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December 10, 2007

Dear Colleagues:

Last year the University of Idaho commissioned Yardley Research Group, an experienced, national higher education consulting practice, to conduct a strategic assessment of graduate programs at the University of Idaho. We seek to share a preliminary draft of their report with you.

The University of Idaho's graduate programs are critical to the overall vitality of the institution as a land grant research university. Our programs are key to the University's aspirations to improve national competitiveness and, over time, meet the criteria for inclusion in the Association of American Universities. We commissioned an assessment that includes comparisons with our national peers in each program to evaluate our ability to function in a highly competitive national market.

The Yardley representative has been meeting with the Provost and Deans, in anticipation of delivering this first draft report for input from the faculty at large. The report has been in process for one year and is intended to create a snapshot of one distinctive part of what the University of Idaho does.

The challenge before us will be to give the entirety of the report our attention and consideration, and to do so openly and objectively. It offers a frank assessment of graduate programs at the University of Idaho and the structural and cultural factors that affect those programs. The University will utilize the report as part of the development of a comprehensive strategy to integrate the efforts of academic units, branch campuses and institutes into centers of excellence that can consistently compete for research support, and attract top students and post-docs in particular areas of research and creative activity.

We view the report as a *catalyst for discussion about and implementation of improvement in key areas.* It is not necessarily a blueprint for action, but rather provides a framework for discussing improvements to the institution. The University of Idaho is in a transformative state, as are many of our national peers who are reacting to and leading a rapidly changing environment. This study is part of an ongoing continuous improvement process, one which all healthy and strong institutions go through at critical times in their evolution and in the implementation of strategic plans. The assessment is comprehensive and incisive, and it comes at a time in the renewal of our institution when it is critically important to understand the strengths of, and opportunities for, the University of Idaho's graduate programs in relation to those of our national peers.

Thank you for your dedication to the University of Idaho during our continuing period of renewal.

Sincerely,

Timothy P. White
President

Doug Baker
Provost and Executive Vice President

An Assessment of Graduate Programs At the University of Idaho

Prepared by
Yardley Research Group

November 9, 2007

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Preface

Our assessments of both the University of Idaho's graduate programs and the institutional climate and infrastructure that support them are based on certain premises related to the contemporary practice of doctoral education at research universities in the United States. The purposes of this preface are to clarify the perspectives from which we conducted our work in order to establish a context for the evaluative comments that follow and to articulate our sense of what constitutes a competitive graduate program.

As we have written elsewhere,[1] the overwhelming reality for public higher education in this decade—despite the temporary relief experienced by many public universities in the last several years—is budget inadequacy. It is tempting to think that budget crisis is cyclical and that more prosperous times always return, but we think that the economic reality for most states is that greater portions of shrinking revenue bases need to be earmarked for the care of aging populations, civil security, and other matters deemed more pressing than higher education. More important, the rhetoric emanating from both state and federal government indicates a fundamental shift in values: higher education is seen increasingly as a good for the individual rather than as a societal good. For government officials, regardless of party affiliation, it is beginning to stand to reason that the cost of an individual good should be shouldered primarily by the individual. From any vantage point now conceivable, many of the recent cuts to higher education are permanent. This economic scenario has many important implications for public research universities, the most important of which is that they need to develop a capacity for self-funding—down to the level of the individual faculty member, wherever possible.[2]

Related closely to budget inadequacy is the cost structure of research doctoral programs. Competitive programs require the presence of senior faculty with active and prominent research agendas, which in turn requires higher salaries and—increasingly frequently—very large start-up packages. Competitive programs also require a critical mass of top-notch Ph.D. students who are competent to participate in faculty research programs. Though we would all like to believe that students choose a doctoral program based on their projected major professor, the reality is that most students now opt for the program that provides the highest assistantship stipend. Competitive stipends and benefits are becoming significantly more costly to universities, particularly in those fields in which U of I is poised to make a difference. Add to these the cost of state-of-the-art facilities and equipment, student professional travel, and the like, and it is clear that research doctoral programs are enterprises of significant expense.[3]

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[1] Michael Ditchkofsky, "Editor's Introduction to a Special Issue on Financing Higher Education," *Journal for Higher Education Strategists* 1 (Winter 2004): 341-343.

[2] We acknowledge that self-funding is more possible for faculty in the sciences, engineering, and some of the social sciences than it is for faculty in the humanities. Nevertheless, in our experience of performing doctoral program assessments at research universities, we have encountered only three programs in the humanities that have no external funding at all. Of course, grant awards in the humanities are significantly lower than they are for the other disciplines; and they frequently carry no possibility of indirect cost recovery.

[3] It is increasingly the case in research universities that master's programs, professional or otherwise, are regarded as primarily as a means of raising tuition revenue. This is not yet a universal practice and is not yet the case at the University of Idaho. Obviously, this adds significantly to the cost of graduate education for the institution.

How do we reconcile the expense of these enterprises with the reality of shrinking state support for public higher education? On the faculty level, we assume that the appropriate plan of action is to increase the grantworthiness of research and to pursue grant opportunities vigorously. Given the now long-standing patterns of the federal agencies in awarding research grants, we place great emphasis on collaborative research projects conducted by multidisciplinary teams of faculty and students.[4] On an institutional level, we stress the need for strong strategic choices that create centers of excellence—areas with a critical mass of research-active faculty and students supported by deliberative institutional financial investment. Because of the budgetary realities of most public universities, it is—to us—clear that strategic choices will include placing some programs in a position of lesser emphasis. More than any other factor, we believe it is the drive to be comprehensive—that is, the desire to be uniformly excellent in every possible discipline and sub-discipline—that increases the operating costs of institutions. In our view, the attempt to be comprehensive results in mediocrity, since there is no area resourced sufficiently to make a difference.

Our assessments also take into account developments in the academic disciplines. It is obvious that disciplines develop over long periods of time. Otherwise, for example, chemists would still be discussing phlogiston. In the past three decades or so, however, we have witnessed rapid and radical shifts in the scope, content, and epistemological orientations of many of the arts and sciences—so that scholars practicing those disciplines today ought to be doing work of a decidedly different nature from the work they were doing 30 years ago.[5] We assume that graduate programs, especially doctoral programs, should also develop over time; and to us, the development of viable programs is closely aligned with the development of their disciplines. We reject the notion that faculty are "stewards of their disciplines," as the Carnegie Foundation for the Advancement of Teaching phrases it; and we tend, therefore, to be critical of programs that are overly concerned with preserving traditional practices and techniques or with exploring questions of decreasing relevance to the constituents which the program serves.

For us, the primary strategic purpose of a research doctoral program is to help shape its discipline, and we, therefore, define competitiveness as the ability of a program to impact its field. For this reason, all of our analyses are based on comparison of University of Idaho programs with similar programs at other universities. We have no interest in comparing programs within an institution to one another. This practice of external comparison is part of an increasingly more prevalent practice in higher education to embrace performance metrics in order to monitor and foster improvement and in order to be accountable to various constituents—taxpayers, legislators, boards, etc. We also use external comparisons to assess master's programs; though in this case, we compare admission and degree requirements and other elements that enable programs to attract students over the local or regional programs with which they are likely to compete.

As we explain in our discussion of methodology below, we assessed Idaho's graduate programs against the specific performance standards embodied in the institutional

[4] Correspondingly, we are critical of administrative structures and budgeting processes that prevent such collaboration.

[5] The field of bioinformatics is a perfect example of the rapid shifts we have been discussing. Approximately 20 years ago, the field didn't exist. By the early to mid-1990s, many research universities were offering doctoral programs in the field. Today, there are very few bioinformatics programs left—precisely because they have changed into something else: computational biology, functional genomics, etc.

benchmark groups for this project.[6] More generally, however, we evaluated Idaho programs from the perspective of emerging national standards on graduate education and research, as represented by the consensus of the communities of graduate deans and research officers and the findings of studies on the doctoral degree especially, such as the University of Washington's Re-Envisioning the Ph.D. Project, that have been conducted over the last decade or so by numerous academic agencies. We did *not* see our task as the assessment of faculty priorities. Hence, we avoid qualifying judgments based on the relative emphasis that faculty choose to give to teaching versus research or to undergraduate education versus graduate. Our intention has been to discuss Idaho graduate programs against the background of graduate programs generally so that faculty and administrators can then make informed decisions about what their priorities ought to be.

A final note: Except in certain instances below where our intentions are clear, we do not mean to suggest in a negative assessment that the situation we have found is the fault of specific individuals or departments. As we indicated during our visits to campus, we believe that current state budgeting policies and specific budgeting actions following the financial crisis occasioned by the construction of the University's Boise Center have placed the University at a decided competitive disadvantage on the national stage. We also acknowledge that what it means to be a faculty member now is in many ways radically different from what it was when most faculty now practicing chose to enter the professoriate, and it is probable that many faculty at the U of I—and elsewhere—will resist or not be able to adjust their work to the newer model of faculty function and behavior. Not to change will be hurtful to the University.

As we have also indicated below, we believe that one of the most urgent issues facing the University at this time is the need to invest significantly in graduate education and research. It is not clear to us if, during the interim leadership following the fiscal crisis, anyone made an explicit decision not to focus on graduate education. Nevertheless, the University community clearly came to a conventional—if unconscious and unarticulated—agreement in the face of diminishing resources to preserve its "core" mission and functions. That the University at the time conceived its core mission to be excellence in (undergraduate) teaching is beyond question.[7] From our point of view, in the contexts of both research universities and land-grant colleges, graduate education and research have an importance at least on par with that of undergraduate instruction. For many reasons, the community at the time acted contrary to this—to the point, in our opinion, that the University has, since roughly the time of the crisis, failed to fulfill adequately critical parts of its mission—as is evidenced by declining applications and enrollments, loss of grant income, uncompetitive graduate stipends complicated by the charging of significant in-state fees to students whose stipends are low in the first place, and a prevailing sense among many faculty that neither time nor budgets permit significant activity outside of undergraduate teaching. This was a collective error, however, made under the pressure of a crisis that was both perceived as overwhelming and that resulted in significant tangible loss and diminishment. In our opinion, it is pointless under such circumstances to assign blame after the fact.

[6] Benchmark groups are different for doctoral and master's programs, since the student markets for these programs are different.

[7] It is also certain that some faculty who conceived the University's core mission to include research and graduate education left the University for employment elsewhere.

Introduction and Methodology

In August 2006, the Dean of the College of Graduate Studies at the University of Idaho, in cooperation with both the Provost and the Deans of the academic Colleges, contracted Yardley Research Group to conduct a strategic assessment of the University's graduate programs, in order both to benchmark them against cognate programs in the University's institutional peer group and to introduce to the faculty the plan for the National Research Councils' national assessment of research doctoral programs.[8] The specific purposes of this analysis are:

- to define the competitiveness of each participating program in relation to a cohort of institutions selected by the University;[9]
- to identify specific steps to increase both program and institutional competitiveness; and
- to suggest long-term strategic priorities that strengthen, realign for development purposes, or otherwise improve prospects for graduate programs and research at the University of Idaho.

The methodology we used to complete the program assessments evaluates a program's own sense of its strategic direction and competitive position in light of comparative data on similar programs at peer institutions. While in practice the various stages of the methodology overlap one another, it is convenient to think of the work as taking place in distinct phases.

- *Phase I—Interviews and Collection of Program Information*: During the week of September 11, 2006, Yardley Research Group personnel[10] conducted on-campus interviews with directors of graduate study of the graduate programs participating in the study, as well as the relevant department chairs. Faculty interviews focused on enrollment trends and analytics, recruiting activities, the programs' own understandings of their competitive strengths and weaknesses, especially related to academic research, and strategic initiatives to improve program standing.

  At the time of the interview, we requested that faculty provide to us copies of their current strategic plans, the titles of journals in which they had published in the previous five years, promotional materials, and most recent external reviews. Faculty were also free to provide to us any other supporting documentation they feel is important to gaining an understanding of their programs.

  For background purposes and in order to discover institutional strategic intent, we also interviewed the Deans of each of the participating Colleges and some of the

[8] The College of Law falls outside the scope of this study for reasons explained below.
[9] As we have already indicated, the comparative cohorts for doctoral and master's programs are different. We compare U of I doctoral programs with those of other land-grant institutions nationwide, with emphasis on those located in western states. We compare master's programs with regional institutions that are likely to compete with Idaho for students.
[10] CEO Michael Ditchkofsky, Vice President Louise Williamson, and Senior Consultant Nancy Diamond.

University's senior administrators, including the President, the Provost, the Vice President for Research, and others.[11]

- *Phase II—Selection of Institutional Cohort*: In collaboration with the Dean of the College of Graduate Studies, we selected a cohort of ten institutions for the purpose of comparing doctoral programs. To select the group, we worked with several lists—Idaho's list of peer institutions, the 2006 Carnegie Classifications, and two lists based on queries we conducted on data from the Integrated Post-Secondary Education Data System (IPEDS) of the U.S. Department of Education.[12]

  The first query identified institutions that, for the most recent three-year period for which data were available, spent within 20% of Idaho's instructional expenditures. The second query identified institutions that spent within 20% of Idaho's research expenditures. We chose the final list of comparator institutions with a view to establishing aspirational benchmarks for the University.

  Also in collaboration with the Graduate Dean, we selected a cohort of ten institutions for the purpose of comparing master's programs. For the most part, these are land-grant and research universities located in the West, but the list also includes other public universities in the state of Idaho and more local institutions, such as Eastern Washington University and Gonzaga University, with which the University is likely to compete for master's students.

- *Phase III—Selection of Program Cognates*: Once we selected the comparative cohort, we then reviewed catalog copy and other published descriptive information in order to choose benchmark programs for each Idaho graduate program participating in the project. In choosing, we paid particular attention to credentials offered, program curricula, and faculty research. This allowed us to compare programs that, whatever their official names, were similar in content and strategic intent.[13]

- *Phase IV—Productivity Comparisons*: We assessed each doctoral program on the basis of productivity indicators that we anticipate will be used by the NRC in its upcoming assessment of doctoral programs.[14] These data are divided into the following groups:

Data related to program size, including the current number of FTE faculty[15], the average doctoral enrollment for the previous three years, and the resulting doctoral-student-to-faculty ratio

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[11] Questionnaires for each of these interviews are included in Appendix A: Interview Protocols.
[12] Results of these queries are provided in Appendix B: Instructional and Research Peers.
[13] A list of comparator programs is available in Appendix C: Taxonomy of Program Cognates.
[14] These data are summarized in Appendix D: Comparative Doctoral Program Data. We detail the sources of data fully in Appendix D, but for the most part, the source of data is the universities' offices of institutional research.
[15] In all cases, we asked for the number of FTE faculty who are either designated as graduate faculty or who are currently active in training doctoral students. (We did not count non-graduate faculty or non-tenure-system faculty.) The universities' calculation of FTE are derived from the varying teaching load requirements of each university and, in those cases where joint appointments are possible, the percentage of faculty time devoted to specific doctoral programs. Formulae for calculating FTE differ from institution to institution.

Data related to students, including in all cases the number of doctoral degrees conferred in the five year period from AY 2001-02 through 2005-06. (Figures for 2006-07 were not available at the time of data collection.) For many programs, we also include average GRE scores, though institutions were inconsistent in the way that they record scores. Some institutions record verbal and quantitative scores; others record only the total score. For verbal, quantitative, and total scores, we use a three-year average (AY 2003-04 through 2005-06). For analytical writing scores, we use a two-year average (AY 2004-05 and 2005-06), since using earlier years would require us to convert from the test's old method of scoring. Since many University of Idaho programs do not require the GRE for admission, we also include the average incoming GPA of the entering doctoral cohorts for the period AY 2003-04 through AY 2004-05, though we do so reluctantly because, in our view, the national context of grade inflation makes GPA a particularly unreliable indicator.

Data related to faculty and research, including total average annual research awards[16] for the period AY 2001-02 through AY 2005-06 and papers published and citations received in periodical publications for the same period.

Data related to program competitive quality and practices, including net assignable square footage of research space, degree of tuition remission, the customary duration of the doctoral stipend, the average amount of the stipends, the degree of subsidization of student and dependent health insurance, and the average time-to-degree for the five-year period from AY 2001-02 through 2005-06.

> Master's programs in departments that also have doctoral programs are measured on the basis of the same data as the doctoral programs in addition to master's enrollments and degrees conferred. Data for stand-alone master's programs—that is, master's programs in departments that do not offer doctoral degrees—are divided into the following categories and focus on those aspects of programs on which students are likely to make enrollment decisions:

Data related to admission requirements, including degree and course pre-requisites, GPA, standardized tests, portfolio requirements, prior job experience, special essays, interviews, and letters of recommendation

Data related to degree requirements, including credits required for graduation, time to degree, delivery format (that is, traditional or some version of distance or hybrid), required courses, electives, practical experiences, comprehensive exams, and a thesis or capstone requirement.

Competitive indicators, including curricular thrust, license or certification preparation, career outcomes, admission frequency, availability of financial aid, tuition and fees, enrollment, degrees conferred, and faculty size.

Before turning to the assessments of the graduate programs themselves, we want to delineate some general observations that became apparent during the course of this study and that cut across specific programs, departments, and colleges.

[16] We prefer awards rather than expenditures, since awards are the best indicator of current research prowess.

General Observations and Recommendations

Introduction

We begin this assessment of graduate programs at the University of Idaho and our analysis of the cultural, structural, and infrastructural issues that relate to program performance by telling the story of our involvement with the University. We first worked for the University of Idaho beginning in the Fall of 2001, when we were hired by Roger Wallins, who was then the Associate Dean of the Graduate College, to formulate student recruiting strategies for graduate programs and to offer recruiting support.[17] The project involved several visits to campus to meet with both administrators and faculty, first in December 2001 and then in the spring of 2002. During our first visit, though we noticed issues with the competitiveness of some programs, we also noted that the University was a particularly vibrant place, with a strong sense of community and a faculty that was generally committed to nurturing graduate students.

Prior to our second visit to campus, after the retirement of Dean Wallins and the resumption of his position by current Dean Margrit von Braun, the financial crisis had begun. We sensed immediately during our second visit that the University was a decidedly different place. Faculty morale was extremely low; and whereas in December 2001, faculty had eagerly embraced the possibility of increased graduate enrollment, in spring 2002, they felt overwhelmed by the erosion of budgets and faculty lines and, in many cases, felt strongly that decreased resources precluded the possibility not only of increasing graduate enrollment but of planning for program improvement.

We have, of course, stayed in touch with the University in the interim period since that experience and the start of this current project in September 2006 and know that the prevailing mood on campus during that interval consisted of an overwhelming sense of diminished possibilities and a corresponding determination to preserve what faculty conceive to be the University's core mission and functions. Substantial progress in reversing the erosion has taken place under the new administration of President White and Provost Baker. In fact, one of the purposes of this current project is to help the University decide how to allocate resources in order to create national prominence for its best graduate programs. Our frank observation, however, is that this new spirit of optimism and building for the future is largely confined to senior administrators and a minority of faculty who are either new to the University or ready to move on from the state of crisis. From our point of view, many faculty and some administrators remain in crisis mode and are focused on recovering the past rather than building the future.[18]

Since both the substance and the tone of this document will be largely critical of the University's efforts in graduate education, we want to begin by stating that the University does in fact have some strong areas of research and graduate education; and, in our opinion, there are several programs and initiatives that, with a reasonable measure of investment,

[17] At that time, the principals of the Yardley Research Group worked for Peterson's, the publisher of guides to colleges and graduate programs. Peterson's core business related to student recruiting. Because we were concerned with marketing and recruiting, we necessarily paid some attention to the competitiveness of programs, though we did not at that time specifically conduct program assessments.

[18] An unusual amount of time has passed since our first visit and the submission of this document. It is quite possible that the University has experienced in that time substantial improvement in terms of faculty and administrative morale.

could become nationally recognized. Among these are the programs in Microbiology, Molecular Biology, and Biochemistry and Biological Sciences. The program in Biological and Agricultural Engineering, though not yet performing at the level of some of the country's best programs in this area, is among the best programs of its kind that we have seen. Beyond this, there are various programs in science and social science related to the environment which, by at least one measure, are already among the best performing in the United States. There are also what the University calls "blue ribbon initiatives" which, though they are operating under some pressure from the deans and department chairs and in some cases require more precise definition, represent exciting new avenues of multi-disciplinary research that could form the foundation of innovative new programming and have significant development implications for the region. Finally, there are several outstanding research centers and institutes, such as the Center for Ecohydraulics Research in Boise, though the extent to which the work of these centers and institutes is integrated into graduate programming is not clear.

Though these programs and initiatives stand out, there are other relatively good graduate programs at the University; but in general, graduate programs at Idaho suffer from both a lack of emphasis and a lack of strategic direction. During the five-year period from Fall 2003 to Fall 2007, applications to graduate programs decreased by 24%. During the same period, enrollments in graduate programs decreased by 21%. Certainly, these decreases are in part the result of faculty and grant losses suffered as a result of the fiscal crisis, after which more than 200 faculty left the University either to early retirement or to employment elsewhere; but we think the issue is more complex than this. It is not simply that applications and enrollments decreased substantially. In 2003, 24% of students who applied eventually enrolled, one of the lowest enrollment to application ratios we have seen. In 2006, the percentage is even lower—only 21% of applying students eventually enrolled. No doubt, faculty losses and departments' subsequent decisions to accept fewer graduate students have played a role; but the substantial decrease in yield rate, which has not been high since at least 2001, indicates something more serious: from a variety of perspectives, Idaho graduate programs—even the academically strongest of them—are not as competitive as they need to be for a number of reasons, as articulated later in this report.

More specifically, graduate programming at Idaho is negatively affected by a faculty culture which, though exaggerated by the fiscal crisis, is more long-standing and very deeply rooted; by a lack of a viable research culture; by a number of overly small and unviable programs; by an organizationally weak College of Graduate Studies; and by significant deficiencies in infrastructure, particularly related to information systems. The quality of graduate programs is also affected by issues and practices related to leadership, particularly at the level of deans and department chairs.

Faculty Cultural Issues

We begin our discussion of faculty cultural issues at the University of Idaho with the observation that we made during our first visit to campus and that we reported above. There is an extraordinary sense of community at Idaho, and we think that this is one of the University's greatest strengths. In fact, most of the faculty and administrators with whom we met agreed that the community of Moscow is a strong competitive advantage for the University.[19] Our feeling is that this sense of community is caused at least in part by the

[19] To place the matter in perspective, we should say that several years ago, we conducted an assessment of doctoral programs for Washington State University. There, by contrast, [continued on next page]

vibrancy of the arts and culture on campus and by the near proximity of opportunities for outdoor sports and experiences of wilderness.

As is often the case with greatest strengths, however, this particular strength has also become one of the University's greatest weaknesses. We have observed that however positive the community life of Moscow and the University are, there is also an element of exclusiveness in this community. We see evidence, for example, that in the hiring and departure from the University of faculty and staff, greater importance is attached to how the faculty and administrators in question fit into the community than to the professional contributions they have made or will make (or have not made or will not make) to the University, especially in terms of research.[20]

Related to this exclusiveness is a real climate of tension focused on how the University operates and, more specifically, how budgets are handled. This climate, whether it originated with or was deepened by the fiscal crisis and the subsequent financial hardship suffered by the University, is expressed in a variety of ways: older versus newer faculty; faculty versus administrators; cost center versus cost center; main campus versus branch campuses; departments and colleges versus centers and institutes; active researchers versus teachers, etc.[21] One important face of this tension has to do with faculty governance, which operates primarily at the department level, and faculty's participation in problem-solving.

The governance policies of the University give significant power to faculty in terms of shared decision making. If this governance were functioning properly, it would be a real strength; but as several faculty and administrators pointed out to us, faculty tend to exercise their power over trivia, such as particular aspects of the University's commencement ceremony, and shun involvement in real issues.[22] Faculty reaction to two events illustrate the pattern we are describing. When the new Dean of the College of Education assumed office last year, he was confronted with a communication from the National Council for the Accreditation of

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faculty almost universally considered location in Pullman to be a competitive disadvantage, and many of them reported that they lived or spent most of their social time in Moscow.

[20] It happened that during one of our recent visits to campus, administrators were interviewing finalists for the position of Vice President for Research. We were privy to some of the conversations that happened in these interviews and know that some of the interviewers spent most of their time assessing and discussing the candidates' "fit" for the community. We think that in this particular case, being judged fit meant in part that the candidate would not unduly upset the status quo. Our understanding is that at least some of the deliberations of the search committee took the same form. The search is ongoing.

[21] We think it is literally true that several of the University's most active researchers were driven from the institution, either by unhappiness over diminished resources or by other faculty—who are still present—who insist that resources are adequate only to "preserve the core" and that research agendas must be subordinated to that goal.

[22] Another face of this phenomenon is that many faculty tend to think about the institution more operationally than strategically and focus on keeping the University running in terms of covering instruction. The current format of the University strategic plan which, at the time of our first visit to campus had not yet been driven down to the level of the Colleges, needs to move faculty away from such operational thinking. Its four goals related to teaching and learning, scholarly and creative activity, outreach and engagement, and organization, culture, and climate do refer, in part, to operational aspects of the University. Faculty and administrators need to work hard on strategic visions and implementation. We think it is important to add to the plan actions that will result in strategic identities at several levels—the University, colleges, departments, programs, etc.

Teacher Education (NCATE) that threatened revocation of the accreditation of the University's programs unless progress could be demonstrated on particular issues during a special accreditation visit. Even though loss of accreditation or placement on probationary status would have been disastrous for both the College of Education and the University, the Council's letter was virtually buried for a significant period of time, despite the fact that at least several faculty and administrators in the College clearly knew of its existence. The prevailing attitude encountered by Dean Rowland as he set about to deal with the issue—successfully, we might add—was that NCATE accreditation was an issue to be solved by administrators.

Similarly, more than several faculty stated bitterly to us during our visit to campus that the fiscal crisis was caused by some combination of ineptness and unethical behavior on the part of prior administrators and that it was, therefore, the "administration's job" to "fix the problem." There was no sense among these faculty, who felt that the aftermath of the fiscal crisis was "catastrophic" for the University, that faculty could or should play a crucial role in the revitalization of the institution by helping to create a vision of what excellence could be achieved with more limited resources and how that excellence could become a means for regaining the confidence of the Idaho legislature, the State Board of Education, and the general public. Our sense is that these same faculty are less interested in a future of excellence precisely because, given limited resources, it would have a different shape from what they imagine to be the excellence of the past. So far as we can tell, the excellence of the past is overstated; and from our perspective, faculty's hope to recover the excellence of the past is in fact a nostalgia for a particular cultural climate which, for lack of a better phrase, we have termed "the culture of Moscow," a culture worth describing in some detail.[23]

Despite the arbitrary name we have given it, the culture of Moscow is in fact a faculty culture, though it has very much to do with maintaining a particular quality of life in Moscow and defining the place of work within that life. To put it plainly, work in this culture is secondary to much else, some of which, such as family, is natural and reasonable. It is also secondary, however, to social and communal activities—to the extent that we question whether Moscow faculty have a realistic sense of the work load experienced generally by faculty in research universities elsewhere. To put it another way, part of the "culture of Moscow" is an antipathy toward what in another time would have been called the "rat race," to the intrusive pressure that is part of the experience of most American workers, including faculty.

Another feature of the "culture of Moscow" is paradoxical. Despite a strong belief in diversity of various kinds—intellectual, racial and ethnic, etc.—the culture gives great emphasis to similarity of values. This is perhaps related to the fact that the University has achieved relatively little in terms of diversifying both its faculty and student body. It certainly explains the improper degree of concern, to which we referred in note 20 above, with potential new faculty and administrators "fitting in" in Moscow.

Though there is certainly not complete uniformity of values among faculty, many faculty appear to hold what in an earlier era would have been called anti-establishment values. Among these is a strong sense of the obligations that the state holds towards its citizens; and as a result of this value, there is among faculty a vivid sense of entitlement to state funds that support higher education, on the level both of students and of the institution itself.

[23] Almost universally, faculty discuss the academic strengths and advantages of their programs in terms of faculty size and diversity of specialization—and, therefore, given faculty losses, in the past tense.

While this sense of entitlement is very strong, there is not generally a corresponding sense of service obligation to the state on the state's terms. University of Idaho faculty have a very powerful sense of mission, but our observation is that their missions are generally self-defined; and, as we have stated elsewhere in this document, those missions have little relation to the economic development imperatives of the state, which many faculty deem irrelevant to the higher ethical, political, and social missions that they have defined for themselves. Consequently, it is part of the "culture of Moscow" for faculty to feel under siege as they work to fulfill missions they consider vital without tangible or intangible support from the state. This sense of siege has, of course, deepened considerably in the post-crisis financial climate, especially as faculty have watched esteemed colleagues who had similar values leave for employment at other universities or take early retirement.

We have already discussed a faculty tendency to focus on the University's past rather than its future, but we wish to discuss this specifically as a feature of the "culture of Moscow." The attempt to recover the past is both practical and idealistic, intellectual and communal. Nearly every meeting we had with both faculty and administrators was dominated by discussion of lost faculty lines and the corresponding increased work load, especially heavier teaching loads, of those faculty who have been left behind. From the point of view of faculty, the number of faculty lines pre-crisis was the "right" number, and many departments' plans and aspirations are focused on recovering that right number.

The historical records indicate, however, that research productivity at the University was never exceptionally high compared to national norms in most areas, and we think faculty energy would be better spent redefining excellence than attempting to recover lost lines. In fact, our sense is that all the previous number of lines permitted was for departments to have one or two faculty working in most of the subfields of their disciplines. In our view, the former number of lines more or less guaranteed the mediocrity of most departments, since having one or two faculty in the most possible subfields meant that there was not a critical mass of faculty in any particular area—and critical mass in particular research areas is precisely what is necessary to impact the development of a discipline. We define critical mass as seven or eight faculty and at least two doctoral students per faculty member working on research so closely related that they could all be co-investigators under the same grant. We do not assume that all faculty need to be in the same department. In this context, focusing on the future would, in our opinion, mean choosing no more than two areas of research focus in each department, foci that would then determine strategic hiring plans. The dominant thinking among Idaho faculty, however, is that it is critical to build a department in such a way to cover instruction by specialists in every possible subfield of a discipline.

Perhaps the most prominent aspect of the "culture of Moscow" is the placement of great value in independence of intention and action on the part of faculty. It appears that most Moscow faculty regard this as a matter of academic freedom—that is, they feel that faculty should be free to conduct research and teach courses in whatever most interests them at a particular time. Consequently, University of Idaho faculty tend to resist the notion of strategy or choice, in part because it is perceived to mean accepting direction from administration. The difficulty is that permitting individual faculty to pursue whatever intellectual questions interest them precludes the possibility of critical mass and, therefore, the possibility of national prominence in any particular field.[24]

[24] We have frequently encountered this resistance to strategy in other institutions. In those cases, the cause of resistance is an ideology of egalitarianism which posits that budget increases should be allocated equally among all departments and budget decreases should be absorbed equally. We think this ideology of egalitarianism—or anti-strategy—is also an
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Closely related to this resistance to strategy is an outdated sense of research universities and the faculty and administrators who work in them. Part of this outdated sense we have already discussed: the desire to build comprehensive departments constructed out of the need to have specialists cover every conceivable area of undergraduate instruction rather than to establish critical masses of faculty and students working in particular areas of research. This view of the department has been economically unfeasible for most institutions since at least the early 1980s. The issue goes deeper than this at Idaho, however, in several senses. In the first place, one faculty member stated bluntly what is apparently a view among some Idaho faculty: "Faculty run the University. The administrators do what we tell them to do." This view, again, precludes the possibility of both strategy and impact on the field. Second, Idaho faculty continue to believe, despite nearly universal nationwide practice, that the primary function of faculty at research universities is teaching, especially undergraduate teaching. We know of only a handful of research universities in which this view is still commonly held, since—as we stated in the preface to this document—the reality of state support for higher education now means that faculty need to be self-supporting wherever possible; and most academic units are dependent on the indirect cost recoveries that result from successful faculty pursuit of research grants. It is also more and more the case that the currency of higher education, particularly in research universities, is prestige—the kind of prestige that comes from faculty focus on high-impact research.

Though there were undoubtedly other drivers at work, as we will discuss below, this outdated sense of research universities is apparently behind the widespread notion among faculty—and some deans—that the core mission of the University is undergraduate teaching. The need to preserve the core in the face of significantly depleted resources was a mantra that we heard repeated in nearly every meeting we held on campus, and this is one of the most prominent aspects of the "culture of Moscow": the compulsion to preserve the core while under siege by hostile forces in control of University finances. We have no doubt that it is necessary to preserve the core during a time of financial stress, but we believe strongly that the understanding by most faculty and some administrators of what constitutes the core is seriously mistaken—or at least incomplete. In our view and as we have already implied in the preface to this document, that mistaken understanding of the core has kept the University off mission since at least winter 2002 and has caused a major research university and land-grant college to function, in many critical respects, as a liberal arts college.

This culture of Moscow, as it reacts to the ongoing effects of the University's financial position, is having serious consequences. In fact, during our time on campus, we heard reports of myriad unprofessional behaviors, ranging from enmity among individual faculty members to which students have been made privy, to public criticism of administrative decisions and actions to which students—and the local press—have also been made privy, to inappropriate competitive behavior among the deans and other administrators aimed at securing greater shares of scarce resources.

We cannot overestimate the seriousness of this atmosphere, which is both palpable and long-standing. While unquestionably many faculty losses resulted from the early retirement programs initiated by prior leadership, many others resulted from a desire to flee the atmosphere. We think it is highly probable that the University lost some of its best

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important feature of the faculty culture at Idaho; but in this case, it is masked by the stated desire to "preserve the core" in the face of budget cuts. If preserving the core is defined, as it is by Idaho faculty, as marshalling resources to the coverage of undergraduate instruction, resources need to be allocated almost precisely equally.

researchers during the period of flight; and we are deeply concerned that many of the University's current promising younger researchers—especially those working in University-sanctioned interdisciplinary initiatives now coming under pressure from deans and department chairs concerned solely with resources available to their units—will also take flight for more peaceful environments. We do not think it an exaggeration to say that the current faculty culture is one of the factors causing a brain drain away from both the University and the state.[25]

In attempting to retain faculty who have received job offers elsewhere and as we have implied above, it seems to us that often community is the driver of the deans' retention attempts. That is, frequently, deans' efforts to retain faculty have to do with some aspect of community—length of service, rapport among faculty, rapport between faculty and students, or reliability in terms of service. In our opinion, given the situation we have outlined above, the decision to retain faculty members via counter-offers should be made exclusively in terms of whether the work of those faculty can increase the research profiles of their departments and programs.[26]

In further describing the faculty culture at Idaho, we note a peculiar provincialism that sometimes takes the form of regionalism. In locating their programs within a particular competitive environment, in planning, in recruiting students, in thinking about placing alumni in post-degree positions, faculty think almost exclusively in terms of "the West" or some smaller part of the West.[27] While we think that one of the principal purposes of

[25] The data we have do not enable us to say if the culture is also driving away graduate students, though clearly there are problems with attrition and completion, as well as time to degree, in many programs. We would be surprised if the culture were not at least partially to blame for these issues. We think it would also behoove the Graduate College to begin a study of students who were admitted for admission to Idaho programs but who chose to go elsewhere, especially of those students who visited campus as part of their decision-making process. At the very least, the general public and potential students are aware of both troubling events and a prior atmosphere of trouble related to the University. We have no doubt that this has played a role in the sharp declines in both applications and enrollments. It is critical, therefore, that the University take steps to change the atmosphere on campus—in part by offering workshops to faculty who will be involved in the recruiting of potential graduate students. We should also note, for the sake of fairness, that other factors are playing a role in application and enrollment decline. Applications to graduate school are down throughout much of the West—though not to the degree they are at Idaho. There have also been planned—though, in our view, not necessarily well-thought-out—program eliminations, especially in Education, on some of the branch campuses that also account for enrollment decline. The reasons for these program eliminations, which we will describe below, are complex and may have made sense from certain points of view; but they have definitely affected the University's enrollment picture.

[26] We do not mean to underestimate the value of a faculty member's teaching; but we think that at this particular point in the University's history, primary consideration should be given to research contributions.

[27] That is to say that faculty think in terms of the West when they think of this issue at all. It was clear to us that many faculty were considering for the first time during their interviews with us the question of whom their peers and aspirational peers are, despite the fact that they knew in advance that we were going to be questioning this area. (Some faculty said that they considered the question pointless.) It is as though some Idaho faculty are working in a vacuum relative to their disciplines, with little sense of a competitive landscape and no standards other than their own to which they need to conform. The exception to this

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research and graduate education is regional economic development, which we will discuss in more detail below, the perspective of doctoral programs especially must be at least national in scope—that is, faculty must think in terms of recruiting and placing students nationwide and must delineate research programs in the context of the field itself, not the field as it is practiced in Montana, Utah, or Washington state. It is our view that such regionalism is frequently a cause of mediocrity—becoming the best program in the West or in New England, for example, may not be saying very much.

Provincialism—or, depending upon the context, regionalism or isolationism, takes several forms at Idaho. One form of provincialism is faculty—and in some cases, administrative—over-emphasis on Moscow and a corresponding lack of interest in—and in some cases, active mistrust of—the branch campuses. As Provost Baker pointed out to us during one of our visits to campus, the principal population centers of the state are remote from the University's main campus in Moscow; and while there is a system of branch campuses in place to deliver programming to these population centers, that system is not yet adequately integrated into the activities of the Colleges in Moscow. There is considerable tension between the chief officers of the branch campuses, who feel that they are not sufficiently used, and the Deans of the Colleges, who feel that they are not sufficiently in control of branch campus programming and budgets. This tension extends to questions of program availability, standards, budgets, marketing, and faculty supervision. Our sense is that this tension has primarily to do with competition for resources.

We are more concerned, however, with the attitudes toward the branch campuses of faculty, who prefer to remain uninvolved. The prevailing view of Moscow faculty is that the branch campuses offer primarily professional programming that is academically less rigorous than programming in Moscow, which enrolls "real" students, as opposed to professional or career-oriented students in the branch campuses. Consequently, branch campuses are staffed by dedicated faculty, some of whom are off the tenure track.[28] We think that the real issue here, as we have stated in another context elsewhere in this document, is that at least some Moscow faculty are isolated from the economic development imperatives of the state and consider their educational missions to be irrelevant to those imperatives.

We think, on the contrary, that the branch campuses are among the most vital but underutilized instructional and research assets of the University—underutilized because the culture of Moscow deems them less academically credible—and that it is important for these assets to be well integrated into the system, especially in terms of faculty. That is, we think there should be one statewide University of Idaho faculty, and that programs offered on the branch campuses should be frequently taught and supervised by faculty on the Moscow campus and that programs offered in Moscow be sometimes taught and supervised by faculty whose "homes" are on the branch campuses. As a model for how such a scenario could be operated, we point to the practices of the University of Wyoming, the only higher education institution in its state. The University maintains a "College Center" in Casper and has nine outreach education centers in close proximity to population centers and regional airports.

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is when they need to justify greater faculty size and increased resources, in which case they look outward—but rarely beyond the West—for evidence to make their cases. It is possible that this kind of isolationism is a characteristic of the Palouse, since we found more or less the same phenomenon at Washington State.

[28] It is an interesting status question that some Moscow faculty stated a preference for instructors or adjunct faculty for the branch campuses but insist that the use of such faculty on the Moscow campus diminishes the quality of the education offered there. In some cases, the Deans of the Colleges agree with them.

Laramie faculty in the Teacher Education program, for example, travel by commuter jet on a weekly basis to the education outreach centers and teach their classes there. Our understanding is that the University had forged an agreement with regional air carriers to take advantage of high-volume pricing. Classes are offered on special schedules, such as one three-hour session per week or six eight-hour Saturday sessions.[29] In this way, long distances can be overcome so that there can be one system-wide faculty who implement consistent instructional and research standards and who are responsive to regional needs.

It is not simply that Moscow faculty are isolated from the state's population centers and economic development imperatives. We think that they are also often isolated from current best practice in higher education, as we have stated above, and in their own disciplines. This latter isolationism frequently results in a false sense of national prominence in terms of both program performance and of individual faculty reputation. The comparative evidence compiled in Appendix D of this document indicates that very few programs are performing on par with programs in either their actual or aspirational peer groups. Nevertheless, many faculty believe otherwise. One program, for example—though we could choose as examples many others—believes its competitive advantage to be faculty reputations on par with or superior to those in cognate programs in such institutions as Wisconsin, Kansas State, and the University of Nebraska at Lincoln. The program in question has the lowest external funding—on both a program and a per-faculty basis—of any other program in the comparative cohort save one—a program that we know from prior experience is barely functional and in a state of serious decline. The same Idaho program has on a per-faculty basis published only 45% of the mean number of papers published by faculty in its comparative cohort and has one of the lowest citation records in its field.

One of the most extreme forms of isolationism at Idaho is the unusually high percentage of graduate students, faculty, and administrators from either the University itself or from Washington State University. Though we have no hard and fast statistics on this issue, it is clear from what we do know that many Idaho faculty and administrators have at least one degree from either the University of Idaho or from Washington State and/or were promoted into their current positions from among the faculty ranks. Many departments appear to almost routinely hire their own graduates as regular faculty, contingent faculty, post-docs, or in some other capacity. Even more alarming is that a significant percentage of graduate students were University of Idaho undergraduates. In fact, many graduate program directors see their own undergraduates as the primary audience for their programs.[30] We cannot emphasize enough how these practices contribute both to ignorance of national best practice and to narrowness of vision and perspective and consider them very harmful both to the programs and to the University. We are concerned enough over the effects of this practice to recommend specifically that the University place a moratorium on promoting from within its own ranks and from hiring either its own alumni or those of Washington State. For the good of the University, we think that all administrative positions—from department chair on up—should be filled via national searches that aim to hire candidates from outside the immediate region.

[29] Such an arrangement was in effect at the University of Wyoming several years ago. We do not know for certain if it is currently in effect.

[30] We do not mean to imply here that the University should not recruit those of its undergraduate students who belong to underrepresented groups, since many of these students are place-bound and part of their culture is to remain close to their family environments for the sake of intellectual and emotional support.

It is our opinion that national faculty searches should operate under the same guidelines—that is, there should be a moratorium on hiring Idaho Ph.D.s into faculty positions and it should be the rare exception that faculty are hired from Washington State. In fact, we think it should be firm institutional policy that faculty may be hired from peer-aspirational institutions *only*—with no exception—and the list of peer-aspirational institutions should include a significant number of universities from outside the Northwest. Moreover, since new faculty are quickly caught up in the competition for resources among the academic units and since faculty working in interdisciplinary initiatives operate under pressure from some of the deans and department chairs, we think the University should also place a five-year moratorium on *departmental* faculty hires and should hire instead only faculty who have joint appointments among departments and who can contribute to specific overarching University research initiatives.[31]

Apart from scarce resources, faculty cultural issues, as we have described them, are the most significant problems facing the University at this time; and we do not believe that the University will be able to address seriously its shortage of resources until it can solve its cultural issues. We think it is imperative that administrators identify, support, and work with faculty who are capable of ignoring trivia and helping to forge a viable specific research mission for the University; but we are also realistic. It is clear to us as outsiders that some faculty will continue to focus on the past. Though we are well aware of President White's antipathy toward early retirement programs in which compensation is paid in return for no effort—and agree with it in principle—we also think that early retirement is the only tool at the University's disposal to remove the destructive elements among its faculty and move the institution further toward academic and financial health. That this is necessary is—to us—beyond question. President White noted to us during our first visit to campus that there has been a nearly 100% turnover of senior leadership during his tenure. Our view is that the destructive aspects of the faculty culture are so strong that they have already absorbed some of the University's new leadership, a topic to which we will return later.

Improvements Needed in Research Culture

To be fair to faculty, we need to point out that the University *did* experience significant increases in undergraduate enrollment at the same time that it experienced large decreases in both staff and budget;[32] and our sense is that there may be structural issues that encouraged the faculty's initial choice to focus on undergraduate teaching at the expense of graduate education and research. Information about the formulae for budget allocation from the state was not available for this study, but we would be surprised if those formulae did not give undue emphasis to undergraduate instruction.[33] In a sense, faculty discussion of

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[31] It is possible that joint hires focused on research will create some level of inconvenience in terms of covering instruction. We think this could be remedied through the judicious use of adjunct or fixed-term faculty. It is imperative, in our view, that the institution begin to see tenure-system faculty in terms of their research function and to avoid using them for lower division instruction.

[32] Undergraduate enrollment increased 13.4% between 1998 and 2003, though it began to decrease again after that, so that the total enrollment increase during the period of this study was only 2.5%. Faculty sentiment is still tied to the memory of the worst period of the crisis, during which both enrollment increases and faculty losses were substantial.

[33] It is common for budget allocations to be made on the basis of student credit hours (SCH) generated, which automatically gives greater importance to undergraduate education, since that effort typically produces many more credit hours than graduate programs. We know from the University's Controller that the State Board of Education does use an allocation

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lost lines and growing enrollment is natural. We think the more productive conversation, however, would have focused on both strategic reductions and eliminations and strategic building and restructuring of selected areas in order to enhance existing strength.[34] That is, we think that post-crisis discussions about operations needed (and need) to be transformative—that is, they need to focus on how to build and maintain research strength in critical areas, in part by considering how institutional operations could be implemented differently in order to both accommodate and impact the changing fiscal environment. Instead, the basic presumption of those discussions was that the University's "core mission" had to be conducted as it always has been even though the budgetary climate permitted that implementation only at the expense of other critical missions.

In addition to structural elements such as budget allocation formulae, we think that the institution's post-crisis choices were encouraged by a cultural and organizational climate that does not adequately understand or value contemporary research practices. In some cases, even physical conditions are not conducive to fostering research. Faculty reported to us that some areas do not have separate teaching and research labs, resulting in disruption to research and potential problems in security. Our point here is that both physical conditions and institutional practice indicate a marked preference for teaching over research, and this has unquestionably damaged both the University's national standing and its efforts in graduate education.[35]

We also think that the University's infrastructure for research administration is not optimal and in some cases may actually be impeding the integration of research and education. Our

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formula based on SCH, but that this is a relatively new formula and that the University's budget will not actually be affected by it until FY 2009.

[34] For example, during their discussions with us, the Departments of Geography and Geology focused relentlessly—and unrealistically—on rebuilding themselves to their pre-crisis number of faculty. Given a similarity of research interests, trends in the fields, and more or less equivalent size issues in both departments, we think the better discussion would have been about how to combine the two departments in order to create a larger organization in Earth Sciences that would have a more significant impact on the field.

[35] Every single program with which we met—without exception—emphasizes teaching over research—to the point that we wondered frequently who on campus champions the University's research mission. We wish to be explicit, however, that none of this is to say that University of Idaho faculty do not work hard. In fact, they often work very hard. We have observed, however, that they have a tendency to overburden themselves with many functions that have nothing to do with research—particular services to the state, despite the fact that, as far as we can tell, these services are no longer paid for by the state; undergraduate teaching, often on an overload basis; financially unproductive master's programs, etc. In fact, at the time of our visit, one program in the College of Education was exploring the possibility of assuming responsibility from the Department of Biological Sciences for advising all students in pre-med, pre-nursing, pre-PT, and other areas in the introductory health sciences. (See HPERD's five-year plan dated April 16, 2007, page 6.) From our point of view, assuming such responsibility could provide no benefit—financial or otherwise—to the department. It would, however, increase considerably the department's workload. We think this specific example represents a general trend: Idaho faculty overburden themselves with numerous activities related especially to undergraduate education. The effect of this is that they are then too busy to conduct research on any meaningful scale. In other research universities, activities such as advising are handled by dedicated advisers, with relatively minimal faculty involvement for upper-division students only.

impression, confirmed by our discussion with the former Vice President for Research, who is now retired, is that the University Research Office focuses more on post-award administration and compliance than it does on proposal development—except in the Natural Resources disciplines. We were not asked to assess this office as part of this project; but a cursory glance at the Office's website indicates that, apart from the sponsored programs area, the Office is as woefully understaffed as the College of Graduate Studies. The position of Vice President for Research is currently vacant, *and it is our conviction that hiring for this position is the single-most important act the University will undertake for some time to come.* In our opinion, it is urgent that the University hire—from outside—an experienced professional research administrator who will see his or her role not as managing faculty proposals and post-award activities but as developing and managing the institution's research portfolio.

The current approach to research administration at Idaho gives too much credence, in our view, to individual faculty interests and does not go far enough to create direction.[36] What is needed now is a strategic research plan that delineates the development and management of an institutional research portfolio. Such a plan would create principal research themes that reflect intended areas of strength—developed out of the Blue Ribbon Initiatives or otherwise—attempt to subsume as many of the undirected activities as possible under these themes, develop a plan for systematic and sustained investment in these areas, identify external funding opportunities and strategies for achieving funding, and outline the organizational and technical infrastructures necessary to support these initiatives. The plan would also take into account current research in the fields and would identify particular roles for Idaho in the competitive landscape. The plan should also address the long-term objective of commercializing faculty and student discovery.

Building an institutional research portfolio is obviously a long-term strategic initiative. We think that the University can also undertake several practical actions that would make a significant difference in the near term in developing a sustainable research culture. The first is to reinstitute the graduate program review process, which has been dormant since about 2001, focusing especially on the integration of programming and research. The second is to review both minimum standards for and current membership in the graduate faculty.[37] Standards for graduate faculty status should be based on such standards in other research universities and should identify minimum levels of research productivity—in terms of grantsmanship, publishing, exhibition, and other appropriate activities. Membership in the graduate faculty should be for a fixed term and subject to renewal on the basis of continuing productivity; and we think that all future faculty hiring should be aimed primarily at research-active faculty committed to achieving and maintaining graduate faculty status. A third short-term strategy for enhancing a culture of research is to hire a critical mass of post-docs, particularly in the sciences and engineering. Ordinarily, post-docs are free of teaching responsibility but contribute significantly to the mentoring of doctoral students and the

[36] This approach appears to be endemic to the University. The former dean of one of the colleges said there was a palpable obligation to allow faculty members to conduct research on any question that interested them, whether those questions contributed to the College's strategic choices or not. Given the current fiscal climate at Idaho and the academic repercussions of it, this non-strategic approach strikes us as unproductive and leaves little possibility for high-impact research.

[37] We do not mean to imply that graduate faculty should not teach undergraduates but that only research-active faculty should work with graduate students.

development of their research skills and disciplinary instincts. A cadre of post-docs would also have an immediate impact on the level of institutional grant competition.[38]

In some cases, insufficient faculty attention to research is institutionalized by University policy and procedures. As part of the supporting documentation for this assessment, faculty from several Colleges provided us with copies of their current job descriptions. The descriptions spelled out specific faculty duties related to teaching, research, and service. What alarmed us in the descriptions we saw is that expected percentages of time allocated to different faculty activities consistently assigned significantly lower priority to research than to teaching. When we mentioned this to administrators, they were puzzled about the origin of these descriptions, and so we have no way of knowing if *all* faculty job descriptions give less emphasis to research. We recommend specifically that the University review all faculty job descriptions and, in every case, ensure that the portion of faculty time to be allocated to research be equal to that allocated to teaching. This will obviously need to take place in stages.

We have already touched upon other evidences of an insufficient culture of research in the section of this document related to faculty cultural issues. Of these, the most important is faculty—and, in some cases, administrative—opposition to strategy. In our view, it bears repeating that given the current budgetary reality not only at the University of Idaho but throughout higher education generally, it is not feasible to attempt comprehensive excellence; nor is it possible to build traditional comprehensive departments that include specialists in every possible sub-field of a discipline. We think especially that it is a waste of resources to have individual faculty working in isolation on research questions that are of interest to them, since under those conditions, institutional research accomplishments are bound to be small and obscure. Building critical mass in particular areas, however, goes against an ingrained sense of egalitarianism, which precludes both strategic investment and strategic reduction and reorganization. This opposition to strategy and corresponding penchant for individual choice must be overcome if the University is to develop a national research profile.

Elsewhere in this document, we have already touched briefly upon the volume of faculty publications and citations. Both the comparative data in Appendix D and the individual program assessments below indicate that, even when we normalize for faculty size, faculty publication levels for most Idaho programs are significantly below what they are for programs in almost any other institution in the comparative cohort for this study. This is partly a reflection of low faculty research productivity, but it is also a function of low doctoral enrollment. In most research universities, the percentage of papers authored by doctoral students is quite high—in some cases, even constituting the majority of publications.[39] More worrisome is that in the case of many programs, Idaho has the lowest citation record in the cohort, indicating that departmental research is not particularly influential on the disciplines. We think it is important that the Provost and the next Vice President for Research launch an initiative to increase both the quantity and the quality of faculty publishing in peer-refereed high impact journals and other venues appropriate to the various disciplines. We assume this initiative will include appropriate incentives and penalties.

Of particular concern to us about the research culture at the University of Idaho is the mission and function of the University's centers and institutes, particularly those that lie

[38] Surprisingly, we heard almost nothing about post-docs during our visits to campus.
[39] At WSU, doctoral students wrote approximately 70% of the papers published out of the University over the last five years.

outside the University's ordinary reporting and budgetary structures. In general, we strongly support cross-departmental and cross-college interdisciplinary research structures that report either to the VPR or to the College of Graduate Studies. In the case of Idaho, however, the function of these structures is unclear and apparently varies from case to case. In the first place, it is not certain that the mission of some centers and institutes is in fact the conduct of externally funded research. Where this is clear, it is not certain that such research is adequately integrated into the educational activities of the Colleges, particularly those activities related to graduate students.

In fact, our impression is that in a significant number of cases, centers and institutes exist simply in order to give a special degree of independence to the faculty who direct them—or to put it more bluntly, to allow directing and participating faculty to operate outside the purview of Deans and other administrators. We think it is important that the University first establish clear and strong policies related to the mission and function of centers and institutes. These policies should dictate that the primary function of such organizations is to conduct *externally funded* research. They should also delineate precisely the relationship between centers and institutes and the University's ordinary academic structure of departments, colleges, and programs. Of greatest importance is that the policies insist on a seamless integration of research and graduate programs—that is, they should establish firm guidelines for the participation of graduate students, especially doctoral students, in the ongoing work of the centers and institutes. Once these policies are in place, we think the University should conduct a review of all centers and institutes with the aims of either bringing them into alignment with the new policies or eliminating them.[40]

As we have implied several times in this document, we think that one of the most important challenges facing the University—assuming that it intends to give equal priority to its research mission—is that it is going to need to develop different and more cost-effective ways to deliver undergraduate instruction, particularly lower division service instruction.[41] Currently, tenure-system faculty contribute significantly to lower-division instruction, in part because there is a strong faculty bias at Idaho, as there is elsewhere, against the use of contingent faculty. It is also because post-crisis staff reductions were more or less random and driven by the need to cut budgets and were, therefore, determined by age of faculty. Consequently, there was no appropriate consideration for the impact reductions would have on particular departments and parts of the curriculum. In our opinion, the high degree of participation of tenure-system faculty in lower-division instruction is crippling the University as it attempts to fulfill its research mission. If the University were able to offer competitive graduate student stipends and eliminate excessive in-state fees, part of the gap could be filled by graduate teaching assistants, though this is a relatively expensive solution.

[40] Perhaps this is the place to relay what we think is one of our most important observations about the University. In any complex organization, there are, for sound reasons, exceptions to rules. Our sense is that at Idaho, there are primarily exceptions and not rules; and this is apparently part of the University's particular tradition of faculty governance. We have implied throughout this document but want to state explicitly here our belief that stronger, more centralized, and more strategic control of activities and budgets, as well as the structures in which they exist, is vital to the University's return to academic and fiscal health.

[41] It is our opinion that, in the context of a research university, it is an appalling waste of resources to have tenure-system faculty teach lower-division courses, especially lower-division service courses for non-majors.

In our opinion, the most obvious—and effective and cost-effective—solution to this problem is to increase the number of non-tenure-system faculty employed by the University in well-identified strategic areas in which doctoral education and research are of clear priority. Though we understand that this is not a recommendation that will be popular among faculty and some administrators, the fact is that the University of Idaho makes far less use of contingent faculty than do other research universities. The average percentage of non-tenure system faculty (both full-time and part-time) employed by the institutions in the comparative cohort for this study is 37.9%. The percentage of contingent faculty at Idaho is 25.7%, smaller than any university in the cohort except the University of California at Davis.[42] In our estimation, Idaho has significant room for growth in the use of contingent faculty and, consequently, significant opportunity to increase the amount of research time available to tenured and tenure-track faculty. A means of measuring precisely how much room for growth the University has in this area—closed to us because we are a private firm rather than a participating university—is a comparison of credit hour productivity through the Delaware Study. A standard that emerged from that study is that in research universities, tenure-system faculty spend no more than 50% of their time on lower division instruction. Based on the information we have from the Deans of the Colleges, this percentage at Idaho is surely significantly higher. Given the University's need to increase faculty research productivity, we think that the percentage should be—at least for the time being—significantly lower.

Compounding the use of tenure-system faculty for lower-division instruction is the loss of research-active faculty to other universities. As one faculty member put it to us during our first visit to campus, "the only way to get a decent raise at Idaho is to get an offer from another university." As a result, faculty recruiting and retention, and particularly the size of start-up packages for new faculty, are serious issues for the University. We think that raising money for start-up packages should become a top priority for both the new Vice President for Research and University Advancement. As we have indicated already, the principal determining factor for retention of faculty should be research productivity, measured specifically by average annual grant income, publication and citation statistics, and appropriate exhibition or performance activity in the arts. Apart from this, as we have stated previously, the University should insist on increased research productivity, and wherever this is not likely, should offer early retirement in some form. We think this is essential if younger productive faculty are to flourish in their research programs.

Program Viability

As the program assessments below will demonstrate, the University has a number of graduate programs that, from many perspectives, are not viable at this time. There are too few research-active faculty participating in them and those who do participate often appear too overloaded with other activities to have adequate time and energy to mentor graduate students. There are currently too few students; and in many cases, applications have been declining for some time. This is not surprising, since recruiting activity virtually stopped years ago, as we will discuss below. Degree production is minimal; completion appears low; and time to degree seems excessive. Worse yet, as we will repeat below, faculty in some of these programs have little to no interest in them, believing that all their time, energy, and resources are taken up in their mission to "preserve the core."

[42] Our sense is that the percentage of contingent faculty is actually lower on the Moscow campus, since the AAUP survey from which these data are taken does not distinguish between Idaho's main and branch campuses.

While we believe there are unviable programs in almost every College of the University, we have particular concerns about some of the programs in the College of Engineering. Trend data from the American Society of Engineering Education (ASEE) indicate, as do data from University of Idaho Institutional Research, that applications and enrollments are down but that acceptance rates are up. This, coupled with the statements of a number of Engineering faculty about being unhappy with the quality of their students, leads us to believe that the programs are accepting considerably weaker students than they once did. The situation is self-caused, however. Though it is the case throughout the University, some faculty in the College of Engineering particularly are notably uninterested in their graduate programs and do nothing to recruit graduate students.[43] We think it is also probable that the College is specifically offering too many programs and is "collapsing" under the weight of them. Our confusion on this issue results from the different nomenclatures used to differentiate on-campus programs from programs offered through Engineering Outreach (EO) and the inability of the University to provide reliable enrollment statistics that separate Moscow programs from programs on the remote campuses and programs offered through EO. In any case, we think it likely that faculty energies are depleted on duplicative programs and that the College's strategic plan needs to explore and address this question. We also want to stress that though we are illustrating this issue with specific reference to the College of Engineering, we believe it to be an issue across the University.

As we have indicated throughout this document, many University of Idaho faculty believe—or behave as though they believe—that the core mission of the University refers to undergraduate teaching; and this is one of the principal reasons for the existence of many unviable programs. Some of the faculty with whom we spoke during our first campus visit stated frankly that they would prefer not to have doctoral programs. They feel that they lack time and appropriate resources; they have failed—for years, in some cases—to recruit potential students for graduate programs; and they have, in the context of the current budget climate, no interest in or concern about these programs.

In order to address this issue, there needs to be a serious shift in both emphasis and culture; and, in our opinion, this shift needs to be initiated and endorsed at the level of the President and, if possible, the State Board of Education. Since faculty are convinced that this is a question of time, we think that in order to launch the initiative, it will be necessary to conduct a workload study that involves direct comparison with research universities from across the country. This need not be elaborate. If the University participates in the Delaware Study, it is simply a matter of requesting from the Study director data on specific aspirational institutions. At that point, it will simply require a mandate from the Provost that College and Department strategic plans include specific steps to increase measurably emphasis on graduate education, including enrollment goals over time and increases in proposals for external research funding. We do not mean to over-simplify the initiative, since the cultural shift required will be daunting and will necessitate major changes in how the University conducts its business in other areas; but the steps outlined here will at least make a good beginning.

A significant aspect of lack of program viability relates to critical mass issues, in several senses. As we have discussed elsewhere in this document, the most important of these is

[43] During our first engagement with the University is 2001-02, a former University official told us that many faculty in the College spent much of their time on private consulting and were relatively unengaged with their positions as faculty. This is perhaps one of the reasons that the new Dean of the College intends to initiate a more rigorous post-tenure review process.

that there are currently too few faculty working in similar areas of research, and this is compounded, as we have indicated, by faculty's adherence to the notion of the traditional comprehensive department.[44] Also important is that there are simply too few graduate students, especially doctoral students, in almost any of the University's programs. This also diminishes research efficacy; but the most visible face of under-enrollment relates to programs' inability to offer required courses and appropriate electives on a reasonable cycle, which in turn leads to lengthier time to degree.

Several unfortunate practices have evolved in an attempt to deal with issue. The first is relatively common among universities that have programs with too few students—the double-numbering of courses so that they can be taken by both undergraduate and graduate students. Our experience is that this practice inevitably leads to serious quality problems in graduate programs, despite requirements for additional research, papers, etc., especially since the additional requirements are frequently not implemented. Even if they are, there is no question that the quality of discussion in double-numbered courses is generally sufficient only for undergraduates. The second practice, unique to U of I, is to offer cross-registered courses with programs at Washington State. We will have more to say about this practice below.

Unfortunately, we think that the reality of the University budget dictates that the issue pertaining to lack of critical masses of students will become worse before it becomes better, since uncompetitive stipends diminished even further by excessive in-state fees are also a very serious issue; and the University will not be able to increase stipends across the board. In fact, we think it will be necessary to stop funding some programs in order to increase the competitiveness of others; and this means that enrollments will drop further in those programs from which funding is cut. In our opinion, the process of building program viability will need to begin with strategic choices to invest in both specific programs and over-arching research areas, with funding initially concentrated there. It is a telling fact that no specifically actionable over-arching research areas have yet emerged, a fact that speaks to the lack of strategic direction and random activity which we have been discussing. We do believe that specific programs are worthy of funding concentration, and these are the ones we identified at the beginning of this portion of the report: the two biological sciences programs, Biological and Agricultural Engineering, and the doctoral program in Natural Resources.[45] Apart from these, we think it possible that any of the University's other graduate programs could be candidates for temporary receivership.

Another aspect of program unviability is a phenomenon we have encountered elsewhere and have termed the "teaching doctorate." These programs tend to be "merely" educational—that is, they are comprised of teaching, reading, studying, writing papers, and other activities associated with courses. They are deficient, however, in intensive research experiences for students, principally because the faculty who participate in them are not sufficiently

[44] We should make explicit our assumption that building critical mass in specific research areas is an *interdepartmental* endeavor. We are not thus suggesting that a biology department, for example, hire a critical mass of faculty conducting cardiovascular research. Instead, an institution could build a critical mass of researchers in cardiovascular science across a number of departments in the life and physical sciences.

[45] Several other programs—neuroscience, environmental science, and computational biology, for example, as well as whatever programs might emerge from the blue-ribbon initiatives—ought to be on this list; but they are too new to be yet sufficiently developed and have suffered from the obstructions that interdisciplinary programs generally face at the University.

research-active to provide those experiences. In our view, faculty who work in doctoral programs must meet minimal standards of research productivity on a *continuous* basis, and the curricula for these programs must be *primarily* dedicated to intensive and original student research. One of the principal upcoming tasks of the College of Graduate Studies, probably in the context of its renewal of the graduate program review cycle, will be a comparative analysis of program curricula, especially at the doctoral level. It is our opinion that the curricular structure of many of the University's programs in science and engineering are more appropriate to programs in the humanities. There is altogether too much emphasis on coursework and the accumulation of credit hours, which seems to us comparatively excessive, and not nearly enough emphasis on either research apprenticeship or original research.[46]

Under ordinary circumstances, given the relative weakness of many of the programs we have seen, the state of the University's finances, and the pronounced nature of the aspects of program unviability we have described above, we would recommend that many programs be either eliminated or subjected to a process of review and renewal that could result in elimination or integration with other programs. The individual program assessments below will demonstrate, however, that we have been very cautious in this regard, and we urge a similar caution to the University as it begins its review of programs. Our understanding is that, apart from its land-grant functions, the unique mission of the University of Idaho within the state system of higher education is in fact graduate education and research. The elimination of too many graduate programs would jeopardize that mission and would render the University vulnerable to an unacceptable degree to increased competition from other institutions in the state.

As we have already indicated above, many—an extraordinary number of—faculty, understanding that their programs are not viable under current conditions, have sought collaboration with Washington State University as a solution especially to the problem of having enough students to make offering particular courses financially viable. In principle, we have no issue with this approach, though we do not regard it as the cure-all that many faculty from both institutions apparently do. Howard Grimes, the Dean of the Graduate School at Washington State, who engaged us several years ago in a project similar to this one, told us specifically during the course of that project that he was not willing to approve many of the collaboration proposals that crossed his desk. His reasoning, with which we agree, is that it does not solve the problem of viability to merge two small unviable programs to create a slightly larger unviable program. Our prior experience at Washington State indicates that this is precisely what would happen if many of the Idaho faculty considering collaboration were to move forward with their proposals.

We do have a serious concern that many of the discussions regarding program collaboration are taking place among faculty on an ad-hoc basis and without centralized coordination. Since a new president has recently begun his tenure at Washington State, we think that this is an opportune moment to initiate president-to-president discussions and negotiations on this question. Given the risk inherent in offering joint programs between institutions in states with differing budgetary processes, political climates, and higher education

[46] Original research *is*, obviously, required at the dissertation phase, but our sense is that this is in addition to excessive coursework and in the context of inadequate prior research experience. This perhaps accounts for lengthy time to degree; and it seems to us a safe bet that if we had spoken to proposal- and dissertation-stage students during our visit to the University, many of them would have said that their programs did not prepare them well to undertake and complete a doctoral dissertation. This may also account for low completion.

governance policies and structures and given the propensity of Idaho faculty especially to create structures that operate outside ordinary administrative channels, we think it important that discussions happen only at the level of *senior executives* and that all existing discussions among faculty and others be either halted or subordinated to the executive discussions.

This is not simply a question of necessary centralized control. We have already noted the tendency of Idaho faculty to prefer traditional models and structures that would require significant government support that can no longer be expected or relied upon and think that collaboration between the two institutions is important enough to require a high degree of innovation and creativity. What is needed, in our view, is a kind of environmental strategic plan based on an analysis of both the existing, emerging, and long-term economic development imperatives of both states and the larger surrounding region and the current and projected academic, resource, and organizational capacities of the two universities. The institutional collaborations resulting from such a plan could be as simple as cross-listing courses; but they might also be as complex as the coordination of enrollment management plans and academic programming. It may make sense, for example—and this is purely speculative—that Materials Science at Idaho would be offered as an undergraduate program only and that graduate programming only would be offered at Washington State. In any case, the financial, political, and academic repercussions of institutional collaborations are so complex, in our opinion, that strong centralized control of these collaborations is vital.

In returning to the question of specific program viability at Idaho, we note that the state of Idaho itself does not currently have the minimum program viability tests common in other states. The state of North Carolina, for example, requires that programs have over time specific minimum enrollments, produce a minimum number of degrees, etc. or face closure. It is fortunate for the University that the state currently lacks such standards, but we think it is in the best interests of the institution to create such standards internally. These standards, which obviously would need to be implemented gradually in the light of the emerging budgetary situation and University strategic plans, should address all of the issues and criteria discussed in this section of this document, including enrollment, degree production, faculty interest and research productivity, financial viability, etc. These internal standards should also include any measures the state uses to evaluate the University and its programs.[47]

Improvements Needed in Master's Degree Programs

A factor contributing to lack of program viability and to constrained faculty resources is the outdated and unproductive approach to master's degree programs employed by many of the University's departments. This is a problem that touches virtually the entire University, though it is especially acute—and costly—in the College of Natural Resources.

Much of our own thinking about the master's degree is inspired by recent studies on the reform of the doctoral degree, which have found that the greatest obstacle to timely completion of the doctorate is the master's thesis, especially since the general experience of the field is that completion of a master's thesis imparts to students neither different nor

[47] During our discussions on campus with the University's Interim chief financial officer, we learned to our alarm that it was not yet possible at that time for the University to identify the ratio of income to expense for any of its programs or academic units. The systems and analysis for this are now well underway, and these will provide valuable tools for unit and institutional leadership. This information must be included in minimum viability tests.

deeper research skills than those acquired in the process of proposing and completing a doctoral dissertation.

It has become increasingly the practice of many departments in some of the country's leading research universities to permit direct entry to Ph.D. programs from the bachelor's degree. In such departments, the master's is either not awarded at all or is awarded either in recognition of a student's achievement of milestones on the way to the doctorate or as a "consolation prize" to students unable to advance to doctoral candidacy. This is, by now, the dominant approach to master's degrees in the arts and sciences in research universities, with the notable exception of several professionally oriented fields, such as Counseling Psychology, in which professional accrediting organizations insist on a student's separate completion of a master's degree for licensing or certification. The "academic" master's degree remains a staple outside of research universities, where it frequently serves as a terminal degree for teachers and others who want advanced training in their disciplines. Academic master's programs at such universities also serve students who are considering doctoral study but who lack the qualifications necessary for admission into doctoral programs or whose research interests, despite their qualifications, are insufficiently defined.[48]

In place of the traditional academic master's degrees, many departments have introduced professional master's programs that cater to the needs of students who require advanced training beyond the bachelor's degree but who have no intention of embarking on an academic career.[49] The principal characteristics of such programs is that they eliminate or reduce training in research methodologies, provide practica and internship opportunities that give students direct work-related experience, and—above all—forego completion of a master's thesis, replacing it with a capstone project based on practical experiences, a comprehensive exam, or a smaller research paper.

Apart from small need-based scholarships used primarily for recruiting purposes, research universities typically charge students full tuition and fees for matriculating in professional master's programs. Increasingly, professional master's programs in the arts and sciences have become sources of significant revenue streams for the departments that offer them—in the same way that master's programs in business and education have become "cash cows" that help underwrite expenses not only in their home departments and colleges but in other areas of the institution where self-funding is not possible.

As we will state frequently in the program assessments below, the academic master's program in its most traditional form is a staple in many of the University's departments. We have already mentioned the College of Natural Resources, where this is true despite the fact that the majority of students who pursue master's degrees do not intend to enter doctoral programs or academic employment but instead take positions in business, industry, and government. It is also true in several of the University's biosciences departments, where faculty speak of a conscious commitment to serving students of lesser academic achievement. We think there are a number of negative effects resulting from this practice. These include higher than usual attrition rates, lower than normal completion rates, increased costs

[48] This newer approach to master's programs is *not* currently the standard in professional fields, such as Nursing, Education, and Business. Nor is it *yet* the standard in colleges of Engineering. Our own conversations with engineering deans over the last several years and the nationwide growth of M.Eng. programs, however, indicates that practice in the engineering disciplines is also due to change.

[49] In fact, the Sloane Foundation is sponsoring an ongoing study by the Council of Graduate Schools on standards and best practices in professional master's programs in the sciences.

stemming from the need to support academic master's students, the dedication of already thin faculty resources to supervising master's theses, and—most of all—the loss of significant revenue streams that might result from more professionally oriented master's programs.

The Need for Stronger Graduate Program Administration

The administration of graduate education—broadly defined as the network of faculty and administrators who have something to do with attracting graduate students to the University, enrolling them in programs, monitoring them until they leave, with a graduate degree or otherwise, and remaining in touch with them throughout their lives—at the University of Idaho is largely dysfunctional. As we have stated several times in this document, there is virtually no recruiting of potential graduate students now taking place in the University.[50] One result of this is sharp declines in both applications and enrollments. Another is that there are altogether too many former University of Idaho undergraduates enrolled in graduate programs. A third result, not mentioned thus far, is that Idaho graduate students are generally of less academic quality than they might be, as faculty consistently state; in fact, there is considerable evidence that Idaho enrolls primarily those students who were unable to secure admission or appropriate financial support elsewhere.

There are several factors that contribute to lesser student quality. By far, the worst is that Idaho programs are uncompetitive on a grand scale in terms of student financial support. Despite the fact that increasing graduate stipends is President White's second priority, both the number available and the amount of doctoral stipends of *every* program are inadequate to attract desirable students.[51] The competitiveness of student health benefits and payment of in-state fees varies from program to program, but in many cases is also uncompetitive.

In our opinion, minimum admission requirements set by the University are also too low. Alone among the institutions in the comparative cohort for this assessment—and possibly among research universities nationwide—Idaho requires a minimum GPA of 2.8 for admission. We know of no graduate program in a research university that does not require at least a 3.0. Similarly, many Idaho programs do not require the GRE for admission, and we think this is a mistake, since it attracts students who are unable to do well on the test. We specifically recommend that all programs require the verbal, quantitative, and analytical writing portions of the test, stipulating minimum scores in line with the program's competitive cohort.[52]

A third factor contributing to lesser student quality—in the sense that it encourages students of lesser quality to apply and enroll—is a lack of consistency in the admission process itself. We recently requested five-year total enrollment figures from the Graduate College and questioned why the figures for the 2007-08 cohort are so much lower than those of previous years. The response was that incoming students are not required to register until September 20 and some departments apparently encourage students not to register early, and so it is not possible to have a realistic figure for Fall enrollment until late in September.

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[50] The single exception to this takes place in the Office of Graduate Admissions, which responds to inquiries only and does no active recruiting.

[51] At the same time, stipends for master's students are, in our opinion, too high, and in many instances, are nearly equal to doctoral stipends. We believe that, on the whole, the University spends considerably more money than it should on master's programs which, in our opinion, should be sources of revenue—not of cost. We will have more to say on this issue below.

[52] The exception to this is master's programs and professional doctorates in Education.

This is entirely too ad-hoc a process, and we see no reason that any department should establish separate procedures.

We will address in detail both the competitiveness of student financial packages and the quality of incoming students in the individual program assessments below. Our point here is that there are irregularities in all these areas: no centralized stipulation of minimum stipends and student health benefits, and no consistent admission standards and admission processes in the departments.

Administrative dysfunction of graduate programs extends beyond recruiting, admission, and enrollment. The collection, storage, and retrieval of data needed to manage graduate programs are much more difficult than they should be and consequently, many departments make decisions and execute operations without appropriate information. Despite *very* small enrollment, many faculty could not tell us their program completion statistics or two-year attrition rates. This is another indication of lack of faculty interest, but it is also an indication that information systems are inadequate.[53] In some cases, graduate programs do not have a dedicated director and are instead administered by a department chair who has many priorities other than graduate programs; no graduate program has undergone a dedicated internal or an external review since at least 2001; and both the allocation of assistantship lines and the actual use of teaching assistants indicates that the University is far from successful in maintaining the appropriate balance between covering instruction and providing a rich and meaningful educational and professional development experience for graduate students.

All of these factors indicate, as we have said, that the current infrastructure for the administration of graduate education is inadequate, and our sense is that this inadequacy long pre-dates the fiscal crisis. We think it would be helpful, therefore, to delineate how graduate education is typically administered in research universities. We offer this delineation as a context for our specific recommendations that the College of Graduate Studies be significantly expanded and that control of teaching assistantship lines revert to the Graduate Dean.

The Case for a Strong College of Graduate Studies

We believe specifically that the infrastructure—human and otherwise—of the College of Graduate Studies as it is currently constituted is organizationally inadequate to support the University's current efforts in graduate education—let alone its ambition to offer graduate programs of national prominence. Currently, the College consists of 4.65 FTE personnel: a full-time dean; a part-time associate dean (not permanently funded) in charge of enrollment management and student services; a full-time managerial assistant who, though not traditionally credentialed, deals of necessity with issues handled at other universities by an assistant or associate dean; a full-time clerical worker whose primary function is to provide administrative support to two of the interdisciplinary programs reporting to the College; and a soon-to-be-hired full-time administrative assistant. Though Graduate Admissions at one time was part of the College of Graduate Studies, it was moved elsewhere in approximately 2002 because the College was unable to obtain adequate IT support for the group's operations.

[53] At minimum, the University should collect *on an ongoing basis* those data used by the NRC in its assessment of doctoral programs.

By contrast, the Graduate College at Iowa State has 41 employees, including the Associate Provost and Dean, an assistant dean, a budget analyst, a system support specialist, and three student services specialists. The Graduate School at Kansas State is relatively small with 13 personnel, including the Dean, an associate and an assistant dean, and two administrative officers. Michigan State's Graduate School has 20 personnel, including the Dean, two associate deans, an assistant dean, four "specialists," two development officers, and an information/computer technologist. The Division of Graduate Education at Montana State is also small and has eight personnel, including the Vice Provost, a "director" charged primarily with student services, and a systems analyst. The Graduate College at the University of Arizona also has 41 employees, including the Dean, two associate deans, an assistant dean, and 29 professional staff. UC Davis's Office of Graduate Studies, which employs 45 people, consists of the Dean, two associate deans, an assistant dean, a development director, eight admission processing staff, six student financial support staff, a marketing and communications specialist, eight recruiting staff, five analysis and information systems staff, and five business and financial staff. The Office of Graduate Studies at UNL has 23 personnel, including the Vice Chancellor and Dean, five recruitment staff, five admissions processing staff, six staff in student services and development, and four staff in departmental services. The University of New Hampshire's Graduate School is small, with 11 staff, including the Dean, an associate dean, and two professional staff. The Graduate School at the University of Wyoming, like the Division of Graduate Education at Montana State, has eight employees, including the Dean and five professional staff. Finally, the Graduate School at Washington State has 19 personnel, including the Dean, two associate deans, and an area finance officer.

It is not simply that the Graduate College at Idaho is so much smaller than most of the other graduate schools in the cohort. Our opinion is that a strong graduate school is a vital component of a strong research university. Of the 62 institutions currently in the Association of American Universities, only 18 do not have graduate schools.[54] Of these, eight universities—Rice, Stanford, UC Davis, UC Irvine, UC San Diego, Nebraska, Penn, and UT Austin—have offices of graduate studies with large staffs and extensive responsibilities and are, in fact, graduate schools in all but name. Most of the remaining 10 institutions are either specialized institutes of technology with a concomitant focus on graduate education or are among the country's most elite universities. In these institutions, research is ubiquitous, and doctoral education is considered the principal mission of the university. The University of Chicago, for example, technically has no graduate school; but the deans of its four divisions—Humanities, Social Sciences, Physical Sciences, and Biological Sciences—preside over only graduate programs.

As we have implied throughout this document, it is clear that there is a significant gap between the University's academic ambitions and its current performance. From our point of view, a strong graduate school is necessary to ensure that graduate programs, especially doctoral programs, contribute to an overall culture of research excellence. In advocating for a strong graduate school, we are conforming to functional guidelines stipulated by three organizations:

[54] California Institute of Technology, Carnegie Mellon University, Johns Hopkins University, Massachusetts Institute of Technology, McGill University, Rice University, Stanford University, Texas A&M University, University of California Davis, University of California Irvine, University of California San Diego, University of Chicago, University of Pennsylvania, University of Pittsburgh, University of Rochester, University of Texas Austin, and University of Virginia.

- The Council of Graduate Schools, which is the principal articulator of policies and best practices for graduate education in the United States and Canada;
- The Council on Research Policy and Graduate Education of the National Association of State Universities and Land-Grant Colleges; and
- The Association of Graduate Schools, the division of the AAU concerned specifically with the advancement of graduate education.

The first two of these organizations represent a wide range of institutions from research universities to regional colleges that offer a few graduate programs. As a result, their policies and guidelines are broad enough to accommodate a wide variety of structures and practices; and in fact, we know of no two universities where the organization and administration of graduate education is precisely the same. In presenting the Associations' definitions of roles and responsibilities and in making specific recommendations for the University of Idaho, we have attempted to illustrate patterns that are typical at major land-grants and other flagship institutions.

The Role of the Graduate School

The Council of Graduate Schools[55] defines ten broad responsibilities for graduate schools. These are: a) to articulate a vision of excellence for a university's graduate community, including standards for faculty, students, curriculum, and research direction; b) to provide quality control for graduate education; c) to maintain equitable standards across all academic disciplines; d) to define what graduate education is (e.g., to define instructional and other features of graduate courses, curricula, etc. that distinguish them from undergraduate or continuing or professional education); e) to bring an institution-wide perspective to all post-baccalaureate endeavors; f) to provide an interdisciplinary perspective; g) to enhance intellectual community among faculty and graduate students; h) to serve as an advocate for graduate education; i) to emphasize the importance of adequately training the future professoriate; j) to develop ways for graduate education to contribute to and enhance undergraduate education; k) to provide (or support the provision of) graduate student services; and l) to serve as an advocate for issues and constituencies critical to the success of graduate programs, especially integrity in research and scholarship, values and ethics in graduate education and scholarly work, and promotion of diversity and inclusiveness.

These broad responsibilities are carried out in a variety of typical activities related to programs, faculty, students, administration (especially research administration), and external constituents. Again, our intention is to delineate these responsibilities in ways typical for major land-grant institutions while making specific recommendations for the University of Idaho.

Activities Related to Programs

Generally speaking, graduate schools have four principal functions related to programs. The first is to review and approve proposals for new and revised programs. Final approval of these programs is usually reserved to the graduate dean, who acts with the advice of a graduate council, the function of which is defined in an institution's faculty governance rules. Typically, the review process focuses on whether the proposal conforms substantively to the

[55] in *Organization and Administration of Graduate Education*, a 2004 policy statement overseen by a task force of graduate deans that included Lewis Segal (then at Duke University), Robert Sowell (then at North Carolina State University), and Teresa Sullivan (then at the University of Texas).

curricular and other standards established by the University, though there is a growing trend to also judge whether the program could be competitive in its field.

The second program function of graduate schools is new program development. In stronger, more research-oriented university cultures, the graduate school's role is to inspire new intellectual—and frequently interdisciplinary—pursuits and not simply to respond to faculty initiatives. Given significant barriers to entry and the high costs associated with failure, it is incumbent upon the graduate school to develop not only programs that are academically state-of-the-art but that also marketable and feasible from a variety of perspectives, including fiscal feasibility.

The management of external reviews for existing programs is the third and one of the most important of the graduate school's program functions, though the Graduate College of Idaho has not fulfilled this function, as we have said, since roughly 2001. For the sake of efficiency, many institutions conduct *department* reviews that purport to address both graduate and undergraduate programs; but, because graduate programs are frequently given short attention in department reviews, many of the country's strongest research universities have found that graduate programs require separate review, despite the extra work and expense involved.[56]

External review usually begins with program self-study, in a format prescribed by the graduate school. It is usually the case that the self-study protocol includes internal benchmark data collected by the graduate school, comparing a program's enrollments, completions, etc. with other University programs. While this is not quite meaningless, and at Idaho specifically could serve the function of implementing the minimum viability standards we have discussed elsewhere in this document, we think that the better procedure is to benchmark against similar programs at other universities, as we have done in the program assessments below, since a meaningful review ought to judge whether the program is competitive in the field and whether it is developing in line with the development of its discipline.[57]

Once the self study is completed, the graduate school convenes an external committee. The members of the committee have traditionally been nominated by program faculty, but this is becoming less the case these days as institutions become more intent on making the external review process more meaningful.[58] The resulting report begins the discussions on program improvement between the graduate dean and the program, and it is the graduate school's

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[56] In five years of practice, we have worked with only one university that conducts department—rather than program—reviews. Frequently, universities come to us to begin the process of strengthening their external reviews of graduate programs. Given both the lack of strategic emphasis we have described above and the poor program performance we will describe below, we think it is crucial that reviews at Idaho be conducted at the level of programs rather than departments.

[57] The data we have collected for these program assessments could begin the external review cycles for the doctoral programs. Master's programs attached to doctoral programs are generally not assessed. As we have indicated below, the assessment of professional master's programs not attached to doctoral programs requires both a different kind of data set and different benchmark institutions, focusing on those elements that make a program regionally or locally competitive, including admission requirements, degree requirements, and program features.

[58] At Penn State, for example, faculty identify scholars in the field who are then asked to nominate program reviewers.

role to formulate an improvement plan and monitor progress against the plan. Such reviews are generally conducted in five-year cycles and thus require a significant investment of time and energy, but those institutions that use this approach generally find it useful for the continuous improvement of programs.

The fourth function of graduate schools related to programs is the establishment of academic standards that govern graduate study. These include admission standards, minimum course requirements, definitions of good standing, content and format of theses and dissertations, etc. Many of these standards will conform to larger university standards, but they are frequently more restrictive and differ, as appropriate, by broad discipline area.[59]

Activities Related to Students

Most of the daily activities of a graduate school are related to graduate students. The most prominent of these in terms of staff involvement and time is usually graduate admissions.[60] In theory, graduate admissions can be decentralized, since admission decisions are really made by academic departments and endorsed by the graduate school, except in those cases in which departments fail to employ minimum university standards, in which case the graduate dean has the prerogative to grant an exception under special circumstances or to deny admission. In practice, however, most universities have centralized graduate admissions to ensure consistency of processing, in part because data entered into the system at the time of initial processing are crucial for tracking and planning[61] and in part because the application systems required to satisfy student expectations regarding feedback on status are too expensive to duplicate across departments.

Complaints about centralized graduate admission processing are nearly universal, and we uncovered evidence of these at Idaho. Faculty complain that their receipt of applications from the graduate admissions office is ill-timed and that they lose their best students as a result. Graduate schools complain that however early they forward applications to departments, faculty make admission and offer decisions too late to catch the best students.[62] We know of several universities, including Idaho, that—though committed to centralized processing—decided to transfer responsibility for processing to undergraduate admissions or some central processing group, where problems magnified—precisely because the most crucial element of graduate admissions—the trafficking of applications between admissions and faculty—is not in the experience of undergraduate admissions. Our own sense in general and our specific recommendation for Idaho is that graduate admissions should be

[59] It is usually in these areas that graduate schools run afoul of faculty opinion. There is sometimes a fine line between enforcing minimum standards and acting as a kind of standards police. Too much focus on trivia is generally a sign of a larger lack of mission in the graduate school.

[60] This is not currently the case at Idaho, where—as we have indicated—the graduate admissions function was separated from the Graduate College. Consequently, though applications are processed competently, almost no recruiting of students takes place at any level. What does take place is entirely passive and responsive in nature. Presumably, the newly appointed associate dean will begin to correct this situation.

[61] The common experience is that however strict institutional data guidelines are, departments that process data will process them in whatever form they prefer.

[62] Our own experience in re-engineering graduate admission operations is that the principal difficulty is that everyone expects the new system to replicate the old paper file. Admissions wastes enormous time and energy attempting to complete paper files that will never be completed and faculty won't read a file unless it is in paper and complete.

centralized under the graduate school, but that processing by the graduate school can frequently be more effective and efficient than it currently is.[63]

In addition to admissions, graduate schools are also responsible in part for recruitment of students. This is again a collaboration between the graduate school and departments, since ultimately, faculty must be responsible for recruiting. The graduate school's role is to offer both funding and labor for the development of web pages, brochures, faculty and student travel, and the like; but the graduate school's principal function in most universities is to implement the centralized recruiting of underrepresented students. In some institutions, there is a type of recruiter who travels frequently to represent the university in graduate fairs. We consider this an ineffective and outdated practice and, apart from a handful of events aimed at recruiting minority students, discourage participation in graduate fairs, including "virtual" graduate fairs. The resumption of recruiting graduate students is critical for Idaho, considering how long it has been since the University has recruited, and we think that the new associate dean of the Graduate College should develop action plans not only for himself and his staff but for departments and individual faculty.

A significant area of activity of major graduate schools is the financial support of graduate students. Apart from teaching and research assistantships, with which we deal separately below, graduate schools are responsible for identifying, securing, and distributing funds for fellowships, traineeships, scholarships, etc. It is becoming more common for graduate schools to have on staff fund-raising professionals who work in conjunction with the institutional development or advancement office, and graduate deans must be knowledgeable about and comfortable with fund-raising. It is now frequently the case that the graduate school takes the lead in developing proposals for federally sponsored training grants, such as GAANN, IGERT, and the NIH training grant. We recommend specifically that the Graduate College hire an experienced director of development whose principal responsibilities include the discovery of fund-raising opportunities and working with the Dean of the College to raise funds for student support and to develop proposals for interdisciplinary training grants. As a model, we offer the examples of the Graduate Schools at Clemson University and Michigan State, both of which have hired at least one development professional to help raise funds for student support.

In some universities, as is the case at Idaho, the academic colleges and/or individual departments hold the budget for appointment of TAs and RAs. In others, this budget is held by the graduate school and administered by the graduate dean. In distributing assistantships, the graduate dean allocates not only on the basis of departmental instructional and research needs but also on the basis of a graduate program's quality. In the strongest universities, budgets are held in both places and the graduate dean is able to leverage the allocation of assistantships to encourage improvement in graduate programs.

Practices vary so widely that it is impossible to give definitive guidelines for the percentage of assistantships to be administered centrally, but our deepest intuition is that the balance between providing an educational and professional development experience for graduate students and covering the instructional needs of the Colleges is critically skewed at the University of Idaho—to the detriment of the College of Graduate Studies—and that the long-term improvement of doctoral programs especially depends in part on restoring the balance.

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[63] Among the reasons to subsume Graduate Admissions under the College of Graduate Studies is that some of the revenue from application fees can be used in support of Graduate College initiatives. This revenue stream, denied to the Graduate College at Idaho, is generally substantial and important for graduate schools in general.

For this reason, we recommend that complete control of teaching assistantship lines be transferred to the College of Graduate Studies. Even in those cases where RA budgets are held by the Colleges or individual departments, the Graduate College should take an active role in the policies that govern distribution, including stipend levels or ranges, average work loads, minimum academic qualifications, appointment and renewal procedures, and mechanisms for resolving grievances. Ultimately, it is the Graduate Dean's responsibility to see that assistantships are competitive in the field. Graduate schools are also active in providing professional teacher training and mentoring for teaching assistants.

Program faculty bear final responsibility for mentoring students through the timely completion of their degrees, but monitoring academic progress is becoming an increasingly important role of the graduate school. This is partly a question of setting policies on such matters as minimum enrollment or registration requirements, minimum GPA, leaves of absence, maximum time to degree, etc. In many universities, the graduate school keeps records on individual student progress, notifying departments and students of upcoming time limits and the achievement or non-achievement of academic milestones. As more national attention is focused on attrition and long time to degree, we think this role of the graduate school will become more important. At Idaho, where both completion and time to degree are serious issues, we think that establishing and maintaining such a monitoring system should be one of the principal tasks of the associate dean for student services.

Though the graduate school does not itself deliver all student services to graduate students, it is the principal advocate for all graduate students on campus; and, as advocate, it actively pursues fair and responsible treatment of graduate students in all offices and departments of the university. It may be involved in personal, academic, and financial counseling of students; student development and enrichment activities, such as orientation; career counseling and placement services, such as interview preparation; and student professional development in such areas as responsible conduct of research, proposal development, and the like. The graduate school needs to maintain relations with any administrative unit or student organization on campus that might have an impact on graduate student retention and must have in place clear policies and procedures for handling student grievances against faculty, staff, and other students.

At one time, appointment and approval of faculty committees for dissertations, theses, comprehensive exams, etc. were a matter of the graduate school's rubber stamping faculty decisions. This is becoming less the case. As both programs and student dissertation research become more interdisciplinary, the decisions on committee membership are becoming more complex; and the graduate school is now more actively involved in both formulating guidelines on the composition of committees and in the appointment of faculty to individual committees.

Even dissertation approval is becoming more complex. The traditional activity of seeing that the dissertation conforms to prescribed style and format remains, but this is now supplemented by other activities, such as offering workshops on how to format, providing advice on copyright issues, and in general, helping students prepare their dissertations for publication.

Activities Related to Faculty

The most important activity of the graduate school in relation to faculty is the appointment and review of graduate faculty. This is usually a relatively simple process of ensuring that faculty continue to meet minimum standards for research activity and training of graduate students. In an institution in transition such as the University of Idaho, however, the

graduate school needs to work proactively with the academic units to redefine minimum standards to match and expand the research ambitions of the institution. The graduate dean's role should always be on the side of increased rigor, since the quality of graduate programs depends on this. Though we are not sure it is current practice at Idaho, it is common elsewhere for the graduate dean to participate in the decisions to hire, tenure, and promote faculty; and if it is not already the case, we recommend this for Idaho. The graduate dean needs to be a constant advocate for the hiring of strong faculty with research agendas that contribute to the strategic development of graduate programs.

For this reason, graduate schools are also interested and involved in faculty development. The graduate school usually plays a significant role in new faculty orientation, so that new faculty understand local practices and policies, give correct information to their graduate students, and know what sources of assistance and support are available to them. More important, the graduate dean needs to be intensely involved in pushing the limits of knowledge at his or her institution, engaging faculty in discussion of interdisciplinary research that could result in interdisciplinary training opportunities that increase the overall competitiveness of graduate study at the university.

The graduate dean also prescribes the possibilities and limits of using non-tenure system faculty for graduate education. This includes clinical faculty, visiting research faculty, researchers at national labs, and people from government and industry. Frequently, such scholars are used to teach courses and serve on student committees, and it is up to the graduate dean to define the possibilities of such use through mechanisms such as temporary appointment to the graduate faculty.

As the number of post-doctoral fellows expands and the length of post-doc appointments becomes longer, it is frequently the graduate school that becomes the administrative home of people who are neither faculty nor students nor staff. Typically, the graduate school will set policies on qualifications and procedures for appointment, employee and tax status, including access to health benefits, term of appointment, access to academic resources, and faculty sponsorship. Two issues are of special concern. The first is a growing tendency among faculty in transitional institutions to prefer hiring post-docs to working with graduate students, frequently on the grounds that it is cheaper to hire a post-doc than to pay tuition for graduate students. Solving the second issue will also solve the first: the graduate dean needs to set policies and otherwise advocate for the payment of fair stipends to post-docs. If the NIH guidelines for payment of tuition and stipends are observed, hiring a post-doc will never be cheaper than working with a graduate student.

Activities Related to Administration

One of the most important activities of graduate schools is the collection, analysis, and dissemination of data related to graduate students, faculty, and programs. According to the Council of Graduate Schools,

> [g]ood data on graduate students and graduate programs are essential to effective oversight of the graduate enterprise on campus. Decisions about curriculum changes, future academic planning, the use of fellowship and assistantship resources and tuition waivers, and the academic quality of individual programs cannot be made effectively without reliable statistics.[64]

[64] *Organization and Administration of Graduate Education*, Washington, DC: Council of Graduate Schools, 2004, p. 34.

In some cases, it may be more efficient for data to be collected and stored by the university's office of institutional research; but in this case, it is important that IR be responsive to the needs of the graduate school, since much of the data required for the administration of graduate programs are of a very different format from data typically collected with undergraduates in mind. Whoever collects the data and is responsible for maintaining data systems, information management is one of the principal functions of the graduate school.[65]

Apart from the interactions discussed above with those parts of the university that provide services to graduate students, it is crucial that the graduate school maintain a good relationship with university counsel or with the outside law firm that represents university interests. The graduate school is at least as subject to litigation as any other part of the campus but has the added possibility of being sued because of actions performed by teaching assistants. There has also been a noted increase in the last several years of legal disputes between graduate students and faculty over intellectual property.

Activities Related to External Constituents

As is the case for most senior administrators, it is important that the graduate dean and, as appropriate, his or her assistants, be active in the regional and national professional associations concerned with graduate education. Though the Council of Graduate Schools is hardly impartial on this matter, its observations are correct:

> In the press of daily affairs, it is difficult to find time for professional activities, but they are essential if the graduate dean and his or her staff are to fulfill their larger obligations to graduate education broadly defined and to maintain the skills and information necessary to do their jobs at home. It is impossible to keep up-to-date on best practices in graduate education, recent research findings on student success, federal budget proposals, changes in the tax laws, and research funding levels without a steady stream of information from external associations and a network of contacts with other graduate deans.[66]

Participation in the appropriate professional associations also provides graduate deans with the opportunity to shape federal policy related to graduate education. Inevitably, the funding agencies and the NRC choose those deans who are most active in the professional associations for work on steering committees and the like. The NRC study methodology committee, for example, is made up primarily of current and former board members of the Council of Graduate Schools.

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[65] As we will discuss in more detail below, the information infrastructure at Idaho is particularly weak. Since this will be a major challenge, we recommend the hiring of at least one information analyst by the College of Graduate Studies. It will be important for that analyst to work closely with Institutional Research, since it will be critical to conform to national data standards—to the extent that they exist—and since data about graduate education should be part of the University's ongoing assessment of itself. It is not simply a matter of collaboration between IR and Graduate Studies, however. There needs to be one consistent University data warehouse that includes information from admissions, financial aid, the registrar, and any other unit with information that could serve as decision support.

[66] *Organization and Administration of Graduate Education*, Washington, DC: Council of Graduate Schools, 2004, p. 37.

Good graduate deans also keep contact, coordinated through appropriate channels in the university, with legislators interested in education and with institutional trustees. The increasing role of the graduate dean in fund-raising means increased contact with alumni, as well as the establishment of graduate school advisory boards from regional and appropriate national industries. These help the dean to establish realistic fund-raising goals and strategies.

It is our observation that many of the country's leading graduate deans spend a significant amount of their time "on the circuit," and are on the road nearly as much as they are in the office. Among other things, this points to the growing strategic nature of the graduate dean's role. One of the by-products of this is that there needs to be an adequate number of associate deans to manage the day-to-day affairs of the graduate school.

Structuring the Administration of Graduate Education

Over roughly the last decade, there has been an important shift in the scope of responsibilities for graduate deans. Prior to this shift, the general pattern for research universities was to have a single senior administrator in charge of both graduate education and research, generally at the vice president's level. This pattern continues to persist in some of the country's major universities, such as Penn State and the University of California San Diego. The more recent trend is to separate the two positions as Idaho has done, sometimes having a graduate dean report to a vice president for research but more frequently having a senior officer for research and a senior officer for graduate education.

We understand that the merging or separation of what is now two positions is cyclical, changing every 20 years or so. Our feeling, however, is that the recent shift is permanent, in part because the demands on both positions are now too large to be accommodated by one person. The expectations related to increasing grant income, for example, leave a research officer little time to do anything other than manage the University's research portfolio.

However a university decides to handle this, it is important that both units work closely together. While the daily work of research administration is managing grants and contracts and the daily work of the graduate school is managing the delivery of education, both units have the strategic purpose of managing the university's research profile, and both the VPR and the graduate dean are primarily strategic officers. As we have already indicated, the single-most important act the University needs to undertake in the next year is the hiring of a research officer to manage the University's research portfolio. It is crucial that this person have experience in the administration of graduate education and work closely with the Dean of the College of Graduate Studies.[67]

Specific Recommendations for Staffing the College of Graduate Studies

As we have indicated elsewhere in this document, graduate admissions at the University of Idaho have been unstable, with enrollment decreasing by about 21% over the last five years and applications declining nearly as significantly. This is in part the effect of fewer faculty lines and departments' subsequent decisions to limit graduate enrollment. It is also no doubt the result of the morale problems generated by the financial crisis; but unquestionably, the

[67] The lack of a permanent VPR at the University and the consequent confusion over specific research missions has already had a detrimental effect on graduate studies at Idaho. In a general sense, there is one less advocate for graduate education. More specifically, it is more difficult to coordinate both strategic research agendas and research assistantships.

primary cause of diminished applications and enrollments is that no one at any level—neither in the departments nor in Graduate Admissions nor in the College of Graduate Studies—is responsible for recruiting graduate students. Both small current graduate enrollment and the pressing need to drive growth have influenced the staffing recommendations we are making here.

In addition to the Dean, whose job responsibilities have been outlined throughout this section of this assessment document, we think that the College should have two associate deans[68]—one for academic programs, whose primary responsibility should be to spearhead the ongoing external review of graduate programs, and one for enrollment management and student services. In our view, Graduate Admissions should report to this second associate dean, as should two management assistant positions, one of which should be devoted to allocating fellowships and assistantships. The second management assistant position should be dedicated to the fulfillment of graduate student services and managing relationships with other entities on campus that provide such service. We think that as graduate enrollment grows, the number of management assistants reporting to the associate dean for enrollment management and student services should also increase, probably at the rate of one staff person for every 500-600 students. Administrative support for the associate dean for academic programs will also need to be provided as enrollment grows, since we envision that this position will also be responsible for monitoring student progress toward degrees and for certifying that students have in fact competently fulfilled all degree requirements. Obviously, both associate deans should report to the Dean of the College.

Also reporting to the Dean of the College should be a development officer whose role will be to discover specific fund-raising opportunities, to coordinate these with University Advancement, and to help coordinate faculty proposals for multidisciplinary federal training grants. At this time, we do not anticipate the need for dedicated support staff for the development officer, though in time such support may be necessary. We also believe that the College will require a finance officer who is responsible for both accounting and projecting funds for student support and College initiatives. The finance officer should also report to the Dean. We assume that part of the budget for the College will be generated through student application fees.

One of the key new positions in the College should be that of an information analyst charged with building, maintaining, and querying databases on both programs and students. As we have indicated elsewhere, it is crucial not only for the College but for the entire University to have more readily available data and other information in order to make better strategic and other managerial decisions and to track the progress of any strategic initiative. In terms of graduate programs, it is essential to collect and maintain at least the data required by the NRC in its pending assessment of doctoral programs, as well as information related to student publication, post-degree placement, and the like. Typically, student databases contain all the information collected from the application for admission, as well as information related to financial support and progress toward the degree. Ultimately, this position should report to the Dean of the College, though initially, it may be desirable to have it report temporarily to the associate dean for academic programs, since the Dean will be occupied with building the new organization, pursuing fund-raising and other strategic initiatives, and generally reinvigorating graduate education at the University.

[68] We prefer associate rather than assistant deans because, given the current state of graduate education, it behooves the University to attract people with significant experience in these roles.

We think that there is also a need for a dedicated IT specialist who builds and maintains the technical systems for both the College and Graduate Admissions, which we think should become part of the College. Though IT positions typically report to the Dean, we feel strongly that this position should report to the information analyst, despite the fact that it will need to support the graduate admission system. Our experience is that technical systems function much better when they are designed specifically to support a unit's information needs. When IT specialists are organizationally independent of information analysts, technical capability typically determines what information the organization can collect, as well as how the organization can use that information.[69]

In addition to the two management assistants stipulated above, we think the College will require two or three clerical support staff. One of these positions should work exclusively for the Dean and should function more as a special assistant rather than an ordinary administrative assistant. The second position should support the remaining professional staff. It is difficult for us to judge how much administrative support is required by the interdisciplinary graduate programs that report to the Graduate College. If the amount of that support is significant, additional clerical positions will be necessary.

It is more difficult to determine the number of people needed to staff Graduate Admissions. Typically—and this is true for the graduate organizations in the comparative cohort for this study—there needs to be one admissions processing position and one recruiter for every 250-300 graduate students enrolled. We advocate hiring additional staff to this level, but recognize that such hiring will, in all likelihood, need to be gradual. We think it would be beneficial, therefore, to restructure the job functions of the people currently working in Graduate Admissions, recognizing that doing so may slow down the processing of applications:

- some staff should be charged with processing applications, including transmission of applications to departments
- some staff should be specifically dedicated to recruiting activities, including coordinating activities undertaken by departments. One of these positions could absorb central activities related to recruiting minority students, such as the McNair Scholars program.
- at least one clerical support staff.

Since under this organizational scheme there would no longer be a person dedicated to international applications processing, it may be necessary to refer students to one of the credential evaluation firms, such as World Education Services. Typically, student applicants pay for their transcripts to be evaluated by organizations such as WES.[70] Given current

[69] In recommending the hiring of an IT specialist, we do not mean in any way to suggest that significant support should not be available from the University's central IT department. The kinds of complex systems needed to manage a highly functional graduate organization require much more support than one specialist could provide. As a rule of thumb, we suggest that the IT specialist in the Graduate College be responsible for those systems that support the Information Analyst and other staff. University IT should be responsible for ongoing support of Graduate Admissions.

[70] To conform to State Department requirements, one person will need to be responsible for signing I-20 forms. In our opinion, the best person to fulfill this function would be the associate dean for enrollment management and student services. He or she would sign I-20s based on the recommendations of his processing staff, each of whom should be equally

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enrollment, Graduate Admissions should report to the associate dean for enrollment management, though as enrollments and recruiting activities grow, we think it will be necessary to hire a director of graduate admissions.

Other Problems in Structure and Infrastructure Relevant to Graduate Education and Research

There are several other infrastructural issues we wish to address. Though they are not directly related to either graduate education or the College of Graduate Studies, they have an enormous impact both on the research culture of the University and on institutional resources; and we, therefore, consider them relevant to this assessment.

We assume it is obvious from the preceding sections of this document that if the University is going to make significant advances in graduate education and research sufficient to develop at least several programs of national import, it will need to make a considerable financial investment in this area—new staff in the College of Graduate Studies and elsewhere; funds for recruiting students; the hiring of new research-active faculty at competitive salaries and start-up packages; etc. Some of the money required for investment will come from fund-raising; some will come from increased grantsmanship and strategic reallocation of indirect cost recoveries; some may come in the form of new funding from the state. It is unquestionable, however, that a substantial portion of the required funds will need to come from elsewhere in the University budget. In this context, we are concerned that, in some areas, the University is currently doing business in ways that are more expensive than they need to be.

Before detailing possible areas of savings, we acknowledge that some of the University's academic units have undergone restructuring several times during the course of the last several years. Some of these reorganizations were initiated by interim administrations; at least one was faculty driven and involved an action of the State Board of Education. In each case, reorganization—though it may have seemed strategic and necessary at the time—was disruptive to institutional operations and traumatic for faculty.

This context of trauma and disruption—added to the reality of fulfilled and ongoing searches for both administrators and faculty—makes us hesitate; but we feel we would be seriously remiss in our duties if we did not state forthrightly that we believe most if not all of the restructuring to have been a mistake. At the moment, the University is overburdened by the expense of too many small colleges, each of which carries ongoing obligations to administrative and operational expense.[71] Though we understand on some level the feeling

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knowledgeable about international admissions and immigration requirements for international students.

[71] Ironically, the administrative infrastructures of the small colleges are generally inadequate in terms of academic, professional, and support staff. Given the current necessity of supporting many college administrations, this is inevitable. We would also add that many of the current divisions are based on legacy, as well as friendships and antagonisms among individuals and groups of people. Consequently, they foster fragmentation and absence of critical mass and create serious obstacles to collaboration of any kind, especially research collaboration. The experience of faculty involved in the current blue ribbon initiatives in this regard is instructive. Though they are eager to advance the initiatives, they are frequently hindered in their work by deans and department chairs who find their extra-departmental and college work to be a drain on internal resources. We wonder what would happen, for

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of faculty in the College of Art and Architecture related to the reinstitution of their College, the fact is that it is now a college of approximately 35 faculty and is not likely to grow much beyond that level. We believe that such a small faculty simply does not warrant the ongoing expense of a separate administration, especially since it is inconceivable that being part of a larger college of liberal arts could have a negative effect on either arts degree programs or the arts culture on campus. The same is true of the College of Science which, with only six doctoral programs and approximately 65 faculty, is not only too small to justify a separate administration but is so small to preclude the possibility of research teams of adequate size to make an impact on their fields—especially since current policies and practices make it difficult for faculty to become productively involved in inter-departmental work.[72]

The College of Letters, Arts, and Social Sciences is larger in terms of both programs and faculty, but its separation from the other arts and sciences means that it also operates primarily as a unit of service instruction. It contains only two doctoral programs, neither of which is adequately functional thanks to both faculty size and teaching load and its possibilities for flexible strategic spending are all but nil since, separated from the grant-earning sciences, it has no opportunity to allocate a portion of indirect cost recoveries to the arts, humanities, and social sciences.[73] Though we are mindful of the recent history of trauma and reluctant to propose anything that would create additional trauma, we think it is in the best interests—both academic and financial—of the University to have one college of arts and sciences, reporting to a single dean assisted by executive associate deans responsible for the various disciplinary areas. This would make possible a larger and more effective administrative staff and would permit flexible and strategic spending.

Another current practice that may unnecessarily drain resources is the preference of faculty in some programs, particularly those in the College of Art and Architecture, to operate their programs with the stamp of professional association accreditation. We acknowledge that frequently, such accreditations are necessary for the sake of program competitiveness. We also point out, however, that they tend to be the most expensive way of delivering degree programs, since they have the effect of requiring facilities and equipment, small faculty-to-student ratios, and limited class size.[74] We are not in a position to make definitive judgments in this regard, but we wonder if such accreditation is always necessary at Idaho. We think that the Provost's Council should review all professional association accreditations and decide if they are either necessary or necessary in their current form. To do this, administrators need two sets of data. The first is simply the lists of accredited and unaccredited programs nationwide. In which company does the University prefer to be? Are there distinguished programs that have not earned or sought to earn professional accreditation? Are there programs, such as those in architecture, which require program accreditation for the sake of student licensure? The second is enrollment data extending

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example, if scientists from both the Biological and Agricultural Engineering and Geology programs were more free to collaborate than they currently are.

[72] We also think that the current faculty sizes of the science programs more or less dictate that faculty in the College spend the bulk of their time on service instruction. This is a scenario that is both academically and financially deadly for a research university, which should expect the bulk of its grant income to come through the activities of its research scientists.

[73] We want to be clear that we are suggesting that only a small and reasonable portion of IDC recoveries from science be spent on the arts and humanities.

[74] We need to caution further that faculty frequently justify such caps and limits as requirements of the accrediting association, though in reality limits are usually imposed by faculty and the accrediting association simply judges if faculty-stated standards are met.

back a reasonable period of time. If the bulk of program students have come from inside the state of Idaho, we think it reasonable to conclude first that Idaho students are not likely to leave the state for education in the field and second that accreditation, in any case, has not attracted a regional or national audience. If this is the case, it seems to us that the question could be resolved by examining the magnitude of resources that could be dedicated to some other strategic purpose.

Though it is far less visible than the issue of multiple small colleges and the cachet of professional accreditation, an equally important problem for the University is the lack of a viable infrastructure for institutional research. We want to make clear that this is *not* a personnel issue. Everyone from the Office of Institutional Research with whom we dealt was both responsive and competent. The issue is there are not enough people working in this area, and we suspect that the systems with which they work are inadequate to support the University's information needs. Our experience in collecting University of Idaho data for this project is illustrative.

There is no one entity on campus that is responsible for collecting, storing, retrieving, analyzing, and disseminating data. Consequently, the same data kept by Institutional Research and various academic units disagree sharply. No doubt, this is in part because the academic units lack both the personnel and the systems to collect and maintain information adequately; but it is also because the academic units keep data—when they do—for their own purposes and, therefore, define data elements differently. We also have no doubt that the various systems in which data are stored structure those data differently.

A second issue is that those units that do collect data frequently collect them at the wrong level—or at a level that is not useful for all University endeavors; and it should not be surprising that current data structures are more useful for decision support related to the undergraduate program than for graduate programs. As is the case with most institutions, the basic academic unit at Idaho is the department; and it is at this level that most data are available. This is frequently inadequate, however, when measuring *programs*, since not all faculty in a department, for example, are active in a doctoral program. This situation will become more complex as the University's programming and other initiatives become increasingly multidisciplinary.

Complicating this issue at Idaho is that some data refer to the branch campuses or some other "unordinary" educational channel—that is, something outside the degree programs residing on the Moscow campus. We have several times, for example, requested enrollment data for master's programs taken through the Engineering Outreach office or for Education programs offered at the branch campuses. Institutional Research could provide only total enrollment and referred us for breakdowns to the various academic units. We have found no way to reconcile data from the various sources, and we think this is a serious issue in terms of both performance tracking and institutional planning.

A final issue is that much of the data we have received were in formats that made them difficult to use and, in some cases, almost impossible to interpret as they were presented, making it necessary to call frequently for clarification. This also is a serious issue in itself, but we think it indicates something more important—that there is not yet a culture of numbers at the University, a sense that important elements such as enrollments, attrition, completion, and time to degree can be controlled by establishing goals, strategies, and tactics, monitoring progress (or lack of progress) toward those goals, and taking corrective action in order to achieve the desired results.

It is vital that the University establish such a culture of numbers if it is to achieve strategic progress in doctoral education and research. One of the means of establishing this culture will be to expand the Office of Institutional Research so that it has the necessary systems to collect, store, retrieve, query, and analyze data for decision-making purposes. Another means, equally important, is that the director of this office, knowledgeable about national practices and standards through active involvement in the Association of Institutional Research, develop data definitions that are both aligned to national practice and responsive to the needs of the academic units. The use of these definitions by the academic units must be mandatory.

Issues Related to Academic Leadership

Throughout this document, we have referred to a number of situations, issues, structures, and practices that have compromised both the quality of the University's graduate and research efforts and its mission as a land-grant institution. We want, in this section, to take up some of these issues again—this time in the context of structural deficiencies, negative legacy, and poor practices related to academic leadership. We wish to make clear at the outset, however, that it is not our intention to disparage the job performance of any specific individuals, though we will address at least one issue for which some of the Deans personally bear professional responsibility. As we hope to make clear, many of these issues have their roots both in the University community's understanding of the notion of community itself and in its tradition—if not policies and structures—of co-governance.

As we have indicated repeatedly, the notion of strong centralized management is largely alien to the culture of the University—or, as we expressed it above, at Idaho, there are few rules and standards from which to deviate. Nearly everything is an exception, in part because of legacy and in part because there are too many independent channels, many of them in practice unaccountable to anyone in administration, through which resources can flow. Partly as a result of this situation, operating resources seem to be stretched unbelievably thin and there are few central guidelines on how to address serious problems across the academic units.

One of the most pressing of these problems is the departure of research-active faculty from the University—to the extent, as we have said, that we believe that the University has lost many of its best research faculty to other institutions. As one faculty member confided to us during our first visit to campus, "the only way to get a raise [at Idaho] is to get an offer from somewhere else." In the absence of a strong strategic direction, as we have said, the Deans have attempted to retain faculty on the basis of three factors: community, facilitation of operations, and the attempt to rebuild departments to their pre-crisis numbers. We have already stated that we believe this last element to be particularly destructive to strength in research. We have found no evidence, in the case of most programs, that the pre-crisis faculty size created excellence as measured on the national scale. In effect, from the point of view of the Colleges and Departments, the attempt to rebuild to pre-crisis levels is an attempt to preserve mediocrity.

One of the most debilitating structural deficiencies in academic leadership has been the lack of a discretionary budget in the hands of the University's provost.[75] From our point of view, the concentration of budgetary funds in the Deans of the Colleges has meant that spending at the University has been almost exclusively operational and not strategic. The funding, under the University's new administration, of the blue-ribbon initiatives was the first step

[75] We understand that, since our visit, this situation is being slowly corrected.

toward strategic spending. We respect that first step; but we urge that the effort be increased significantly, with as much money as operationally feasible annually reserved to the Provost for strategic academic initiatives that will advance the University's reputation for excellence in particular areas of research.[76]

We do not mean to imply that all discretionary funding should be concentrated in the Provost. As feasible, it should also be held by the Deans of the Colleges and—to a significantly lesser extent—the Chairs of the Departments. Though we have not examined ourselves the University's formulae for the reallocation of indirect cost recovery, we have heard from too many administrators to doubt it that too much IDC funding is currently returned to the principal investigator—and not enough is returned to the academic units, at any level. We specifically recommend that, as much as possible, funds should be allocated to *organizations* rather than to individuals, so that larger sums of money can be spent on strategic purposes. We think that allocating money to too many resource channels, including individuals, guarantees that money is always tight and that funds will be spent primarily on operations rather than strategies.[77] Although it is usually impossible in practice to implement zero-based budgeting, we think it is important for the University to attempt this exercise, giving much greater emphasis to strategic research initiatives than to "preserving the core."

As we have already stated above, detailed information about the *state's* allocation of funds to the University itself was unavailable for this study, in part because the University's Controller is new to her position and in part because the formula is in a state of transition. It is clear, however, that the formula encourages focus on the undergraduate program; and the transition to a greater focus on the production of student credit hours will only deepen this problem. It is also clear that the notion that undergraduates are the University's "bread and butter" is widespread. It is not clear to what extent the University can influence the state's budget formula; but we think it is possible—given the necessary technical systems and financial information—to create an internal budget system that gives greater emphasis to graduate programs.

We have recommended elsewhere, and want to recommend here, that the University modify its budget system so that it is based on a comprehensive enrollment management plan that governs in detail both operational and strategic spending for the next five years and that lays the groundwork for strategic spending for the five years beyond that. Such a plan should be

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[76] As we have indicated elsewhere, it is clear that one of the University's principal research strengths is in the study of natural resources and the environment. This strength is laudatory and we have no intention to detract from it. We think, however, that funding opportunities for these areas are low relative to other academic areas and are likely to remain so even if a new national administration is elected in 2008, since it will take roughly a decade for political initiatives to work their way through the agency funding system. If and when they do, we think environmental funding will look very different from what it is now. It will be focused not on ecology but on phenomena and issues related to energy and climate control. For this reason, we think it is important that the University develop another area of strength that is more grantworthy. Centralized discretionary funding at the level of the Provost could foster greater collaboration between scientists in the College of Natural Resources and the two life sciences programs that would result in significantly more external research funding for the University.

[77] Returning more IDC funds to *units* rather than individuals could be used, for example, to increase the number and amount of start-up packages, which are crucial to the strategic hiring of research-active faculty and to the building of research leadership.

informed by explicit policies that express the consensus of the deans and senior administrators about acceptable levels of spending and non-financial values in particular areas. The plan should include the following elements:

- an accurate accounting of existing and potential income for particular academic units, including state per-student allocations if they exist, actual tuition revenues, external research and training grants, income from service contracts and clinical trials, student fees, income generated through University or College Advancement, and endowment-generated income[78]

- an accurate accounting of actual and projected operational and strategic expenses, including salaries and benefits for tenure system faculty, fixed term instructors and adjunct professors, graduate assistants, technical and research staff, and clerical staff; competitive tuition support for GAs; competitive start-up packages for new faculty; physical infrastructure; equipment maintenance; and marketing

- the resulting Income/Expense (I/E) ratios (It is important to note that acceptable I/E ratios—whether positive, negative, or zero—are governed by institutional policy. The University may decide that the non-financial value associated with a particular unit is high enough to warrant a negative or zero I/E ratio.) Strategic budgeting assumes that I/E ratios differ by unit and change over time.[79]

- operational assumptions and strategic goals of the units plotted out over time, but these must always be expressed in terms of their effect on the I/E ratio

We think that a budgeting system such as this would give equal—or rather, appropriate, weight to teaching, research, and service and to graduate and undergraduate education, and in the short-run, would force a focus on external funding rather than on enrollment increases. This kind of system would also help faculty to discover that enrollments at various levels *can* be managed and would drive how faculty spend both time and money.

Questions of deficiencies in leadership structures aside, there is no question that some of the institutional malaise currently being experienced by the University is caused by poor management practices on the part of the Deans and the Department Chairs. At the time of our first visit to campus, President White had completed his Plan for Renewal of the University and Provost Baker had developed a process for the completion of a strategic academic plan by the Deans of the Colleges. At that time, the academic plan was incomplete and, judging by the amount of time that it took for some of the Deans to provide us with

[78] This list is meant to be illustrative only, since we have no knowledge of particular budget regulations in the state. It means simply "all possible income."

[79] We should point out that we also have a particular conception of "academic unit." For the most part, tracking at most universities happens, as we have said, at the level of the department—so that it is difficult, for example, to track research awards at the level of an interdisciplinary doctoral program. Since we think it is important to track performance in a way that is more conducive to the conduct of doctoral education and research, we recommend the development of a system that defines "unit" as the individual faculty member. In such a system, various codes can be assigned flexibly so that the University can track cost, revenue, and other kinds of productivity however it desires. For example, an individual faculty member can be coded so that (s)he is a member of a program, a department, a college, an overarching research initiative, such as next energy research, or any other larger group of faculty which the University is using to accomplish some strategic purpose.

copies of their College's plans, remained so for a long time afterward. Provost Baker's process was designed in a way that gave the Deans significant independence to plan from the bottom up, but our distinct impression at the time of our visit was that many of the Deans were at sea in terms of developing plans, either waiting at great length for input from departments or for determination of a strategic direction from above. As a result, the academic plans strike us as primarily operational and peculiarly lacking in strategy—in the sense that they are reluctant to focus on developing areas of disciplinary and interdisciplinary strength to the extent that some—rather than all—areas will develop national prominence in terms of research.

We attribute this partly to the institutional paralysis that continues to linger from the financial crisis; but we also sense strongly a lack of confidence on the part of some of the deans in making and implementing strategic decisions. Our opinion is that the Moscow community ethos, as we have defined it above, has absorbed some of the Deans of the Colleges and many of the Department Chairs, in part because many of these personnel have been promoted into their positions from among the faculty ranks.[80] To our mind, the most striking illustration of this is that several of the Deans told us explicitly that they are holding significant funds in reserve on a carry-forward basis in anticipation of future budget cuts from the state and in order to avoid future reductions in faculty and staff should those cuts occur. It is our opinion that the University has an urgent need to spend money in a way that will make a strategic difference and that this practice is a gross breach of managerial responsibility and plays a significant role in the institutional paralysis we have noted. We think that strong leadership makes hard choices. Responsible managerial behavior, in our opinion, is to make strategic decisions that advance the standing of the institution, spend funds in accord with those decisions, and—in the event of future cuts—make whatever hard choices need to be made.

We are particularly concerned that our conversations with the Deans revealed little in the way of strategic vision. Like faculty, the Deans have devoted the bulk of their energies to what they consider "preserving the core" and most of them believe that funding is too scant to do anything beyond the core. We think it is urgent that the Deans especially adjust their vision of the core to include the development of a prominent research profile in selected areas. This will necessitate not only strategic thinking about their colleges and departments but strategic thinking about the advancement of the University as a whole. It is apparent that many of the deans have considered that one of their primary functions is to defend the resources of their units. If the University moves, as we think it should, in the direction of strategic budgeting based on income-expense ratios, it will be crucial to have a Provost's Council that is able to come to consensus about the strategic priorities of the *institution*—not simply the strategic priorities of its various academic units.

[80] We want to be careful to make clear that we are *not* stating that all of the deans and department chairs who have come from within the University ranks are unsuited for their positions. Some of them, in our opinion, are excellently suited, and all of them are capable of development and growth. Moving forward, however, we think it is important that all positions at the level of deans and department chairs be filled through national searches. We think that, given the isolationism which we described earlier in this document and the importance of external perspective, it would be helpful for such positions to be filled from outside both the institution and the region. Along the same lines, we note also that so far as we can tell, only one of the current deans has had prior experience as a dean of a college. Given the University's current need for the strongest possible management, we recommend that future positions carry the requirement of five years of similar experience.

Paramount to developing strategic visions among the Deans is a greater concern for and understanding of the economic development imperatives of the state of Idaho and the larger region, of which we heard almost nothing during our decanal interviews. In our view, the Dean's understanding of economic development imperatives should be shaped significantly by more productive relationships with the executives of the branch campuses, who appear to have a much better grasp of these issues. We think that the appropriate integration of the branch campuses with the campus at Moscow will take the form of market-driven research and programming offered on *all* of the campuses by *one* faculty. Such programming should be based on: one, the Deans' understandings of the disciplines under their purview and two, the remote campus executives' understandings of market forces.

Graduate Program Assessments

College of Agricultural and Life Sciences

Introduction

We have two special concerns for the College of Agricultural and Life Sciences. Like most colleges of agriculture, it is in a state of transition, shifting emphasis from its traditional areas of production agriculture to two broad areas of biotechnology—one focused on health and disease prevention and the other on biofuels. The College describes itself as valuing "balance" between these areas, though we caution that the College's long-term prospects for external funding depend on its giving greater emphasis to biotechnology than to production agriculture. We think that achieving this greater emphasis on biotechnology can be accomplished in part by consolidating the College's signature programs into a more manageable number.

Our second concern is that some of the College's programming—Agricultural Extension Education and Agricultural Economics in their current forms--appear dated, having developed out of the traditional land-grant mission that was focused on uses of the land in a particular kind of agricultural society. Though the state of Idaho remains more agrarian than any state in the union with the possible exception of Vermont, it is unquestionably changing; and we think that now is the time to begin to review these programs using the viability tests that we described above in the general section of this document. The point of the reviews is not necessarily to close all of the programs but to transform them in ways that are more responsive to regional economic development as it is contemporarily understood. We stress that this is not a problem unique to the College of Agriculture and Life Sciences. The same phenomenon—dated programming consistent with an outmoded understanding of the land-grant mission—transcends colleges; but we think that this College should take the lead in resolving the issue, since it is most concerned with the transformation of extension from service to agriculture to stimulation of regional economic growth and diversity.

Agricultural and Extension Education

For form's sake, we will outline below some changes that the University could make to this program's admission requirements that we think would place it, in terms of image to prospective students, more on an equal footing with the its two cognate programs in the comparative cohort. However, our real feeling, based on a number of factors, is that the program, despite significant faculty effort, will never have more than a few students at any given time and should be suspended, leaving faculty free to focus on other efforts.

For this assessment, the program director provided us with various supporting materials—syllabi, promotional brochures, and consulting agreements to provide beginning teacher induction seminars to public school districts. From all of these materials, it is clear that this program operates on the thinnest of shoestring budgets; and we know from our work with the University in 2001-02 that it had done so for a very long time. As such, the program has only two faculty and is unable to handle more students than it currently has.[81]

In 2001, the program was on the verge of closure, with continuing minimal enrollments. Since then, faculty have engaged in a number of activities to try to rejuvenate the program,

[81] This number has been in flux since our initial visit to campus. The Dean of the College reports that the program now has three faculty and that there is a search in progress, though the current chair of the Department is due to retire shortly. The Department's administrative status is also due to change. Upon the retirement of the current chair, it will report to an associate dean of the College and will no longer be a stand-alone department. None of these changes affects our conclusions about the program.

including offering the program at the Boise Center, developing online courses, and cooperating with other land-grant institutions that offer similar instruction. It is clear that these activities have had some effect, though to what degree is not clear, since enrollment numbers provided by faculty differ significantly from numbers provided by Institutional Research. Assuming that the official enrollment figures from Institutional Research are correct,[82] the average enrollment for the program over the last three years is five students, despite the significant efforts of the faculty. Once students enroll, typical time to degree is four to six years. We attribute this long time to degree to two factors. The first is the program's practice of completely individualizing the curriculum that, though it provides maximum flexibility in catering to student interests, tends to lengthen time to degree. The second factor is that Idaho students tend to complete the optional thesis requirement, which also obviously lengthens time to degree.[83]

To turn to benchmarking, we note that there are only two programs in the comparative cohort against which to benchmark the Idaho program. This is not surprising, since this kind of program has been eliminated by a significant number of land-grant institutions over the last several decades or so—a fact which, to us, is telling. There are some significant differences in admission requirements between Idaho's program and those at Oregon State and Montana State. The most important of these is that the comparator programs require for admission a specific educational background in one of the agricultural sciences, such as soil science. Idaho's program does not. The other programs also require a minimum GPA of 3.0, while Idaho's programs in general require a 2.8. Idaho's program is also alone in not requiring a standardized test for admission; the other programs require at least the Praxis. We think the end result of this is that, whether it is true or not, Idaho's program appears to be of lower quality than its competitors.

Though we have pointed to issues with time to degree, we do not wish to devalue the efforts of program faculty. Nor does our recommendation to close the program reflect on them. The fact is that the market for this program is small at best. The market figures on the program's own web site, though nearly ten years old, are still pertinent: there are only approximately 10,000 agriculture teachers in the entire nation and the number of positions open on an annual basis are probably fewer than 500.

Market size, combined with other facts and circumstances, seem to us to make a compelling case for closure. The evolving models of both extension and the land-grant mission indicate that the market is bound to shrink—not grow. Moreover, very little of the content for this program is peculiar to the program itself. Students interested in this area could get a substantial part of their training from courses in both the College of Education and the College of Business and Economics.

Despite significant effort, enrollments are poor and are likely to continue to be poor. The impact that the program has on the state is minimal and under any set of circumstances now foreseeable, will continue to be minimal. Given a university budget stretched painfully the thin and the University's need to spend money in a way that will make a difference, we think

[82]Throughout these assessments, we will assume that, in cases of discrepancy, IR figures are correct, since IR operates in accord with both national data standards and official state and University definitions of data elements, such as the calculation of FTE.

[83] The other program on which we have data—the one at Oregon State—also has a thesis option, but most of its students tend to complete a shorter portfolio project. We wonder if faculty at Idaho tend to encourage completion of the thesis. If so, this strikes us as a misguided use of time and energy.

it makes better sense to reallocate program resources, including faculty, to an area in which they can make a greater impact—either to the College of Education or to some other entity within the College of Agriculture and Life Sciences.

Agricultural Economics

The development of the M.S. program in Agricultural Economics at the University of Idaho is puzzling to us. The research performance of the faculty, from all appearances, is among the most distinguished in the University and has the potential to affect significantly and in a unique way the development of the discipline—and yet the faculty resists the notion of a doctoral program. It also has a history of recent enrollment growth that is substantive, impressive, and unusual for the University, though thanks to an—in our view, misguided—recommendation from its most recent CREES review, has cut enrollment back to its pre-growth level.[84] This growth took place despite the fact that there was no real recruitment effort on the part of either the program or the College. As a result, we wonder if the quality of the program's students is as high as it might be. In any case, we think that the percentage of international students currently enrolled in the program is too high for a program in a state university.[85] Whatever the quality of students might be, the program has one of the best degree-to-enrollment ratios in the comparative cohort.

Also puzzling to us is a fundamental confusion of identity in the program. Part of this is the result of the overly broad training mission now sometimes associated with agriculturally focused programs in the traditional land-grant institution. As the program states, it addresses problems of interest to *both* individuals and organizations, to *both* farms and ranches and rural communities. The faculty will need to decide how appropriate the broadness of the training mission continues to be; but from our point of view, the program's research profile would be better served by a choice of focus. Ideally, that choice would then impact the training mission on another matter: is the program's purpose to prepare professionals for careers in industry or is it to train students to a level of research skills sufficient for success in a doctoral program? Traditionally, programs prefer to choose both; but we think that the foreseeable funding climate precludes the possibility of excellence in both areas.[86]

Ironically, though we advocate the program *narrowing* its training mission and research focus, we think that the program itself needs to expanded. The *degree program* appears to be in agricultural economics, a scope which in its current form we think is becoming dated. We acknowledge that there is some ambiguity here. The program's materials and web site refer

[84] The reasons for the recommendation are murky to us, though perhaps they have to do with federal requirements for minimum resources. If so, and if a choice were possible, we would have made cuts elsewhere in order to foster growth in this program.

[85] In one respect, this is natural, given the program's emphasis on international agricultural development and marketing. This alone would not justify the high percentage, however. If international students are paying tuition or are paid for by their home governments or other home agencies, we think that the high percentage would be justified.

[86] Ultimately, the choice will need to take into account a model for funding the program. Whether or not all students currently pay tuition for the program is not clear on the basis of the information we have. In our view, students should always pay for a master's program that advances their professional careers. The funding of a research program is more problematic, since faculty need research assistants to help with their grant work; but if the program is to remain a master's program that prepares students for doctoral study elsewhere, we consider this a service for which students should pay.

to agricultural economics, which is consistent with the assessment interview faculty had with us. The Graduate College web site, however, refers to a degree in applied economics with several possible emphasis areas, including agricultural economics. In our opinion, the approach implied in the Graduate College site is better aligned with the development of the discipline and think that the degree program should be transformed into a program in either applied or resource economics. This is especially appropriate since the program is offered in the context of a department of agricultural economics and rural sociology, a combination that represents a perspective that is both unique and promising in terms of creating a nationally prominent program that has the potential to re-shape the field.

Of the programs in the comparative cohort, we think that the Idaho program is the most competitive except in terms of admission requirements. All of the other programs require a minimum GPA of 3.0 for admission; Idaho's program requires a 2.8. The Idaho program also is alone in not requiring a minimum score on the GRE. In our opinion, both of these factors make the program undesirable to high-achieving students. As the program's content is currently constituted, there is little to distinguish it from other programs, though we think this is easily remedied by giving greater prominence to the theme of rural sociology. The program also enjoys a significant competitive advantage in terms of price, with significantly lower resident and non-resident tuition than the programs at Montana State, Oregon State, and Washington State. For this reason, we think the program should mount a focused regional recruiting effort.

We close this assessment by returning to the notion of paradox with which we opened it. Most of the indicators suggest that this is a *very good* program. The faculty is active in research;[87] the program funds student research assistants through grants; it encourages students to present at the appropriate disciplinary professional societies; it has a good record of facilitating degree completion; it has a unique perspective from which to approach the practice of its discipline—all of these are indicators we preferred to see in some of the University's doctoral program and didn't. We think that the Department should rethink its resistance to a doctoral program, especially since it is offering academic—versus a professional—master's programs and since it is funding research assistants from faculty grants. From our point of view, increases in faculty lines should be tied to this effort.

Animal and Veterinary Science

The graduate programs in the Department of Animal and Veterinary Science are clearly in a state of transition in several senses, the most important of which is a migration from traditional animal science focused on production and management to basic research in the molecular biology of animals. We assume that this migration to more current science reflects a transition in personnel from an older faculty on the verge of retirement toward newer and younger faculty who have very different research agendas from their predecessors. Another element of the transition is in the placement of doctoral program graduates. Whereas most placements before were into industry and government agency jobs focused on production, many current placements are into academic research positions, a trend we expect to continue as the program completes its shift in scientific focus.

At the time of our visit, the Department was just beginning to reconceive both its mission and its competitive scope, moving beyond a focus on the immediate region and toward a vision more interested in nationwide recruiting of faculty and students and nationwide

[87] Research funding is uneven, but this is possibly because of faculty losses and the lack of a doctoral program.

placement of program alumni, as well as participating more fully in the contemporary trends of its discipline. It follows that the program was also beginning to rethink both its actual and aspirational peers. It identified as a peer the University of Arizona, which at least from a grant perspective, strikes us as right, though it also identified as aspirational peers several programs which we think are currently beyond its reach. The program has only 30% of the external funding of the programs at Kansas State and Nebraska and doesn't even begin to approach the research prowess of the program at Iowa State, which has external funding of approximately $9,000,000 annually. We think the more appropriate model is the program at Wisconsin, which several years ago had average annual external funding of approximately $1.5 million.[88]

The principal developmental question from our point of view is how to accelerate the transition now underway. There are undoubtedly many ways to do this, but we wish to recommend three in particular. First, we think that program leadership needs to "think much bigger" than it currently does. When asked what they needed to do to reach the level of their aspirational peers, they replied that they needed to increase faculty size by one or two FTE. Kansas State has a faculty of 36; Iowa State 31; and Nebraska 27. The Idaho program as an FTE faculty that is less than half the size of that at Nebraska, the smallest of the program's aspirational peers. We suppose that "thinking small" is one of the results of prolonged fiscal crisis—and is necessary so long as the Department and the College are focused on "balance;" but it is fatal to the strategic building of research prowess.

The second means is related to the first. The tendency to think small has resulted in a departmental grant profile that consists of numerous small contracts rather than a limited number of larger ones. We think it likely that this scenario is partly the result of younger faculty who are less likely for the time being to earn large-volume grants; but it is also likely that this is the result of a continuing focus on applied research related to production and management, which tends to earn significantly less than basic research. Whatever the cause, the effect is the same: a profile of many small grants means that the faculty is overburdened with numerous small obligations and, consequently, it is far more difficult to perform research of wide and lasting impact on the field.

The third—and, in our view, the most important—means of accelerating the transition is the one we have recommended for many Idaho programs: to focus faculty and student research on two selected areas of strategic importance. In the context of the Department of Animal and Veterinary Science particularly, we think this means giving up part of the notion of "balance"—that is, it means giving far less emphasis to the areas of production management and animal health and far greater emphasis to reproductive physiology, especially lactation, and nutrition and growth. We note, however, that adopting this strategy may result in a short-term decrease in external funding.

We took the Department's most recent five-year list of external awards and divided them into categories. Though some awards overlap categories, the classification is roughly as

[88] Though the UI AVS program is clearly moving in the direction of greater basic research orientation, some of its thinking shares the same focus on the past that we have pointed to in other Idaho departments. When we asked program faculty what they thought was the graduate programs' greatest strength, they replied that they thought it was their sense of balance and their effort to "preserve their core." We have addressed elsewhere in this document the harmfulness of "preserving the core" as it is currently understood and wish to point out here that continuing to pursue this strategy will, in our view, preclude the development of a nationally prominent research profile.

follows: 45% of awards are in production and animal health; 11% are in reproduction and lactation; and 31% are in nutrition and growth. The percentage breakdown indicates the transitional nature of Department research, but it also indicates that a significant percentage of awards (13%) are in scattered categories. In our view, it is imperative that the scattered areas be subsumed under the two main areas and that production give way as quickly as possible to reproduction and nutrition. We think that if the Department is to build its research profile in a significant way, its hiring plan will need to be aimed at increasing the appropriate categories.

In recommending this third means of accelerating the Department's transition to a greater research profile, we are cognizant of a warning in the Department's most recent CREES review: "reliance on extramural funding jeopardizes program relevance to Idaho citizens," whom CREES apparently presumes to have a greater interest in production and management. If CREES' assumption is correct, we agree with the CREES review's conclusion, but we disagree sharply with both its premise and its perspective. The reality is that, whether it intended to or not, the state of Idaho has reduced its support for the University's land-grant functions and that regional industry tends not to support production-related research to a sufficient level. From our point of view, the Department has little choice but to follow the money—which is in the study of the molecular biology of animals.[89]

In turning to comparative indicators, we note first that the Animal Science faculty at Idaho is the smallest in the comparative cohort except for that at the University of Arizona and that small size is a serious issue—the program literally has ten fewer faculty than the mean number of faculty in the comparative cohort. Despite this, the program has—on a per-faculty basis—the second-largest doctoral enrollment in the group. Under these particular circumstances, however, we are not sure that large enrollment is positive. It is questionable whether the quality of the program's students is as high as it should be. Though the average incoming GRE verbal is above the mean for the group, the quantitative and analytical writing scores, as well as the average incoming GPA, are significantly below the mean. We think that this combination of relatively poor student quality and high enrollment accounts for the program's relatively low degree production which, on a per-faculty basis, is only 65% of the mean production for the cohort.[90]

Department research indicators are those that give us the greatest concern. Over the five-year period of this study, faculty generated only 38% of the average per-faculty research income for the comparative group. As we stated above, the program has both a long way to go to reach the level of its least productive peer programs and a burning need to secure the large-volume grants that will free it from the tyranny of numerous small contracts. The publication picture is only slightly better. On a per-faculty basis, the program published only 45% of the mean number of papers for the cohort and received only 40% of the average number of citations.

Competitive indicators are also mixed. The *average* doctoral stipend is low for the field, but our understanding is that students in the molecular areas receive, under faculty grants,

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[89] In making its remark, the CREES report also fails to take into account both the development of the discipline, which is now reflected in many land-grant animal science departments throughout the country, and the changing mission of land-grant institutions from a focus on agricultural industries to a broader concern with regional economic development.

[90] This picture is balanced, however, by the Department's master's program, which both enrolls students and grants degrees on par with the comparative group.

stipends of $21,000, which we consider quite competitive. The program is not competitive in providing student health insurance—a University-wide problem—but has the best time to degree in the comparative cohort. As we have previously indicated, we believe that many of the issues will be resolved as the program completes its transitions.

Biological and Agricultural Engineering

In many ways and despite several below-average comparative indicators and some poor practices, the graduate programs in Biological and Agricultural Engineering serve as model programs for other graduate degree programs in the University. Both structurally and operationally, the programs are genuinely interdisciplinary, involving the work of faculty from several departments and colleges. These faculty routinely support graduate students from competitive grants. Faculty report that enrollment is steady at approximately 20 total students per year, though faculty—for the most part—do nothing proactive to recruit students. The exception to this is that faculty will occasionally post messages and advertisements to either the Community of Science or to the appropriate professional associations when they are in need of research assistants. This method invariably results in the required RAs, but is more appropriate for the hiring of post-docs and research scientists and professionals. It does little, however, to build a viable pipeline of prospective students for the program. Not surprisingly, the program is under-enrolled, as the comparative figures below will indicate.

Despite under-enrollment, we think, as we have said, that this is one of the University's best programs—and is most promising in terms of providing leadership in interdisciplinary research. The consequences of failing to develop a viable recruiting program, however, go beyond under-enrollment. Faculty do not formally track attrition and completion, but report anecdotally that five students have become inactive in the last three years—a significant attrition in so small a program. Faculty also state that the placement of their students is usually in either state or federal agencies or in consulting positions, which they believe to be typical for the field, which tends to attract students who want to engage in research careers but not necessarily teach. This may be; but we think that, given both the strength of the program and the University's need for an increased research profile, the program should adopt the mission of accomplishing distinguished academic placements. In other words, we think that the current placement record is unworthy of so strong a program.[91] We also think that the lack of distinguished academic placements is directly connected to the quality of the program's students, which program faculty concede is not as high as it could be; and this in turn is directly connected to the program's failure to recruit.

The faculty leader of the "Water of the West" research initiative, which in our opinion is the strongest of the University's "blue ribbon" efforts, is a member of this department. In terms of the program's focus on water, the department has a very good sense of the competitive environment in which it operates—land-grant institutions in the western states—but we think that this perspective needs to be widened for the sake of the program's other two areas of focus. Of these, the more promising is the area of bioenergy, major initiatives on which

[91] We think it is interesting that the program has lost some of its master' students to other Ph.D. programs, one of which is mediocre at best. It is possible that those students who prefer to work in academia are self-selecting out of the program. We also note that the program has hired several of its own graduates and point out that this practice is not contributing to the program's academic profile. We have already stated in the general section of this document our belief that this practice, unfortunately widespread, is unhealthy for the University.

are taking place at universities elsewhere, especially along the country's eastern seaboard.[92] Widening this perspective could well effect the department's research direction, would certainly impact its strategic hiring plan, and could become an important part of its recipe for achieving excellence.

Part of that recipe, as program faculty accurately state, is the choice of several areas of cutting-edge research rather than the pursuit of comprehensive excellence—a pursuit that would ultimately be futile, considering the program's small size. Another ingredient of the recipe is interdepartmental collaboration, which has flourished despite three years of interim program leadership. Other parts of the recipe are invisible to us. Is the department providing incentives to encourage active faculty research programs? How, specifically, is the program overcoming institutional barriers to interdepartmental collaboration?[93] In any case, we think it would be extremely beneficial for the University to study precisely how the program has experienced its success so that these practices can be duplicated elsewhere. Part of the success is certainly the result of people and their efforts, but it is also a question of structure, strategy, policy, and practice.

To turn more specifically to benchmarks, we begin by noting that the Idaho program faculty is the smallest in the comparative cohort in terms of the number of its faculty whose primary appointments are in the program—nine faculty versus a mean of 21.3 for the group. As we have already implied, this small faculty size is in some ways fortunate, since it has forced the selection of strategic areas of focus, though we do think that this is a program in which the University should invest additional faculty lines as they become available. Even allowing for small faculty size, the doctoral program, as we have already indicated, is under-enrolled, with 0.8 students per faculty versus a mean of 1.2 students per faculty in the cohort. The master's program is also under-enrolled, though we are less concerned about this issue than we are about doctoral enrollment, in part because we think the department should be focused primarily on the doctoral program in any case, and in part because we think that the issue of master's enrollment can be set aside until the University completes its larger analysis of the role of master's programs in the institution. In order to foster greater focus on the doctorate, we think that the department should reconsider its policy of requiring students to complete a master's degree before matriculating into the doctoral program. Our sense is that dropping this policy will both increase the quality of students and solve the problem of master's students leaving the program for doctoral work elsewhere.

As we have stated previously, faculty indicate that the quality of students in the program is not as high as it might be, and the numbers in the comparative data set bear this out. Of all the programs in the benchmark group, this program has the lowest average incoming GPA and the lowest three-year average GRE verbal score, as well as the second lowest average GRE quantitative and analytical writing scores. Nevertheless, the program is comparatively strong in terms of degree production, granting on average one doctorate per faculty over the period of this study, a performance slightly better than the mean per-faculty degree production for the group.

While we believe this to be one of the University's strongest graduate programs, we do have a concern that its research indicators are not as strong as they should be—or, we should say, that they indicate uneven performance. Average annual research earnings in the cohort are

[92] The University of South Carolina's initiative on next-generation fuels comes immediately to mind.

[93] We do know that the Water of the West initiative has experienced some pressure because of the time and effort faculty spend outside ordinary department and college activities.

approximately $125,000 per faculty; in the Idaho program, earnings are only $112,000 per faculty, an indicator perhaps that the program requires more senior faculty than it currently has. The program does fare better on scholarly publishing—35.2 papers per faculty versus a cohort mean of 34.8 papers and 151 citations per faculty versus a cohort mean of 122 citations per faculty. We think that the program's hiring should focus, as we have said, on senior faculty; but we also think that research development for this program should be one of the major priorities of the new Vice President for Research.

Data on research space are confused for all of the programs in the cohort, since most of them are comprised of faculty from various departments and institutions generally do not have the ability to track space interdepartmentally. Nevertheless, our hunch is that the quantity of research space for the Idaho program is inadequate. We have conflicting information about doctoral stipends, since Institutional Research provided what appears to be a figure for incoming teaching assistants—$14,600 versus a cohort mean of $17,500. Faculty report, however, that RAs are funded at the rate of $20,000 plus full benefits and tuition per year. We consider this level of funding competitive but think that the program needs to be prepared over the next several years to offer stipends of approximately $25,000 per year.[94] Time-to-degree for the program is precisely aligned with average time for both the cohort and the field. Direct entry to the doctorate from a bachelor's degree could improve it and provide a greater competitive advantage.

Entomology

More than faculty in perhaps any other of the University's programs, the faculty in the doctoral program in Entomology are focused on the losses they sustained as a result of the financial crisis. This, combined with the penchant we have noted elsewhere in the institution for having coverage in virtually every subfield of and possible topic in the discipline, has created a very fragmented research profile for the program. Faculty in the Entomology program go further than this, however. It is not simply that they want coverage in every conceivable area of instruction. During our interview, they expressed a marked preference to have their teaching, research, and service functions intact in precisely their pre-crisis states, dwelling especially at length on gaps in extension services to the state. This is unfortunate, since several of the program's performance indicators suggest that the faculty has the capacity for greater research productivity; and, in light of this, we think that an appropriate strategic vision based on a more realistic assessment of potential resources could make a significant difference. Other performance indicators suggest that the alternative—to continue as much as possible with the program's pre-crisis mission—is not sustainable in the long run.

Sustainability is not simply a question of faculty size, though this is a very serious issue—the Idaho program is the smallest in the comparative cohort with the exception of the one at the University of Wyoming, which is perhaps too small to be viable. We have a serous concern that the program's practice of its discipline is not as current as it should be. Faculty point to issues with aging equipment and facilities that are "ill suited to some types of modern research" in entomology. Specifically, we do not see enough evidence of work related to genetics and genomics. If indeed the creation of a notable doctoral program is to be one of the goals of the faculty, we think that they need to lessen their focus on extension services and give both coherence and focus to research, focusing especially on agricultural genetics,

[94] We think this program is a prime candidate for an interdisciplinary training grant and that pursuing this strategy could help the program offer more competitive financial packages to entering students.

with the understanding that this will require the elimination of some of their current areas of research. As the faculty thinks through such a vision, it needs to take into account possible collaborations with other academic units, particularly those conducting research in molecular biology. In our view, collaborations currently under consideration with faculty in the College of Natural Resources and the Department of Biology are based on an outdated understanding of both the program's mission and its practice of its discipline and could only increase the fragmentation of the program's research profile.

We repeat that the Entomology faculty at Idaho is the smallest in the comparative cohort with the exception of the one at the University of Wyoming. Despite this, the program has a reasonable level of enrollment, particularly at the doctoral level, with about half the mean enrollment for the comparative cohort and a per-faculty enrollment only slightly below the mean. Student quality indicators are uneven, with average incoming GPA and GRE verbal scores well above the mean for the group and GRE quantitative scores significantly below the mean—in fact, the lowest scores in the cohort. Given both this unevenness and the fragmentation of faculty efforts that we have been describing, it is not surprising that degree production is poor, lower even than that of the smaller program at Wyoming, and only about half the mean per-faculty degree production for the cohort.

Research productivity is more difficult to gauge, since the figures we have for research awards from University of Idaho IR stop at the level of the department and are unable to distinguish among the divisions of entomology, plant science, and soil science. Even at that, the entire department at Idaho has only 77% of the average annual research earnings for cohort programs in Entomology alone. The program's publication record is better—still only about half the mean for the comparative cohort on a program basis but 82% of the mean on a per-faculty basis. Citations follow the same pattern. As a program, the Idaho group receives only about a third of the mean number of citations for the cohort; on a per-faculty basis, Idaho faculty receive about 64% of the mean per-faculty citations for the group.

Physical infrastructure, as we have already stated, is an issue. Again, we have square footage figures only at the department level for Idaho, but even so, the entire Idaho department has less research space than any of the Entomology programs in the cohort. Faculty, as we have also said, indicate issues with both storage and equipment.

In terms of stipends, the picture is mixed. The *average* stipend is below the mean for the comparative cohort but faculty state that a student's total annual income ranges between approximately $20,000 and $24,000 plus paid fees and health insurance. This is a level that is competitive with the program at UC Davis, though in the current context, we consider it excessive, since the Idaho program is clearly not competing with the one at Davis. We think that a stipend of $17,000 plus tuition and health insurance is adequate. The program's time to degree is excellent and competitive with the group, though it is questionable whether this could be sustained at a normal level of degree production.

Family and Consumer Sciences

There is only one other program in Family and Consumer Sciences in the comparative cohort for this study—the program in Human Development at Washington State University—though we have assessed a fair number of these programs elsewhere, usually at land-grant institutions. The evaluative comments that follow are made against the backdrop of this context—but also in the context of our discussion of academic master's programs in the general section of this document. In terms of the national landscape of family and consumer science programs, the Idaho program compares fairly well, though as with all Idaho graduate programs, we think that it could significantly increase its student profile if it raised its

minimum entrance requirement for the GPA to 3.0 from 2.8 and if it required the GRE with a minimum score, probably of 1000. Such changes in admission requirements would align this program with the one at Washington State, so that there would be little risk of losing potential students because of more stringent admission criteria.
In fact, we think that the Idaho program has several competitive advantages over the WSU program. To begin with, it is offered via distance, a strategy that faculty at WSU consciously oppose but that the potential audience of students for the program increasingly prefers.[95]
The Idaho program also has a more flexible curriculum than the WSU program, with a smaller set of core requirements and a larger number of electives. Both programs provide a thesis option, though we consider this a waste of faculty resources for several reasons. Nationwide, relatively few students enrolled in a program of this kind choose to continue on to doctoral study. In the context of the University of Idaho specifically, we believe—consistent with our thoughts on the role of master's programs institution-wide—that the thesis option is a drain of both faculty and financial resources that could be put to more strategic use and that eliminating the thesis option here would clearly delineate a professional program for which the majority of students pay to enroll. Compared to the program at Washington State, the Idaho program's concentration options and areas of academic interest are scattered. We do not see this as an issue for a master's program but do think this would prevent faculty from ever offering a competitive doctoral program with a nationally prominent research profile.

If we take extension faculty out of the picture, this program has approximately the same number of faculty as the program at Washington State. From that perspective, its ratio of degrees to enrollment appears quite good, with roughly one third of students graduating every year and being replaced by an equal number of new students. The program also has a significant price advantage over the one at WSU, with less costly in-state and out-of-state tuition. Under all these circumstances, we wonder why the program enrolls only 18 students, especially if it offers online instruction. Given the number of assistantships and scholarships distributed by the program, how much net revenue does the University receive as a result of offering it? At its current enrollment levels, is it worth it for the University to continue a program that clearly has the potential for significantly larger enrollment and net tuition revenues?

We think that the program needs to begin a concerted recruiting effort, particularly for students residing in the state of Washington. Presumably, joining the national alliance of programs in this area is a first step in that direction. We also think that the program should drop the mission of preparing students for doctoral study elsewhere, since the market for such students is small and since doing so increases the need for resources and detracts from the professional orientation of the program. Finally, we think that the University should study the ratio of income to expenses in this program and should work with the program to create an enrollment management plan based on the desired ratio. Program faculty report that they intend to fill three to four faculty positions over the next five years. Considering that level of expense, we would tie faculty hires to the enrollment results outlined in the plan.

[95] We have conducted a market analysis for neither U of I nor WSU; but we have conducted such an analysis elsewhere. That analysis indicated that the overwhelming potential market for family and consumer science programs is working teachers, a group that has embraced distance education more eagerly than almost any other. We assume the same market for the Idaho program.

Food Science and Toxicology

At the time of our first visit to campus, the Department of Food Science and Toxicology had recently received approval for a bi-state school of food science to be operated in collaboration with appropriate degree programs at Washington State University. The bi-state school strategy was designed to shore up resources for the Department's relatively new doctoral program, specifically resolving critical mass issues, especially in terms of offering courses and sharing research facilities. Since both the doctoral program and the bi-state agreement have been already approved, much of our analysis is moot, though in our opinion, the process was backward. We think there should have been a significantly greater level of research activity and a critical mass of research-active faculty *before* the introduction of a new doctoral program.

That said, we have conflicting information on precisely what size the new program will be. According to faculty, the bi-state school will be the largest food science enterprise in the country. It is possible that Idaho faculty are thinking of collaborations with WSU scientists who are doing related research but are technically not part of that university's Food Science and Human Nutrition Department. If activities are limited to that Department, we note that thought it is better funded than the Idaho program, it has a faculty that is nearly as small in size. If the figures we have from both institutions' IR departments are correct, the combined program will continue to be the smallest in the comparative cohort in terms of both faculty size and graduate enrollment. In fact, the program size will be even smaller than it appears in Appendix D of this document, since though there are technically six Idaho faculty, the director reports that only 2.5 of them are research-active and, in our view, only they are qualified to participate in the doctoral program. We wonder if this is not one of those instances described by the Dean of the Graduate School at Washington State, in which two small unviable programs from each institution are combined to create one slightly larger unviable program. If in fact the program size is going to be so small, we caution that program faculty have already identified six areas of research interest and, as we have stated frequently throughout this document, we believe that the combination of small faculty, limited doctoral enrollment, and a comprehensive approach to the discipline is a recipe for mediocrity. The director of the program indicated during our interview that the program hopes to be known for work in food safety research. We recommend that, for the foreseeable future, the Department's hiring plan focus specifically on that area.

The current departmental strategic plan (dated 6/22/05) is actually more of a statement of intention than a strategic plan. For example, it states the intention of developing a student recruitment strategy but doesn't actually specify one. It also states a goal to enhance the academic experience of students but the discussion surrounding this refers primarily to resources and internal processes and ends with the conclusion that the effort will be successful if the program offers some unspecified number of graduate courses over a period of time. In order to achieve that unspecified number, the plan resolves to explore the possibility of cross-listing courses with Washington State.

The section of the strategic plan devoted to research is likewise a statement of intention oriented toward process—that is, it declares the intention to explore areas of research focus that will make the program unique, though it does not actually choose such areas or even suggest likely possibilities. The program's list of faculty research projects is, of course, fragmented and scattered, with little discernable common ground out of which to build a critical mass. The program does say that it would like to pursue an IGERT grant. While we think the program is a long way from eligibility, we think it would be a useful exercise to

bring faculty together to plan a proposal, as this may help them structure their thinking about the program and the departmental research profile.

Of program master's recipients who have gone on to Ph.D. programs elsewhere, several have been admitted to highly reputable departments, such as those at Purdue and Penn State. This, combined with several other performance indicators, indicate that the quality of instruction in the program is high and that the program is clearly having a positive impact. Our sense, however and because of critical mass issues and a lack of strategic vision, is that the faculty is not yet ready for a doctoral program—despite the program's having been approved.

For the most part, since the program is new, it is not possible to do the detailed performance analysis that we have done for other programs. The benchmark group, however, does indicate some standards toward which the fledgling program needs to aim. In terms of enrollment, the program needs to plan for at least two doctoral students per faculty.[96] We are unable to judge doctoral student quality at this point, since at the time of our visit, there had been only one student enrolled, who was of very high quality. The performance indicator that we can judge is faculty research which, though of significant achievement in terms of publications and citations, is very poor in terms of external funding. During the period of this study, Idaho faculty each earned an average annual research income of $53,000—versus a cohort mean of $185,000 per faculty.[97] Faculty publishing levels, as we have said, are much higher. On average, Idaho program faculty publish 19% more than the mean number of per-faculty publications in the group and receive about 15% more than the mean number of per-faculty citations in the group. This level of publishing activity indicates a capacity for improved research productivity, but the culture of the Department—like that of other units in the University—has not been especially focused on external grants. This will need to change if the program is to achieve its stated goal of becoming the best food science program in the West.

Our estimation is that, relative to the other programs in the comparative cohort, the Idaho program has only 35-40% of the research space that it requires to conduct research at a competitive level, a problem that will worsen as the program hires new faculty and staff but which collaboration with Washington State may alleviate. The program director also spoke about the need for new equipment.

Stipends present a mixed picture. The current student brought his or her own funding through an external agency, but the program's intended financial package is more than competitive for the field, though it is not clear that there is enough money to fund a well-enrolled program. The master's stipends are also more competitive than it needs to be, and we think that, in time, some of the money currently spent on master's students will need to be used for Ph.D. students. Despite competitive stipends, the master's program is not attracting students of high quality. The program director estimates that approximately 90% of current students failed to gain admission or an appropriate financial package from another institution. Our opinion is that a stipend of $17,500 plus full tuition and health

[96] Master's enrollment per faculty would depend on the nature of the program. If the program is of a professional nature, which we prefer, enrollment need be limited only by space available. If the program is to be academic—especially if it carries a thesis requirement—then, at most, faculty could handle two students each.

[97] We suspect that the actual mean for per-faculty research earnings in the cohort is significantly higher than it appears, since the Food Science program at UC Davis is located within a graduate group and the University is unable to track research awards at that level.

insurance would be adequate for the time being—assuming that the program energetically pursues student recruiting, which it is not currently doing. A competitive time to the doctorate in the comparative cohort is five years, and the program should be setting plans in place now to achieve that time frame for completion. Though we do not believe the faculty to be doctorally ready at this point, it is clear that the program has potential if it is willing to establish and achieve competitive goals for external funding.

Microbiology, Molecular Biology, and Biochemistry

We begin by noting our conviction that the graduate programs, both master's and doctoral, in Microbiology, Molecular Biology, and Biochemistry are strong programs in their own right and are among the strongest graduate programs at the University of Idaho, though many of the performance indicators we discuss below will suggest otherwise.[98] We think there are two reasons for this. First, because of reasons that have to do with both critical mass and the historical development of the life sciences at land-grant institutions, the University of Idaho combines in one program three distinct disciplines that elsewhere are located in separate programs and departments. We have tried to correct for this by comparing the Idaho program against two sets of means: one for all of the relevant programs in the comparative cohort and one for a sub-group of programs that combine at least two of the disciplines of the Idaho program into one program. [99]

Even in comparison with the subgroup, however, Idaho performance indicators are sometimes unfavorable. Our opinion is that this reflects the fact that the research work of other programs in the cohort is oriented more toward biomedical science, especially human biomedicine, than the Idaho program can be. As we have suggested elsewhere in this document, we consider the greater orientation of the University's life science enterprise toward agriculture and the environment—versus biomedicine—a serious issue, since it renders the University largely ineligible for the more lucrative NIH research and training grants that are common in biomedicine.[100] We gave serious consideration during the course of this assessment to recommending that this program be relocated from the College of Agriculture and Life Sciences to the College of Science, but an examination of the grant records of both this program and the program in Biology indicate that such a move would probably make little difference. We think it is important, therefore, that faculty in this

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[98] In stating that the master's degree is strong in itself, we do not mean to imply that we think it should be continued in its current form. As with academic master's programs generally at the University, we consider it a distraction from the institution's doctoral efforts and a drain on faculty research productivity.

[99] This subgroup includes programs at the University of Nebraska Lincoln, the University of Wyoming, Washington State, and Michigan State. It is impossible to ignore the larger group, however, since the larger group represents the whole range of disciplinary activity in the cohort and it is ultimately against this landscape that the Idaho program needs to compete.

[100] We want to be clear that we are not advocating a lesser focus on agriculture and the environment. Our sense, as we will also discuss later in relation to the College of Natural Resources, is that the disciplines in these areas have undergone fundamental changes that are reflected in the funding patterns of the federal agencies. Research in the agricultural and environmental sciences will continue to be funded, but not in the form that it has been in the past. The reason that the biomedical sciences are, for the most part, more lucrative at this time is that they are currently better aligned with recent developments in the earth and molecular life sciences—changes that disciplines in the agricultural and natural resources areas will need to absorb if they intend to achieve the levels of funding that they have previously enjoyed.

program explore either more meaningful participation in the WAMI Extension program[101] or collaboration with faculty working in basic biomedical sciences in the School of Veterinary Medicine at Washington State.[102]

Combinations and collaborations notwithstanding, the program does have serious critical mass issues in terms of research. Faculty research interests are scattered, and the program's list of grant titles suggest that faculty either follow their own individual interests or collaborate in very small groups. This impacts average annual grant earnings, and it also places the department at a decided disadvantage in terms of achieving a reputation of national prominence.

Unlike most other graduate programs at the University of Idaho, this program does have a very robust student recruiting effort, especially evidenced in the INBRE program. However, it appears not to be making much difference, given both the small size of the program and the quality of students, who have the lowest average incoming GRE verbal and analytical writing scores in the entire comparative cohort.[103] Degree production overall is low but is significantly above the mean on a per-faculty basis. To us, this indicates a highly productive faculty with great potential, the fulfillment of which depends on the University's ability to address issues of size and disciplinary orientation.

The most problematic of the program's performance indicators have to do with research. The program has annual average research income of $4.4 million, precisely the same as the mean of the sub-cohort, but half the mean of the entire group.[104] This speaks to the program's relative lack of biomedical research. Faculty publishing is the real issue. Whether we look at the program or per-faculty, against the entire cohort or the subgroup, the number of program publications is a fraction of what it needs to be. The program publishes only 28% of the mean volume of the entire group and 27% of the mean volume of the subgroup—or, on a per-faculty basis, 40% of the mean volume for the cohort and 60% of the mean volume for the subgroup. Citations received are worse—20% of the mean number for the whole group (or 32% on a per-faculty basis) and 17% (or 45% per-faculty) for the subgroup. It is quite possible that low publication rates reflect low doctoral enrollment and an inadequate number

[101] Frankly, in our view, opportunities for serious biomedical research through the WAMI Extension Program are limited, and biomedical research has consequently suffered in each of the participating states except for Washington, which has the extensive faculty and facilities of the University of Washington. We note, however, that several institutions with community-based medical schools have begun to make serious progress in medical research, and so it is possible to overcome the research limitations inherent in such schools. We suggest that the program study the experiences of the University of South Carolina School of Medicine and the Brody School of Medicine at East Carolina University in Greenville, North Carolina.

[102] We are not certain if there is existing collaboration with WSU's molecular plant sciences group, which would also be appropriate, though it would not solve the biomedical issue. We assume that exploration of either alternative would be coordinated among the Universities' senior administrations.

[103] On a *per-faculty* basis, enrollment is quite good—1.8 students per faculty versus a cohort mean of 1.4 students per faculty and a subgroup mean of 1.5 students per faculty—but overall enrollment is poor, since the program's faculty size is the smallest in the cohort except for that of the program at the University of New Hampshire.

[104] The program fares less well on a per-faculty basis—$271,000 versus a subgroup mean of $283,000 per faculty and a cohort mean of $697,000 per faculty.

of post-docs, since a significant portion of departmental publications originate from these groups, or it could simply be that faculty have too many conflicting priorities.

Square footage figures for research space validate the faculty's contention that they are forced to co-mingle teaching and research in the same space. The program has only 43% of the mean research space for the comparative cohort. It is impossible for us to tell if moving the program to the College of Science would help to resolve this issue; but we think the University should examine this question and proceed accordingly. Doctoral stipends are competitive for this particular cohort of programs but are low for the biosciences in general. We think the average stipend should be approximately $22,000. Lack of health insurance is a serious competitive issue. Program time to degree, however, is good—precisely at the mean for the comparative group.

Plant Science

In assessing the graduate programs in Plant Science, we note first that there is a significant discrepancy between the faculty counts provided to us by Institutional Research and by program faculty themselves, possibly because IR used, at our request, the very specific definition of graduate faculty developed by the methodology committee of the National Research Council.[105] In any case, since we assume that IR is closer to the standard definitions of both the University and the national institutional research community and since program faculty were given the opportunity to vet figures provided to us by IR, we have elected to use the IR figures for this assessment. It is possible, however, that faculty will want to look at these figures again in light of how they are being used and suggest adjustments for our consideration.

Even if we had elected to use the size figures provided by program faculty, we would need to state that the program has serious critical mass issues—serious enough to require that it offer a significant number of undergraduate courses dual-numbered as graduate courses. Perhaps dual-numbering is necessary in the current funding climate; but it is our opinion that this practice seriously compromises the quality of graduate education and our experience is generally that this remains the case despite policies designed to avoid poor quality, such as extra research and writing requirements for graduate students.

Critical mass is not simply an instructional issue, however. It is a more serious issue in terms of research, primarily because the program has elected to retain all of the functions and subfields of a traditional plant science program. The Graduate Program Outcome Guide provided by program faculty lists too many key themes for a faculty of this size, and so the research profile of the program is far too fragmented to make much of an impact on the field. The good news is that the program's themes are both well aligned to regional needs and state-of-the-art in terms of the development of the discipline. Consequently, it is a simple matter of the program's choosing the one or two areas in which it intends to make an impact, and there is no need to address the far more complicated question of building the intellectual capacity for contemporary science. In making its choices, the program needs to take into account research being performed by scientists working in molecular biology, wherever they happen to be located in the structure of departments and colleges, since collaboration with these scientists is necessary.

Though we think that the program's enrollment could be improved in the short term by developing an active recruiting program, we think that its enrollment experience—as well as

[105] The counts are off by 50%.

the enrollment experiences in both Entomology and Soil Science—reflect long-term trends in the fields and indicate the need for the fields to reshape themselves to be more responsive to the current and projected needs of both the agriculture industry and environmental management efforts. We know that the program in Soil Science has already undertaken an effort to transform itself, but we think it is worth it for all three programs to consider the question of what would happen if they collaborated on a single doctoral program that combines the research of faculty in each of the three separate areas. This kind of exploration is taking place at many land-grant institutions nationwide, but it is still too early to tell what the outcomes of the exploration will be. Perhaps it is as simple as creating a single program in agricultural genetics and genomics. We acknowledge that there are serious extension issues involved in this question and these need to be taken into account; but in our view, it is time to ask such fundamental questions as "To whom are our traditional extension services valuable?"; "How has this changed over time and how is it likely to change?"; "How do these changes impact the practice of our science?" For maximum impact, these questions need to be explored in the context of faculty research in the College of Natural Resources, the program in Microbiology, Molecular Biology, and Biochemistry, and the program in Biological Sciences. To put this another way, we think that faculty in this division, as well as in the two other divisions in this Department—have been focused on the breadth of their offerings. We think that they now need to focus on the depth of their research, and that that depth needs to be developed in collaboration with the other life sciences units on campus.

Returning specifically to Plant Science, we note that the program is excessively small—literally 56% of the average faculty size for the programs in the comparative cohort. Not surprisingly, the program is therefore under-enrolled, though on a per-faculty basis, it holds its own: 0.7 students per faculty versus a cohort mean of 0.9 students per faculty. The quality of students in the program is ambiguous. The program has the highest average incoming GPA in the comparative group, though given the national context of grade inflation, we tend to think this indicator means little, especially since the program has the lowest average GRE verbal and quantitative scores in the cohort.[106] Despite all this, the program's degree production is quite good—0.81 degrees per faculty versus a cohort mean of 0.62 degrees per faculty—and its placement of its graduates is rather distinguished.

The program's research indicators are very poor, with literally half the mean average annual research earnings for the comparative group. Since the program has an IGERT and many of its stated research interests are cutting-edge for the field, we attribute this to lack of focus—or, to put it another way, to research fragmentation—that is, to lack of critical mass in particular research areas. This notion is reinforced for us by the program's record of grant success. 78% of its proposals are funded—a remarkable record—but faculty have received only 33% of the funds they have requested, a sign that the funding agencies consider overall program research resources to be too thin. Publication statistics are grim. On a per-faculty basis, the program publishes fewer papers than any other cohort program except for the one at the University of New Hampshire: only 61% of the mean number of papers published for the group. Citation indicators are even worse: Idaho program faculty receive only 40% of the mean number of per-faculty citations in the cohort, which again represents the second-lowest performance in the group.[107]

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[106] The program does not currently require the GRE analytical writing test, which we think is a mistake.

[107] We think that the cohort mean for research earnings is artificially low—and, as we stated in the Food Science and Technology assessment, UC Davis's inability to track precisely at the graduate group level is at fault. Given the publication figures for that faculty, we think their research earnings are much higher than we have recorded here.

We are also concerned that the program's research space is inadequate. Though it does not have the smallest faculty in the cohort, it does have the smallest net assignable square footage of research space. Faculty also report that their facilities are outdated and under-equipped, and we believe this to be true. In addition to greenhouses, the program requires clean growth chambers for both healthy and pathogenically infected plants, with computer-controlled daylight length, temperature, humidity, and irrigation. There would also need to be a computational network for use in genomic research. In our estimation, the best facilities in the field exist at UC Davis, Texas A&M, and Cambridge University, and it would require significant investment to replicate or approximate them at Idaho.

It is difficult to comment definitively on the program's doctoral stipend, since it has an IGERT and presumably pays students in that program at the standard NSF rate. The program's average stipend, however, is inadequate--$14,200 versus a cohort mean of $15,090, though we note that the programs at Washington State, New Hampshire, and Michigan State all have lower stipends. Those programs, however, offer full tuition and health insurance for students, and it is not clear that the Idaho program does. The program's time to degree is competitive. At 5.1 years, it is only slightly longer than the program mean time of 5.0 years.

Soil Science

At the time of our first visit to campus, the graduate program in Soil Science was in a state of planned transition that deemphasizes extension and gives greater importance to research. As with other Soil Science programs nationwide, the transition is in part a response to a lengthening trend of lower enrollments.[108] The transition will also need to move toward a more contemporary practice of the science, as we discussed in the assessment of the Plant Science program above; and while it is not yet completely clear what the end of the transition of the discipline will resemble, we feel reasonably certain that this program's future competitive landscape will be in the life—rather than the strictly agricultural—sciences. One of the signs of the transition is that faculty in this Department are giving greater portions of their time and energy to the interdisciplinary program in Environmental Science, and it is certain that their productivity in that program is not reflected here. For this reason, we want to be clear that this is an assessment of the *program* in Soil Science and not of faculty, whose energies are appropriately directed elsewhere.

We have already discussed in the general section of this document a notion that applies to many Idaho graduate programs—that in the atmosphere of decline and diminishment following the financial crisis, faculty defined their core missions too narrowly and focused on undergraduate education to the extent that the training and mentoring of graduate students suffered. The activities of this program in the post-crisis period typify this pattern. Faculty say that they have granted only three doctoral degrees in the past five years; and yet they are unable to identify where the third student was placed and are only vaguely aware of the second student's placement. Similarly, records on master's students are almost non-existent. Apart from one master's student who entered the Division's doctoral program, the

[108] As with some other Idaho programs, there are significant discrepancies between faculty and student counts provided by the Department and IR. We are again taking IR figures to be correct, since IR is presumably closer to standard data definitions for both the University and the NRC, and since the program raised no objection to the IR figures when it had the opportunity to vet them. The program may wish to look at these numbers afresh in the light of how we are using them and comment as appropriate.

whereabouts of recent master's graduates are completely unknown. What does this scenario indicate about the quality of the mentoring relationships that exist between faculty and their graduate students? We find this situation alarming, especially since faculty report that alumni word of mouth is one of their most successful recruiting tools.[109] We cannot imagine a greater symbol of the decline of this program than this.

The list of institutions to which this program loses prospective students indicates that it is being used as a "safety" application for students who are interested primarily in other programs. Consequently, we think that the program's current list of aspirational peers, which includes Iowa State and Michigan State, is unrealistic, and that no set of specific actions would elevate this program to that level in the foreseeable future. Consequently, the program's sense of its competitive strengths and disadvantages is off. The program believes, for example, that apart from scarce resources, its greatest disadvantage is lack of name recognition. We would give this credence were it competing with the program at Penn State; but the reality is that it is more likely competing with the program at Montana State, for example; and in that context, we think that the issues go much deeper than lack of name recognition.

The program's research profile, such as it is, is highly fragmented. IR gave a faculty count of seven; the program gave a count of nine. Whichever the correct number is, it is far too few to sustain credible research focus in five areas; and faculty acknowledge that in many areas, the Division is only "one deep." We do not know the precise level of external grant dollars attached to this Division, since Institutional Research's figures extend only to the level of the Department. That entire departmental figure is unimpressive compared to any of the average annual grant earnings in any of the disciplinary programs in the comparative cohort, and is in fact, lower those of any program except the one at the University of New Hampshire. Figures for the Division of Soil Science can only be lower. The program acknowledges that grant earnings are a concern and that it is yet to reach $1 million annually as a program, though the mean earnings of soil science programs in the cohort is approximately $5 million. On a per-faculty level, soil science faculty in the cohort earn about $204,000 annually. Faculty in the Idaho program must earn only a fraction of that amount.

It is possible that the program's interest in bioproducts accounts in part for its low research awards.[110] In any event, we judge this interest to be out of step with the emerging interests of the other divisions in the Department, and it may well be this interest that is preventing the development of a single departmental doctoral program. We do think that the Division's expressed interest in biogeochemistry is well aligned with the development of the discipline; but since there really is no divisional strength in this area, we think the better alliance will be with faculty research in natural resources and the molecular biosciences.[111]

[109] The other successful "tool" is the national reputation of program faculty, though as we will see, research indicators for the program are poor.

[110] Since our visit to campus, the program has won several large-volume grants in the area of biofuels, and so this has emerged as a viable alternative to a unified PSES doctoral program. Since these grants fall outside the period of this study, we acknowledge them in this way and leave intact the original assessment. This area had not been grant-productive during the period of the study.

[111] We have learned while writing this document that the Geology Department has recently hired a biogeochemist. Since this single hire cannot affect critical mass, however, we continue to think that the better alliance for Soil Science is in the direction noted.

In terms of faculty size, this program is the smallest in the comparative cohort for this study with the exception of the one at the University of Wyoming—seven or nine faculty versus a group mean of 31 faculty—and is probably too small to be viable, especially in terms of the program's current vision of itself. It is also the smallest divisional faculty in the Department of Plant, Soil, and Entomological Sciences; but ironically, it commands the lion's share of attention in both the departmental strategic plan and the program's most recent external review. This is puzzling to us, since our bias in the current economic climate is to build on strength rather than to attempt to bolster weakness. The program is also under-enrolled, with only five doctoral students (or 0.7 students per faculty) versus a cohort mean of 21.4 students (or 0.8 students per faculty).[112]

Doctoral student quality is ambiguous. Though the program's average incoming GPA is on par with the other programs in the cohort and its three-year average GRE quantitative score is among the highest in the group, it has by far the lowest average GRE verbal score—310 versus 500+ for every other program in the cohort. Degree production is at the bottom of the comparative group: 0.14 degrees per faculty versus a cohort mean of 0.73 degrees per faculty.

Publication levels are the lone bright spot for the program, with faculty having published 98.7 papers over the five-year period of the study—versus a cohort mean of 59.4 papers. The program is also significantly above the mean for citations received.[113] On a per-faculty basis, research space appears inadequate; and though the Division representatives with whom we spoke did not address it, we assume that the Division shares with the other departmental divisions the problems of aging equipment and outdated facilities.

We also have conflicting information about the program's average stipend. IR reports a figure of $31,000, which seems impossible—unless the figure is explained by the Department's IGERT grant, in which case it is unrepresentative. The faculty report a stipend of $21,000, which is competitive for the life sciences but which is out of line with the other divisional doctoral programs in the Department, both of which report a stipend of $14,000. The program's time to degree is the longest in the cohort and needs to be reduced by about half a year.

[112] IR and faculty figures for master's program enrollments are too far discrepant to allow us to comment with any definitiveness.

[113] Given the limitations of the indexing system, it is impossible to tell what percentage of these papers and citations refer to Idaho faculty from outside the Department or who have left the institution for retirement or employment elsewhere.

College of Art and Architecture

Introduction

At the time of our visit, the College of Art and Architecture had recently passed through a relatively prolonged period of turmoil. In addition to the budgetary squeeze brought on by the fiscal crisis, the College had been absorbed into the College of Letters, Arts, and Social Sciences. For reasons that make no sense to us, Art and Architecture faculty chafed under this absorption and led an ultimately successful public campaign to have the merger overturned by the Idaho State Board of Education. As we discussed in the general section of this document, we consider this overturning to have been a serious mistake, since it creates considerable administrative overhead for a faculty of approximately only 35 professors and renders more difficult the interdisciplinary collaborations that might have enriched the Art and Architecture programs. Practically speaking, the separation is accomplished; and we believe that in the long run, it will limit the growth potential of the programs within the new College.

Questions of structure aside, we are concerned with the quality of the College's current strategic plan. It is, in our view, entirely operational and, in any case, too brief to be useful. Its principal fault is that it fails to create a strategic identity for the College beyond that of being a separate administrative structure. Nor does it propose anything practical that will help to develop programs of national distinction and attract the funding necessary to support those programs. In any case, we think that under permanent decanal leadership, the College needs to develop a new plan that addresses questions of recruiting outside the state and fundraising.

We wish to be clear. For the most part, it is not that we think that programs in the College are of poor quality. It is that we do not believe that being housed in a larger college of arts and humanities would make them less good; nor do we believe that being housed in a college of art and architecture will make them any better.

Architecture

From all appearances, the graduate program in Architecture at the University of Idaho is an excellent program, performing exceptionally well on most of the comparative indictors we used to conduct this assessment. In many respects, it is a model graduate program for the University and seems to be free of many of the problems and issues most of the University's graduate programs face.

The program's faculty is relatively unique among Idaho faculty in having a good understanding of the competitive environment in which they operate. Consequently, they have both an excellent sense of the competitive advantages and disadvantages of their program and several chosen areas of focus—coherent urban environments and sustainable communities—that are unique among their principal competitors and responsive to the needs of a state undergoing rapid development and transition. The program is also, according to faculty with whom we met, an active participant in the "Building Sustainable Communities" blue ribbon initiative, suggesting a willingness to collaborate with faculty outside both the program and the College of Art and Architecture. It is also relatively unique in making good use of the University's branch campuses, particularly the Boise Center, and is enriched as a result. Its per-faculty enrollment is excellent, well above the mean for the comparative cohort, and its ratio of degrees to enrollment is unusually high—the highest in the comparative group, in fact—and this suggests both good completion rates and excellent time to degree.

It appears from the comparative cohort to be a question of choice whether to have a stand-alone master's program or a combined bachelor's/master's program such as the one Idaho has. We have no reason to believe that one type is better than another; but we point out that one of the effects of a combined program is that the percentage of in-state and regional students is much higher than it otherwise might be, especially for a terminal degree program. For this reason, we think the program needs to mount a much more energetic national recruiting initiative, especially for the sake of attracting out-of-state tuition dollars—a fairly urgent necessity given some of the program's financial necessities.

Among these is the necessity of freeing faculty from a very heavy teaching load, the existence of which is corroborated by the program's most recent external review and compromises faculty ability to engage in research and creative work.[114] Another of these is the need for renovated or new space, since both faculty and the Interim Dean of the College reported that the current space is "woefully inadequate" and presents possible safety hazards.[115] Finally, though we believe that faculty focus areas are exceptionally well chosen, we are concerned that there is a serious critical mass issue in these areas; and thanks to licensure requirements, it is not possible to hire only in these areas. Given the newness of the College, the depth of the critical mass issue, and the fiscal situation of the institution, we think it is unlikely that any of these issues can be addressed without a substantial infusion of private funds; and we think that the new Dean of the College should make fund-raising for a new building one of his top priorities.[116]

One of the activities of the program is to make both its faculty and students available to communities in the state for consulting services in community planning and architecture. At the moment, the program sees this primarily in terms of service to the state, and charges only a nominal fee. We think it makes better sense to charge competitive rates for this service in order to help close the gap in funding some of the program's physical needs.

Ordinarily, we judge professional master's programs on the basis of admission requirements, degree requirements, and various competitive indicators. These criteria are appropriate for assessing this program, and we discuss these below and include a summary of the indicators in Appendix E: Comparative Master's Program Data. In addition to these criteria, however, we have also looked at student pass rates on various sections of the licensure exam administered by the National Council of Architectural Registration Boards. These data are summarized in the following table for both the Idaho program and the three additional Architecture master's programs in the comparative cohort. The Idaho program's performance in each of these areas ranges from acceptable to excellent. On an overall basis, Idaho's pass rate is 76.3% (64th percentile), better than the national average of 72%. In individual areas, Idaho performs better than any program in the comparative cohort for materials and methods, but we think some improvement is needed in several areas, possibly through collaboration with faculty in the College of Engineering: general structures, lateral

[114]Though we think excessive teaching load is an issue, we do not see it as the major issue it is in many other programs, since this is a professional program and since the program accreditation process ensures that faculty remain current in terms of professional practice standards related to licensure.

[115] This should be verified by an external review of physical facilities.

[116] It is not clear on the basis of the information we have about student financial support if graduate students are primarily underwritten, as is usually the case with terminal degrees, or if they pay tuition. Though this is a terminal degree, we think it should be regarded as a professional one; and if it is not already the case, the program needs to develop a plan to transition the bulk of its students to paying tuition.

forces, mechanical and electrical systems, site planning, building planning, and especially, building technology.[117]

Table I
Comparative Pass Rates for NCARB Licensure Exam
(in %)[118]

Program	Pre-Design	General Structures	Lateral Forces	ME Systems	Materials & Methods	Const. Docs & Svcs	Site Planning	Building Planning	Building Tech
Idaho	96	83	74	73	100	96	72	64	59
Montana State	94	85	93	84	87	73	77	65	62
Washington	95	94	83	83	94	95	84	67	73
Washington State	100	89	80	67	67	100	72	67	74

In terms of admission requirements, we think the program would probably attract a higher caliber of students if it were to both require the GRE and stipulate minimum GRE scores: we recommend 550 for verbal and 650 for quantitative. We also think that the program should require the analytical writing portion of the GRE but do not think it is necessary to identify a minimum score. Apart from standardized testing, its admission requirements are well aligned with those of other programs in the comparative cohort.

In terms of program features and degree requirements, the program differentiates itself from others in the cohort by offering the combined bachelor's/master's program, though as we have already indicated, we think this needs to be better marketed, particularly outside the immediate region. The increase to 45 credits in the M.Arch. program is well aligned with the other programs in the comparative group, but we point out that this makes the Idaho program longer than the program at Washington State; and though we do not see this as an issue, we do think that the Idaho program needs to be able to explain the benefits of this curricular structure to prospective students who are comparing programs.

The delivery format for the program is precisely the same as that for all of the cohort programs. We wonder, however, if it would be beneficial for the program to formalize its relationship with the Idaho Urban Research Design Center in Boise in order to introduce a required internship, since each of the other programs has a strong interest in urban design. We assume that implementing this suggestion is subject to a cost analysis.

Art and Design

Perhaps more than any other Department with which we met, the Department of Art and Design, which offers two master's programs, has undergone extensive turmoil. According to the faculty, the former Dean of CLASS was determined to close the program and took a series of steps in that direction. We know none of the particulars of this situation, but faculty are clearly preoccupied with it, and during our interview returned to the subject again and again, as though licking—and reopening—an old wound. In defining their

[117] Given these areas, we wonder if the Idaho program is not better in aesthetic areas than it is in more practical and technical areas. Perhaps this is an effect of the program's being housed in the College of Art and Architecture, in which artistic concerns are naturally of greater interest and concern.
[118] These data are for the calendar year 2005, which is the last year for which data are available.

program, they referred to the former Dean's actions; in explaining student attrition, which has been relatively significant, they blame the former Dean and what they consider the consequent atmosphere of struggle and battle in which the Department was engulfed. The Department also remains preoccupied with the loss of faculty lines it has experienced, though whether the losses have to do with the financial crisis or pre-date it is not clear. The time to move on from its bad experiences is long past, but it is certain that the Department has yet to recover from them; and we are concerned that its discussion of its future is over-colored by trauma and is unhealthily preoccupied with achieving its former size. From our point of view, its former size is irrelevant; and the Department needs to begin to chart its future direction in the light of a sober and realistic assessment of potentially available resources.[119]

Student recruitment in this field is largely a matter of influencing art instructors to refer their students, and the program appears very good at this, having established an excellent referral network among art instructors, many of whom are program alumni. Given this network, the program would like to double or triple its enrollment in the MFA program,[120] but the program has not yet considered the financial implications of this and has also indicated that studio space is very tight. Again, we think the program needs to conduct more rational planning in the light of available resources—or to make a compelling case for why additional resources should be made available.

We think that that compelling case begins with making strategic choices about building critical mass and, in the case of this program, such choices may be painful, since it could mean retooling or replacing existing faculty whose work falls outside the program's choices. Faculty have begun studying this problem as they have reviewed their curriculum, and a May 2006 consultant's report has determined that the Department has too many emphasis areas to be supported by a faculty of this size. The faculty hiring plan to date has apparently focused on breadth and, consequently, the program is, to a greater degree than any program we have seen anywhere, completely lacking in depth. Each of the following areas is currently covered by only one faculty member: art history; graphic design; web design; information design; digital imaging and photography; sculpture; printmaking; and mixed media/painting. We think that program faculty are certainly mindful of the need for strategic limitation; but many of their discussions about the program's future center on the notion of hiring back to the levels of the past. As we have already said, we think the Department's former size is irrelevant, especially since it is certain that if the faculty were to achieve that size, the problem of critical mass would still be unresolved.

In the spirit of attempting to jump-start strategic discussion, we note that it is an issue for the program that its scope encompasses both traditional artistic areas such as painting and printmaking and more practical contemporary arts, such as graphic design and survey design. In our previous work in this area (e.g., at the Rhode Island School of Design and the University of Massachusetts-Dartmouth's College of Visual and Performing Arts), most of

[119] So consuming is the Department's thirst for resources that it requested we use data from HEADS (Higher Education Art Data Services) in order to conduct this assessment. We in fact consulted the HEADS data and find them worthless in terms of program assessment, since its sole purpose is to compare resources available to programs—full-time faculty salaries by gender; instructional salaries per semester and per credit hour, etc. We have no knowledge of whether program faculty are underpaid and, frankly, are sympathetic if they prove to be; but this is not the question here; and this example illustrates how the desire to regain lost resources colors virtually everything the Department does.

[120] This may literally mean increasing enrollment by only a few students.

these areas were covered by separate departments and programs, each of which included a number of faculty equal to or greater than the size of the entire Idaho Art and Design Department. We do not think it is feasible—at the graduate level—for a Department so constructed as the one at Idaho to offer a viable program, especially one that grants a terminal degree in the field. A second point of the discussion should examine the program's enrollment history in each of the fields represented. Are there any patterns that suggest that one or other of these fields could be transformed into a viable degree program?

Another consideration is that the part of the program focused on information design is an area not yet recognized as a discipline in the field, and is literally operating at the borders of several disciplines. At this point, there is no way to know for certain if this is pioneering and innovative, since there is no predicting how the field will evolve. We think this area should be encouraged, however, since there is clearly a need for this kind of skill in industry and since such a program could literally be enlarging the discipline itself—which is precisely what terminal degrees programs in research universities are supposed to do.

The M.A.T. program, in our opinion, should be subjected to a viability test. Has the program's enrollment been sufficient over a period of time? What are reasonable prospects for its enrollment growth? Is the number of faculty participating in the program large enough so that courses can be offered on a reasonable cycle that facilitates timely completion of the degree? How much revenue does the program generate? Since the Department is clearly attempting too much in many senses, it seems to us that unless the M.A.T. generates enough revenue to justify its continuation, it would be rational to eliminate it, and doing so would bring at least some relief to the Department.

There is only one other program in this discipline in the comparative cohort for this study, though as we have said, we have worked with other programs during the course of our practice. Against this backdrop, we think that the Idaho's admission requirements lack stringency. The minimum GRE of 2.8 is certainly too low, as it is for all of Idaho's programs, but we think that this program could safely raise its minimum requirement to a 3.25. We also think that the program should examine its admission prerequisites. The program at Boise State requires a relevant bachelor's degree and proficiency in at least one studio area; the Idaho program requires 20 credits in art.

Based on faculty counts, enrollment, and the faculty CVs provided by the Department's representative, we think that the current faculty is highly productive. It is so in a way that could not possibly make a difference, however. In our view, the May 2006 consultant's report was right in its conclusion and the faculty knows this. They need to make decisions about strategic limits and develop a personnel plan that supports those limits.

Landscape Architecture

We begin by noting that, relative to the other Idaho programs we are assessing, the documentation and supporting materials that we have for the graduate program in Landscape Architecture are scant. This is in part because the program has only four faculty, each of whom is seriously overextended, to the extent that is was difficult for them to respond meaningfully to both our interview questions and our requests for documentation.[121]

[121] It is also certain that the program's recordkeeping in terms of enrollment, attrition, and the like is poor. It is not clear what clerical support is available to the program; but the chair is also overextended in terms of teaching duties, and consequently, leadership for the program is not as effective as it might be.

Information in both the catalog and on the program's web site is equally scant, and in our opinion, the site is not sufficiently developed to provide appropriate information to prospective students, which may be one of the reasons that the program is so under-enrolled. There are also technical issues with the site, including broken links, and we think it likely that the program will require the assistance of both IT and Marketing/Communications to address these issues. Each of these issues makes this assessment more difficult than it otherwise might have been, but certain patterns are nevertheless clear.

The overwhelming emphasis of the Department of Landscape Architecture is on its undergraduate program, which has an enrollment of approximately 100 students—versus a master's enrollment of about ten students. The faculty does not actively recruit for the master's program; and in the previous five years, has granted only five degrees.[122] There are a number of factors, however, that indicates that the Department has the potential to offer a viable graduate degree. Faculty are intensely engaged in community outreach projects, and we think that this area could be strengthened through closer collaboration with the College of Natural Resources, the College of Agriculture and Life Sciences and the University's various extension activities.[123] In addition to this, faculty are also collaborating with Mechanical Engineering faculty on a rainwater conservation project and are intimately involved in two of the University's blue-ribbon initiatives—Waters of the West and Building Sustainable Communities, the latter of which is led by one of the faculty in the Department. In our view, the future of the graduate program rests primarily on these collaborations rather than on a traditional approach to landscape architecture.[124]

Though we think that both the undergraduate program and the faculty's participation in extra-departmental initiatives are undoubtedly important, we wonder if it is worth the time and expense to offer a master's program in this area, especially in light of current resources and in light of the fact that the current program is not professionally accredited and does not, therefore, make students eligible for licensure. In the event that faculty and the University decide it is worth it, we think that the program should require that prospective students present a minimum GPA of 3.0 and minimum GRE Scores of 550 for verbal and 650 for quantitative, as well as a score of 4.0 on the analytical writing test.

Our sense in comparing this program with cognate programs in the comparative group is that the curricular structure of the Idaho program is overly loose, while other programs in the cohort are much more specific in terms of course requirements.[125] In our opinion, this needs to be tightened up. In fact, we are confident in our speculation that if the program had

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[122] The program at Washington State does not have a significantly larger faculty and has an even smaller graduate enrollment, yet it grants four times the number of degrees than the Idaho program does. As a result, we cannot help but feel that there are productivity issues in the Idaho program.

[123] In fact, we observe that in many land-grant universities, landscape architecture programs are housed in the College of Agriculture, and we think the University should consider if moving this program to that College would have a positive impact on the program, especially in terms of available resources.

[124] As the Dean of the College of Art and Architecture has noted, a degree from a professionally accredited program and licensure is necessary to practice as a landscape architect in 49 states. As is frequently the case at the University, this program is an academic—rather than a professional—master's program.

[125] This may be a function of very small faculty size. Is it possible that the program cannot reliably offer required courses on a regular basis? This probably also accounts for relatively poor degree production.

a larger enrollment, the lack of a structured curriculum would result in serious time to degree issues.

As we stated in the general section of this document, we do not believe that collaboration with Washington State is the cure-all that faculty at both institutions apparently believe it to be. Nevertheless, we think that it is worth exploring the option of a joint program in this particular case. Faculty share some of the same research and community engagement interests—as well as the problem of unstructured curriculum, despite WSU's significantly better record of degree production. Whether a joint program *can* work is a question, however. Both faculties combined would be only roughly equal to the size of the faculties at Oregon and Washington, and enrollment in both programs is an issue. In fact, combined enrollment at current levels would be only a fraction of that at the University of Washington—not an auspicious sign. Again, we think that the contributions of this faculty are very important in a number of areas, but we question the viability of a master's program in this field and in the current—and foreseeable—fiscal climate.

College of Business and Economics

Note: The Dean of the College of Business has indicated that there is a state policy that would prevent the College of Business from implementing the recommendations suggested here, since under that policy, the business model for the resulting programs would not work. This assessment awaits revision until clarification of this policy can be discussed among the dean, the Provost and the Vice President for Finance and Administration and provided to us. Additionally, we are verifying and re-interpreting the information regarding tuition of other programs in the Accountancy section.

Introduction

With the exception of an Executive MBA program for a new branch campus in Sand Point, the College of Business and Economics at the University of Idaho is an entirely undergraduate enterprise. We believe that the absence of an MBA program on both the Moscow and branch campuses is a serious competitive and financial issue for the University, since MBA programs have proven to be a source of significant revenue (and profits) for many institutions of higher education—let alone for research universities. Given both the current state of the field and the highly positive income/expense ratios of MBA programs, we think the time is ripe for both the College and the University to explore the feasibility of moving in this direction.

Despite an uptick in enrollments at nearly every offering institution during this past year, MBA programs nationwide have been in a slump over the last several years. There are several reasons for this, including industry's reassessment of the value of the degree itself, an economic climate and working conditions that have not been favorable to individuals seeking advanced business education, a growing shortage of new business faculty, and the relative inflexibility of the discipline's accrediting association in fostering innovations that might address these issues. In our opinion, the principal reason for the market decline for the degree is the ironic lack of market responsiveness of most business programs which, despite their championing of change as a positive value in corporate cultures, have been extremely resistant to innovation in their own programs.

We believe that the discipline itself is ripe for significant change and that the first signs of the emerging discipline are now evident at some of the country's foremost institutions. We point the University to an examination of a relatively new MBA program at the University of California San Diego, which we think is a good example of the market-responsive direction in which the discipline is inevitably headed. The program is a cohort program for full-time students who already have several years of work experience, a long-standing innovation of the field. The more important feature of the program, however, is that it does not seek students who have undergraduate degrees in business and instead attempts to attract students with backgrounds in science, technology, and the liberal arts. Then, instead of bogging students down in numerous credits related to the "core" business disciplines of marketing, finance, etc., it focuses on the management of technical innovation and entrepreneurship in a global context and attempts to produce managers who are competent in a broad range of business functions.

We think that this is a much more productive approach than the one business programs have been taking over the last several decades, and believe that the introduction of such a program at the University of Idaho could serve as an important—and lucrative--economic driver in a state that is rapidly changing in terms of both its demographics and its economic and industrial profiles. Given the emerging nature of the new discipline, we think—assuming appropriate and significant investment in both new faculty and extra-institutional linkages—it would be possible for the University to develop a top-ranked program in a relatively brief period of time. We also think that such a program could help spearhead the University's efforts to become less dependent on state financial support.

Accounting

Though the master's degree program in Accounting is not the MBA program that we think the University needs, it does bear at least one of the features that we described in the introductory section above. Specifically, though the program requires a number of core courses in Accounting, it also offers students the opportunity to acquire additional expertise

in finance, information systems, public administration, entrepreneurship, ethics, and law. The small size of the program has forced this interdisciplinary approach, and—unusual for business programs—students are permitted to take coursework outside the College. We consider this healthy, not simply because students are better trained to deal with business problems but because the interdisciplinary nature of the program may ultimately have the effect of increasing the research profile of the faculty.

The program also enjoys some specific competitive advantages over other programs in the comparative cohort with which it is likely to compete. In the first place, it is one of only a few programs in the cohort that has AACSB accreditation—accreditation that is lacked by Eastern Washington University, Gonzaga University, the University of Wyoming, and Montana State.[126] We think that the program's most serious competition is the program at Boise State, which requires for admission an undergraduate degree in accounting or 15 credits equivalent to the Boise State undergraduate business core. Though this practice is common among business schools, we consider it both outdated and wrong-headed, and we think that the flexibility in admission requirements for the Idaho program are a significant competitive advantage and have the effect of attracting a larger market of potential students.[127]

Though the program's ratio of enrollments to applications and admissions appears healthy and the recruiting pool is stable, that pool is also too small, in part because of the recent instability of international enrollments. Though during the past year there has been an upward turn of international applications nationwide, we think this instability is likely to continue over the next several years; and though the program does do some active recruiting, it has not been enough to impact the size of the applicant pool significantly. There are three solutions to this problem, in our view. The first is to begin offering degree programs at the branch campuses which, as we have already stated, the faculty are considering. The second is to recruit undergraduate students from the University itself. Though we stated in the general section of this document that we think this is a harmful practice, we do not think that this issue is so important in this field. The third solution would be to develop agreements with liberal arts colleges in the Northwest as a means of attracting students with undergraduate degrees in the arts and humanities.[128]

Ordinarily, graduate programs in business function as a major source of revenue generation for universities. We lack the information necessary to establish the income/expense ratio for this program, but the program's small size indicates that the program does not function in this way for the University of Idaho. This is in part because of location in Moscow, which is

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[126]Our point of view—though we admit that we are in a minority on this subject—is that AACSB accreditation is a mixed blessing. It is our opinion that business faculty throughout the country have used AACSB accreditation as a means to justify low productivity; and we have already mentioned that the association's hidebound policies have compromised the ability of business deans to deal effectively with a host of issues. Some institutions have actually chosen not to pursue accreditation of their business programs by AACSB, though we acknowledge that these institutions have extraordinary market appeal and are beyond being harmed by lack of accreditation. In any case, there is no question that AACSB accreditation has a certain cachet among prospective business students.

[127] This, to us, is a reason that the program should be operating in Boise, a possibility that was of interest to the faculty at the time of our visit.

[128] Whichever recruiting tactics the program chooses to pursue, we think it would help if the program required either the GRE or the GMAT and stipulated minimum scores that make it appear of equal or greater academic caliber than its competitors.

far removed from the state's major industries. In addition to offerings on branch campuses, the program could increase its competitiveness by offering distance or hybrid versions of itself, since no other program in the comparative cohort is doing this.

The program does have a major competitive disadvantage in terms of price. It is significantly more expensive—for both in-state and out-of-state tuition—than the programs at Boise State and Washington State, and if it is legally possible, the program needs to address this issue.[129] We also think that the thesis option is pointless, since none of the programs in the comparative cohort require it, and since the number of students who are likely to go onto doctoral programs in business is too small to be worth pursuing.

[129] It is possible that tuition and fee figures have changed since we collected the data for this project, and we are checking to see if the price disadvantage still holds.

College of Education

Introduction

The good news related to the College of Education is that it had just received, at the time of our visit, an energetic new Dean who is both highly competent and has prior experience as a dean of a college of Education. In an extraordinarily brief period of time, he had been able to identify a number of important issues in the College, some of which we will discuss below, and was beginning the process of sorting through these issues and establishing the basis for more rational administration of the College's activities. Some of these issues are endemic to Colleges of Education nationwide, though perhaps the depth of them is greater at Idaho than it is elsewhere. One issue, emanating from an apparently long-established state policy, is peculiar to the University and is potentially very harmful to it.[130] In any case, it is clear that Dean Rowland inherited a number of very serious problems, one of which—the College's potential loss of its NCATE accreditation—was potentially catastrophic. That potential loss has since been averted, though we have concerns about the culture and infrastructure that not only created that possibility but left it virtually secret until it was nearly too late for the University to address it.[131]

The issue peculiar to Education programs at Idaho relates to a state policy that permits employees of state agencies, including faculty at public institutions of higher education, to take up to six credits of coursework per semester at any state IHE for a fee of $5.00 per credit hour.[132] Though we suppose it is technically possible for University of Idaho faculty to enjoy the advantages of this policy, the reality is that, given both the remote location of Moscow and the relative lack of graduate and research missions at the state's other colleges and universities, they do not; though it is routine for faculty and staff at Boise State, Idaho State, Lewis and Clark State College, Northern Idaho College, and the College of Southern Idaho to enroll in University of Idaho programs virtually for free. Most of these faculty, of course, enroll in graduate programs in Education.

It is nearly universal practice at IHEs nationwide to charge full tuition for graduate programs in Education, granting only a limited number of scholarships or other financial aid instruments for the sake of recruiting students to programs. This tuition is paid either by the individual students themselves who, by achieving their advanced degrees, become eligible to heighten their positions on salary scales, or by the students' employers—usually school districts—who have a vested interest in increasing the professional training of their employees. We have examined income/expense ratios for programs of every conceivable type for most of our public university clients; and though programs in the arts and sciences almost always have zero or negative ratios—that is, they break even or lose money—professional programs, particularly Education programs, typically have positive ratios. Our experience is that Education programs generally earn about $4.00 for every dollar they spend. It is common practice for institutions to use these profits to underwrite the expenses

[130]It is possible that substantial progress has been made on some of these issues since our visit in Fall 2006.

[131] In addressing these issues ourselves, we want to acknowledge upfront that many of our opinions about quality and productivity in Colleges of Education, though they appear to be part of a recent and growing movement afoot in the field, are at odds with received opinion among the national Education professoriate and are not yet consistent with widespread practice. We also want to be clear, however, that none of our thinking about Colleges of Education—or higher education itself, for that matter—is aligned with the thinking of the current administration of the U.S. Department of Education, though certain aspects of it may coincide with those of the Department of Ed.

[132] The policy strikes us, frankly, as a kind of welfare benefit for public employees.

of other programs that are unable to earn money because of their need for expensive personnel, facilities, and equipment and to advance various strategic initiatives. The state regulation is beyond the control of the University, and we are certainly not in a position to influence state policy; but we would be remiss if we were not to point out that there is a patent unfairness in both reducing state support for this University in particular and depriving the University of an important means of supporting itself, especially since that means is available to many colleges and universities—and certainly to *every* research university—in the country. It is our opinion that all state employees should pay full customary tuition for the instructional services they receive; and short of this, the University should have the right to cancel courses and programs on which it loses money because of the policy.

Other issues related to the College are, as we have said endemic to Colleges of Education generally. These include the existence of too many degree programs and too many separate tracks and options within those programs—with little meaningful differentiation among either the programs or the specialization tracks. There are also too many levels of degrees, which are also not meaningfully distinguished. It is a common complaint among Education students generally, for example, that specialist and doctoral degree programs offer little or nothing in addition to master's degree programs. (Two exceptions to this are the Ed.S. in Educational Leadership that leads to school district superintendent certification and the Ed.S. in School Psychology that leads to school psychologist certification.) What more or different content is offered in a Specialist program that is not already covered in a master's program? What new skill is developed? What existing skill is demonstrably further developed in a Specialist program? We have seen little evidence of greater content or skill in any Education program we have examined or with which we have worked; and we see no evidence of it at Idaho.[133] It is not simply that the overabundance of options and repeated changes in nomenclature and program requirements are duplicative and confusing; it is especially that the existence of too many options creates severe critical mass problems that are incapable of being resolved in the current situation.

The Associate Dean of the College and the College Graduate Studies and Research Committee have already begun to tackle this issue and, in the process, has produced what we consider to be a groundbreaking document that distinguishes between the research doctorate (Ph.D.) and the professional doctorate (Ed.D.) in Education. We would add to that the notion that the Ph.D. should be offered on the Moscow campus only and only to full-time and fully funded students[134] who intend to enter the professoriate or a research-based policy

[133] Two of the consultants on this project—Dr. Diamond, who has worked with and studied numerous Colleges of Education at what she calls rising research universities, and Ms. Williamson, who has five years of experience in consulting with research universities and is on the verge of finishing a Ph.D. in Educational Leadership—spent hours interviewing department chairs and program directors in the College of Education, calling them with additional questions, and studying their web sites, and were still unable to make sense of the overcomplicated web of programs and tracks, especially when offerings at the remote campuses were taken into account. Even staff in the College of Graduate Studies have difficulty distinguishing programs and tracks from one another, especially because those programs and tracks have changed so frequently.

[134] Occasionally, an employer is willing to fund an employee's Ph.D. program. We do not mean to imply that the University should fund such students if they appear.

position.[135] In our view, the same kind of distinctions now need to be made for master's programs. What is the difference between an M.S. and an M.Ed.?[136] Currently, the distinction hinges on a thesis requirement for the M.S. degree. Should both degrees exist? We also think that the College needs to articulate both the purpose of the Specialist's degree and its distinction from other degrees. How does the Specialist's degree change master's degree programs? How does it change doctoral degree programs? All of this work should be done with a view to eliminating duplication—in tracks as well as programs—and consolidating degree programs into a simple and coherent graduate sequence.

In addition to articulating differentiations among programs, we think that all of the graduate programs in the College should be subjected to a viability review—a process which we believe to be underway already and which should articulate clear expectations for minimum productivity in terms of enrollment, degree production, and time to degree. We have particular concerns about the viability of the master's program in Professional-Technical and Technology Education and the Specialist degree programs in Adult Education and Professional-Technical and Technology Education.

Prior to Dean Rowland's arrival, the College did cut a number of programs, particularly at the remote campuses, with the result that enrollments are now significantly down in master's programs especially. Since we are recommending that some programs undergo viability testing, we obviously have no problem with the closure of unproductive programs, but no one was able to explain to us the precise reasons for the closures—apart from some faculty who explained that the programs were closed "to ease the burden on the faculty."[137]

That the faculty do bear a significant burden is beyond question, since they share in the culture of overwork that is common in colleges of Education. We have known Education faculty at land-grant universities to teach 4-4 loads and simultaneously mentor as many as sixteen graduate students through master's theses and doctoral dissertations. Under such a scenario, faculty research productivity is virtually nil and—though many Education professors would argue otherwise—the quality of doctoral dissertations can only be extremely poor. A national movement has begun to reverse this culture, arguing for more meaningful faculty research, greater faculty research productivity, and necessarily lighter teaching and mentoring loads.

We both applaud this movement and think it is long overdue, but we also think that Education faculty moving in this direction have not taken into account the implications of program closures for their institutions. It is not simply the loss of a significant revenue stream—probably as significant as revenues generated by graduate business programs; it is also that an institution's status in the Carnegie Classification system could erode because it

[135] There is currently an enormous imbalance at Idaho in the numbers of Ph.D. (too high) and Ed.D. (too low) students, reflecting a now common desire for professional students to have a Ph.D. in order to avoid the widespread negative stereotype regarding the quality of the Ed.D.
[136] We obviously believe that most of the traditional explanations for differentiation are meaningless.
[137] Since our first visit to campus, Dean Rowland has learned that the issue of closures is related to the context in which the programs were opened. In one case, there was clearly a failure to develop a multi-year business plan that would provide the necessary resources to support the program. In that case, closure was the result of failure to provide adequate faculty resources to meet the teaching and advising demands produced by high enrollment that generated little income.

no longer produces the necessary number of graduate, and especially doctoral, degrees it needs to maintain that status.

It is not clear if the new movement played a role in the College's decision to close programs. This is certainly possible, since faculty reported to us that one program of only two faculty had a graduate enrollment of approximately 45. The Graduate Dean has also complained about the quality of doctoral dissertations historically produced in the College, and we know that some effort was underway to improve that quality. We are certain, however, that no thought was given to two factors that we consider most important: the projected educational needs of school districts and other educational institutions throughout the state, since there has been no systematic study of this; and the financial implications for the University of closing particular programs.[138] We want to be clear in stating that we do not believe that programs of dubious quality should remain open because they make money. We are suggesting that the review take place again in light of appropriate information about finances and market need and with an openness to alternatives that would make it possible to administer a program without placing such a great burden on faculty. This includes the use of adjuncts and fixed-term instructors, the elimination of thesis requirements in professional programs, including the Ed.D., that enroll students who will not be entering the professoriate or some other research-intensive field, and various instructional options and technologies that permit distance delivery in some form. We assume that any plan to close programs of insufficient quality would be coupled with a transition plan that would permit the University to replace lost revenue through some other means.[139]

A final note: Of all the programs with which we met during our first visit to campus, programs in Education had made the greatest progress in completing their strategic plan.

Doctoral Program in Education

Many of the general points that we have already made in the introductory section for the College of Education refer also to the doctoral program in Education. We wish to draw special attention to two of these points in order to underline their significance. The first is that, as far as we can tell[140] and as faculty have reported, the balance between the numbers of students enrolled in the Ed.D. and Ph.D. programs is skewed. There are far too many students pursuing the Ph.D.—probably because there is a negative bias in the field about the research quality of the Ed.D. The second point relates to the faculty culture of overwork. Quite simply, there are too few faculty mentoring too many students, and we believe that this compromises the quality of both research and doctoral education, regardless of the nomenclature of the degree.

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[138] Of course, the study also needs to examine competition elsewhere in the state, some of which is new.

[139] It is possible that to conduct this review, the Dean will require the use of a full-time information professional, since gathering performance metrics—or even data as simple as enrollment by program by campus—was very difficult for the College. At the time of our visit, it was impossible for anyone in either Institutional Research or the College of Education to identify with certainty how many students were enrolled in particular programs, how long they had been enrolled, and whether they had dropped out or stopped out. We appreciate that recordkeeping is not always straightforward when dealing with part-time students, but the degree of ignorance we encountered was unacceptable under any circumstances.

[140] The enrollment figures we have from Institutional Research simply indicate "doctoral" students and do not distinguish between Ed.D. and Ph.D.

Beyond this, the assessment of the doctoral program is not as straightforward as it might be. There is in theory one doctoral program in research and professional versions.[141] In practice, there are many—research and professional versions of subfields that correspond to the departmental structure of the College of Education, each of which carries additional possibilities for further specialization. We consider this a weakness for the reason that we have discussed throughout this document. The approach creates critical mass issues, in which there are too few faculty and students working in any given area, making it impossible to have a noticeable impact on the field. It also increases instructional costs, since each "separate" program has its own set of requirements, courses common to all the areas are too few, and enrollment in each course is necessarily small. Critical mass issues also affect the program's research profile. Though there has been some emphasis on competing for grants and, in several cases, faculty in the College have been successful, this success is not nearly at the level enjoyed by Education faculty in many land-grant institutions.

To turn more directly to comparative indicators, the faculty size for the doctoral program is, as we have said, *very* small—only 45% of the mean number of faculty in the comparative cohort. Yet during the period of this study, the program had the second-largest doctoral enrollment in the cohort, second only to the program at Michigan State. To place the matter in perspective, we note that the program enrolled 7.5 students per faculty versus a comparative group mean of 2.8 students per faculty. It is clear that the College did need to reduce doctoral enrollment—for the sake of the quality of dissertations if not for other reasons.

The program's students appear to be of questionable quality. They have the highest average incoming GPA in the comparative group, though as we have said elsewhere in this document, we tend to give less credence to this figure than we do to average incoming GREs,[142] which are the lowest in the cohort for both the verbal and quantitative sections of the test. The program either does not require or does not record the results of the analytical writing test. If the distinctions between the Ed.D. and the Ph.D. had been in place during the period of the study, it would have been interesting to note the difference in score levels. In any case, we think the program should require the GRE, including the analytical writing test, for students entering the Ph.D. program. This would foster the transformation of that program into a genuine research degree and would push more practice-oriented students to the professional doctorate.

Despite having the second-largest enrollment in the comparative group, the program has granted the least number of degrees—11 doctorates versus a cohort mean of 48—or the second-lowest producer on a per-faculty basis, ahead only of the University of New Hampshire. We attribute this weakness to all the factors described above, especially the treatment of the Ed.D. as a research degree. This practice, unfortunately, is common in Colleges of Education throughout the country, though given the new distinctions emanating from the Dean's office and the nationwide movement for greater levels of research productivity, we are hopeful for a change in the right direction.

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[141] As we have already indicated, faculty tended to treat both versions the same, as is common in Colleges of Education. The College's emerging definitions of research and professional characteristics and functions should change this situation for the better.

[142] This is because of the national context of rampant grade inflation. In fact, we have collected GPA data for this study only because many graduate programs at Idaho do not require the GRE.

As we have already indicated, the program has the potential for earning significant external research grant income, especially in light of its focus on science education; but it had during the period of this study one of the lowest grant records in the cohort, both on a program and on a per-faculty basis. It performed better, in fact, only than the program at the University of New Hampshire, which is not noted for excellence, and the one at Wyoming, which had no grant income at all. The publication record is not significantly better. On a per-faculty basis, Idaho faculty wrote only 20% of the mean number of papers in the comparative group and received only 38% of the mean number of citations. Clearly, research has not been adequately stressed in the College, though this is probably already changing under the direction of the new Dean; and, to be fair, we point out that both the teaching mentoring loads for research-active faculty are very high. We suspect that publication rates are also low because of the relatively small number of research-oriented students in the program.

The doctoral stipend, which in our view should only be available to full-time *Ph.D.* students, is the lowest stipend in the cohort apart from the one at the University of Wyoming, and lack of health insurance is a serious competitive issue in terms of attracting high-quality full-time students. Time to degree is quite good for those students who finish, though there are substantial problems with attrition and completion. Faculty report that the most self-directed students tend to finish the program. In our view, this indicates that the program needs to look at its advising model and take more responsibility for degree completion.

Adult, Career, and Technical Education

We begin this assessment of graduate programs in the Department of Adult, Career, and Technical Education by noting that it shares fully in the problems and issues addressed in the introductory section of our remarks related to the College of Education, especially a culture of faculty overwork and the offering of too many degree programs that are not meaningfully distinguished from one another. We also think, based on enrollment patterns and employment trends in this particular subfield, that the Department has confused the research and professional doctoral programs.

Throughout the Department's graduate programs, the ratio of students to faculty is too high, and as faculty realize and stated to us, this causes serious problems in monitoring students' progress toward their degrees. This is especially true of doctoral programs, in which two faculty members currently have responsibility for supervising 45 students, a load that is nothing short of ludicrous. Departmental faculty reported a goal of decreasing this load to nine students per faculty, but we consider this goal to be equally ludicrous.[143]

We think that for a faculty of 11 to 14 professors to carry responsibility for eight degree programs and to participate in both the research and professional College doctorates is a guarantee of compromised quality; and we suspect that once faculty examine who their students are and where they come from, what those students' career goals are, whether those students are full-time or part-time, and how close each individual student is to completing his or her degree in a reasonable period of time, they will decide that they need to eliminate Departmental participation in the research doctorate and to suspend the M.S. degree. The program itself says that it is known for addressing workforce development needs and that it its reputation rests on its practical relevance to the workplace, suggesting that it should

[143] In programs requiring a dissertation, we think the optimal load is three students per faculty. As we stated in the introductory section of our discussion of the College, we assume that movement toward optimum load will be gradual and will take place in the larger contexts of a market study and an analysis of financial impact.

focus on practitioner's degrees. A study of projected marketplace needs may well indicate that additional programs should be cut; but to our mind, it is already clear that there is no need for research-oriented degree programs.

The data indicate that there is a serious problem with degree completion in the program in Professional, Technical, and Technology Education and that there is an equally serious problem with time to degree in the Specialist's program. Faculty appear to have no way to track reliably data on attrition, completion, and time to degree, especially on a per-campus basis; but the faculty's statement that "we never lose a student" both strains credulity and is contrary to the data we have. Surely, the origin of each of these problems is faculty overload and the offering of too many degree programs. We acknowledge that part of the problem is that the program currently serves hugely disparate audiences. 40% of their current students go into academia[144] and another 40% are training for more responsible and advanced positions in human resources departments. Naturally, faculty feel a responsibility to meet comprehensively the needs of the state, but we think that these needs could rationally be met by offering practitioner's degrees only, especially since the nationwide market for new higher education faculty in this field is very small and the current number of programs catering to that demand is too large.

Of the cognate master's programs in the comparative cohort, the Idaho program has the lowest GPA requirement for admission. Adjusting this may well eliminate much of the over-enrollment problem. We also think that the program should require the GRE for admission, with a minimum combined verbal and quantitative score of 1000. It is common for such programs in other states to require that students have several years of post-college work experience prior to admission; and this is something that the Idaho program could seriously consider.

We think it is urgent that the Department develop a cohort approach for both full-time and part-time students in order to address problems with attrition, completion, and time to degree. We also think that, for the sake of competitiveness, the program should introduce a practicum requirement, since each of the comparator programs features a practicum. For professional students, we think the program should also consider elimination of the thesis track, since this has the effect of further burdening an already overworked faculty and is not necessary for a practitioner's degree. A capstone experience could instead proceed from students' work in their practica.

Counseling and School Psychology and Educational Leadership (CASPEL)

Because of the illness of the faculty member who participated in this project, our interview protocol for this program was not completed during our campus visit; and despite two follow-up attempts, we were unable to secure the full protocol in writing afterward, though we did receive a description of program requirements. This is perhaps the reason that this assessment refers primarily to the Counseling and School Psychology program and not to the Educational Leadership and Special Education programs. Despite this, we do have answers for some of our questions, as well as several useful documents that spell out background and strategic intent moving forward.

The Department itself is in a state of transition that appears to have been going on for some time and that, at the time of our visit, seemed poised to go on indefinitely. CASPEL was

[144] This figure is undoubtedly skewed, however, by the $5 per credit rule discussed above in the introductory section for the College of Education.

created in 2005 from programs in the now defunct Division of Teaching, Learning, and Leadership (Educational Leadership and Special Education and ACTE (Counseling and School Psychology). We have no concrete knowledge of the factors driving the transition, but—contrary to our observations elsewhere in the College of Education where we favor consolidation—we note that the configuration of the Department seems quite odd, arbitrarily yoking together decidedly different disciplines and resulting in a lack of critical mass for each of them. We have no doubt that this configuration impacts the graduate degree programs themselves.[145]

The Department's 2007 strategic plan, provided to us by the faculty with whom we met, states that CASPEL effectively merges three academic programs and represents an integration of specialty programs; yet the Department still offers separate degree programs that, so far as we can tell, bear little intellectual relation to one another. It then contradictorily states as its first goal the establishment of a "positive departmental culture that advances program communication, collaboration, and integration," implying that effective integration did not after all take place. If in fact integration has not happened or is insufficient, we suggest that now is the time to question what the combination of disciplines was meant to accomplish in the first place and to consider if administrative separation or an alternative configuration makes more sense. That discussion should also take into account the fact that the Department is offering too many credentials—specialist's degrees, master's degrees, and post-baccalaureate certificate programs—for the size faculty that it has. Our own view is that, though the combination of the disciplines eliminates the expense of separate departmental administrations, the accrediting standards of the disciplines involved are too disparate to permit meaningful integration.

In our judgment, most of the other content of the strategic plan is quite sound and hints at possible broader departmental collaborations in the College that could provide both an overarching identity and a market niche for Education programs at Idaho. Alone among the Education units with which we met, this unit gives significant mention to rural education which, to our mind, makes a great deal of sense for the University.[146] The actual standards for the degree programs also appear to be well developed and carefully thought out.

We question, however, several specific initiatives and their supporting objectives.

- One initiative mentions adding new faculty lines; another states that the Department will hire only replacements for faculty who retire.

- Another goal (6e) attempts to "ease the burden on faculty program delivery across the state." It is not quite clear what this means, especially since the remainder of the document tends to separate faculty in Moscow from faculty in the branch campuses, leaving us to wonder what burden the Moscow faculty would have in delivering programs across the state. We have discussed this issue already in the general section of this document and repeat here our belief that there should be one unified

[145] In fairness, however, we point out that we have encountered this departmental configuration once before, in a comprehensive master's institution that, because of its origins as a normal school, had a large number of departments and graduate programs in Education.
[146] We question why this theme is not more prominent in the College, though with specific reference to this program, we note that the fact that a significant number of faculty are in Boise and Coeur d'Alene. This begs the question of whether the program's current locations are appropriate for a rural emphasis and points to the larger need for a market need analysis by campus.

faculty that shares responsibility for the delivery of programs at all campuses. In planning for this, the focus of discussion needs to be on responsiveness to the University's constituents in those campus locations closest to where they reside and not on faculty burden. Faculty seem to realize this in the statement of another goal (8b), in which they state an intention "to approach constructively budget shortfalls and holdbacks," an intention that implies creatively marshalling resources to effective service.

- We note also a curious discrepancy in the statement of two goals related to faculty development. Initiatives for CASP faculty in Moscow and in Coeur d'Alene are precisely the same except for those statements that address tenure and faculty achievement. New Moscow faculty are to be mentored to secure achievements that will ensure tenure. New Coeur d'Alene faculty are simply to secure tenure and to engage in community relationships. It is possible that these distinctions are accidental, though even if they are, they are revealing. As we discussed in the general section of this document, we think it is of utmost importance that faculty on all campuses have both the same status and the same responsibilities. In our view, Coeur d'Alene faculty are equally entitled to mentoring, and faculty in Moscow have an equal obligation to engage in community relationships.

We note also the Department's enrollment projections which, though conservative, assume that the programs in School Counseling, Rehabilitation Counseling, and School Psychology (in both campus locations) will enroll new students only every other year. Though we generally endorse cohort programs and though these projections are probably related to legitimate faculty burden, we think that accepting a new cohort only every other year is an unfeasible enrollment management strategy. This strategy has been used by doctoral programs in Business for nearly a decade now, in response to that discipline's perceived heavy faculty workloads and an emerging shortage of business faculty. The results of the approach have been clear for those doctoral programs in Business that have tried it: a further erosion of market share and an increased shortage of faculty for the discipline. The reality is that potential students do not seek to enter programs only every other year; and if a program is not available when students are looking, their tendency is to look elsewhere. We see no reason that faculty are unable to work with two cohorts simultaneously, especially if the programs make creative use of adjuncts and fixed-term faculty, and urge the Department to reconsider this strategy.

The configuration of the CASPEL Department makes comparisons with cognate programs difficult, since there is no real match for it in the comparative cohort for this study. In some cases, we were forced to use general programs in Counselor Education, which is not a precise match, and in one case, a program in School Psychology is housed in a larger department of Educational Psychology. In that case, data were available only at the level of the entire department and do not drill down to the separate programs; and so, the productivity comparisons are not as precise as we would prefer them to be.

In terms of admission requirements, we note first that the School Counseling program at Gonzaga and the School Psychology programs at both Oregon and Washington have no course prerequisites at all. We have no issue with course prerequisites themselves, though it should give the Idaho programs pause to be the only programs in their comparative landscape that have them. Whatever faculty decide about this, it is crucial that prerequisites not be expressed in language that is internal to the University. "PSYC 390," for example, needs to be replaced with "a course in developmental psychology." Such use of internal language indicates to an outsider that the program is internally focused rather than focused on the needs of students and also implies that prospective students need to have

taken an undergraduate course in precisely the form that the Department teaches it or must take the identified prerequisite through the Department, thus lengthening time to degree and increasing the student's course for the overall program. This obviously has the effect of driving students away.[147] We think the language used by the program at the University of Montana—"successful completion of courses in developmental psychology, basic statistics, and abnormal psychology is expected"—is the model for expression of the requirement and ought to be adopted by the Idaho program.

We also think that the program should require the GRE for admission, as all other programs in the cohort do. Alone among the programs in the cohort, the Idaho program does not require an interview for admission. We are ignorant of particular state requirements in this regard but note that the professional accrediting agency usually requires an admission interview. In our view, the program should consider this practice.

In terms of degree requirements and apart from those institutions in the comparative cohort that have quarter systems that do not permit one-to-one comparison, we note that the Idaho program has the most extensive credit hour requirement in the cohort—67 credits at Idaho versus 53 credits at Gonzaga, 51 credits at Montana, and 47 credits at Washington State. Not surprisingly, the Idaho program takes a half year longer to complete than the one at Washington State. We consider this a serious competitive disadvantage.

All of the programs in the cohort are delivered traditionally. We think the Idaho program could create a real competitive advantage if it were offered in a hybrid version, with part of the program delivered online and part on campus. Moving in this direction would also open up a wider regional market for the program.

The program's enrollment picture is ambiguous, since our understanding is that it is closed until Summer 2008, at which point it intends to admit students every other year. Despite this, the University provided us with enrollment and degree figures that purport to be three-year averages.[148] (If these figures are correct, the program currently has the highest per-faculty enrollment in the comparative cohort.) Though faculty spoke of being very small and dwelled at length on lost lines, the program is in fact about as big as most of the others in the comparative cohort, with the notable exceptions of the ones at Washington and Washington State, which are larger.

Curriculum and Instruction

As with the other graduate programs in the College of Education, the graduate programs in Curriculum and Instruction share many of the issues already raised in the introductory section for the College. We will, therefore, not repeat them here, but will note that the program is in a state of acute transition, driven by the program itself in order to achieve greater levels of quality and research productivity. As it works on its strategic plan, the Department is in fact attempting to rid itself of duplicative programming—an action which we endorse, though we caution that these eliminations need to be made in the context of a market demand study.[149] The program is also examining the research appropriateness of its

[147] If in fact the Department does require prior course work equivalent to its own versions, we think this is a serious mistake.
[148] This is possibly a function of data being kept at the departmental—rather than the program—level.
[149] The data required for market demand studies for this and other programs in the College of Education can be readily—and inexpensively—obtained from Quality Education Data in
[continued on next page]

Ph.D. program and attempting to differentiate it from its Ed.D. program, an action which we also endorse.

Among the Department's contemplated strategic actions is an attempt to cap enrollment at two doctoral students per faculty—an action that is both necessary and innovative for Education programs in general. This action certainly makes sense for Ph.D. programs, though we wonder if the Ed.D. program could be altered to place less emphasis on the dissertation so that faculty could supervise greater numbers of students in the professional program. We acknowledge that this is not yet accepted practice in Ed.D. programs. We do not endorse the program's intention to cap enrollment in the M.Ed. program, since the program does not have a thesis requirement and since doing so might have a negative revenue implications for the University—possibly to a significant extent.

Like most departments in the College, the Department has not kept careful records related to enrollment, completion, and individual student progress toward the degree. To our mind, this is a serious deficiency that requires immediate correction. Also requiring correction is an inability to track the activities of program alumni, which has both development and recruiting implications.

The data we do have on enrollment patterns do not enable us to comment on the robustness of the master's programs' admission and recruiting efforts, since the Department has made a conscious effort to scale back these programs, particularly on the remote campuses. We question whether the M.S. program will be able to meet minimum viability standards once the University implements them, especially since we think that admission to the Ph.D. program should be directly from the undergraduate degree, assuming appropriate prerequisites in Curriculum and Instruction. This also is not yet standard practice in the field, though we think it is inevitable that it will become so. The admission environment for the doctoral program appears robust and faculty say that they employ rigorous admission standards and that students generally accept offers of admission.

Beyond this, we think that there is too much "looseness" in departmental policies and practices. What is the appropriate mix of full-time and part-time students in each program? What is anticipated enrollment per campus based on an analysis of demand by location? How long can students take to complete their degrees? How can progress toward the degree be monitored and students effectively mentored toward completion? The department faculty with whom we spoke indicated that of 300 master's students, approximately 200 are currently "inactive." This is an unacceptable level of attrition; and unquestionably, completion is poor and time to degree too long.

As the Department creates its enrollment management plan, we suggest that it consider if it should be funding master's students, since elsewhere these students are funded by their districts or pay for their own tuition. The enrollment management plan also needs to take into account the Department's use of teaching assistants. Our observation has been that undergraduate instruction in Education is usually handled by non-tenure-system faculty, though the state of Idaho is relatively unique in granting undergraduate degrees in this area.

Denver, Colorado. QED is able to prepare reports that indicate numbers of teachers and administrators who lack master's degrees in school districts, buildings, and private schools, including Roman Catholic diocesan system schools. Once programs assess market demand in particular areas, they can also license contact databases for marketing purposes.

Health, Physical Education, Recreation, and Dance (HPERD)

The Department of Health, Physical Education, Recreation, and Dance, like the Department of Counseling and School Psychology and Educational Leadership, is oddly configured, though in this case, it is not that the disciplines involved and their professional standards are too disparate to permit viable combination. There is, in fact, precedent for the development of such programs in the land-grant tradition.

Despite that precedent, the combination has not always been easy, since, as the programs have progressed, their traditional constituent audiences—health and physical education teachers, recreation professionals, and dance instructors—have expanded to include new audiences that are not quite compatible with the traditional ones: specialists in exercise and sports who have greater affinity with the biomedical sciences than they do with Education faculty and Dance instructors who are more closely aligned with the performing arts. Elsewhere, as this tendency has become more pronounced, the departments and their programs have transformed into something else, usually units focused on exercise and sports science, with strong interdisciplinary ties to other units able to contribute to the study of the physiological basis of movement[150] or the biopsychological basis of exercise. As this transition has taken place, many of these former programs in health and physical education have moved to from colleges of education to colleges of health science.[151]

This transition has begun in the Idaho program but has become stalled, in part because of a relative scarcity of bioscientists focused on human biology and in part because there is no administrative structure for teaching and research in the human health sciences. It is not simply structure, however. Department faculty consider it an achievement to have preserved the Department intact through the post-crisis financial turmoil and consider the current department structure—four faculty in Exercise, three in Recreation, two in Dance, and two in Physical Education—comprehensive and balanced.[152] We consider it fragmented and think that the current structure is both outdated and ineffective in promoting a strong research program, especially since the Department has an ambition to introduce a stand-alone doctoral program, which requires both critical mass and a contemporary approach. In fact, in the context of the contemporary practice of the discipline, we consider recreation and dance—and physical education in its current form—to be distractions from a contemporary research-oriented direction.

We further think that many of the department's current plans—though thorough and the result of hard work—are also distractions. For example, the Department plans to "explore

[150] There are a growing number of excellent programs in a new discipline usually named "bioenergetics." Programs at Bowling Green State University and East Carolina University are models for the field.

[151] Such programs, whatever their origin, have also begun to appear in the competitive landscape for this program. Boise State has a master's program in Exercise and Sports Studies and Oregon State has both Exercise and Sports Science and Sports Psychology.

[152] We should note here that there are significant discrepancies between the numbers of faculty reported by the Department and Institutional Research. IR says that the Department has 14 faculty; the department says it has six and plans to hire three more—though this does not tally with the disciplinary breakdown provided by the department and referenced above. Similarly, IR and the department report different enrollment figures. IR reports 19.7 students in Recreation; the department reports 21. IR provides a figure of 22 students for Physical Education; the department says 19. Finally, IR reports 9.3 students in the M.Ed. program; the faculty reports 3 students.

the possibility of assuming responsibility for pre-med, pre-nursing, and pre-PT advising from the Department of Biological Sciences." Though we certainly think that research collaborations with the biological and health sciences are precisely what the program needs, we are at a loss to account for the Department's desire to advise undergraduates from outside their own majors, since this could only take away from research time that is already too scant. The Department also plans to consider research collaborations with faculty in Family and Consumer Sciences and Natural Resources. We think that these could also only detract from a research strength in exercise science and believe that the better match would be with faculty in the Neuroscience program. To put it another way, we think that the program has one foot in the health sciences but is attempting to create meaningful research roles for those segments of the faculty active in recreation and dance. In this way, we think that the program is currently looking more to its past than to its future in order to create a unique niche for itself. In our view, the neurological basis of exercise is niche enough.[153]

To judge the program in its current form, we question whether, given low enrollment and constraints on faculty time, it is really necessary to offer an M.Ed., especially since the M.S. program permits a non-thesis option. We also wonder why any students are receiving stipends for this program that, in its current form, is certainly a degree for which students or their districts should pay.

There is only one program in the comparative cohort for this study that is a close match to the Idaho program in its current form—the Exercise and Sports Studies program at Boise State. The admission requirements for both programs are practically identical, though we recommend that the Idaho program require the GRE for admission. We also think that comparison with the program at Boise State indicates the advantage of focus, not only in terms of intellectual content and the research programs of faculty but in terms of requirements and policies related to students. At Idaho, these are different from track to track; and the program must consequently be difficult to manage, since there appears to be many exceptions but few rules.

[153] Such a niche would also align the program more closely with its stated aspirational peers, Oregon State and the University of Utah, both of which have contemporary programs in the physiological basis of exercise. The Idaho faculty's interview with us took place immediately prior to a planned Department retreat, in which at least some of these issues were to be discussed. It is possible that faculty came to some of the same conclusions that we are presenting here, though these would be based on a value of scholarly rigor, whereas the program values health and wellness from a lifestyle point of view. This is best illustrated by the statement of outcomes for the M.S. program in Physical Education. To us, these outcomes would be appropriate for an undergraduate program and are simply not advanced enough in either content or skill development for a graduate program.

College of Engineering

Introduction

At the time of our visit to campus, the College of Engineering had recently acquired a new Dean. At that time, received opinion among administrators was that the College had been in a prolonged state of decline and required new and energetic leadership in order to develop a viable strategic direction and to increase performance metrics to their former levels.[154]

Dean Elshabini stated first that she was too new to her position to have yet developed a research agenda for the College; and her initial impressions of her faculty were contradictory. On the one hand, she felt that the faculty was dynamic but in greater need of mentoring; on the other, she stated that many faculty were in a "comfort zone" and were more or less unengaged in their jobs—the particular sign of which was that there was almost no faculty-student interaction outside the classroom.

Despite her contradictory impressions, it was clear that Dean Elshabini was determined to add a measure of vitality to the College, both through directive actions and by her own example, since we have no doubt that she is an extraordinarily talented and accomplished scientist who still maintains an active research program of her own. For this reason, we were particularly anxious to see the new strategic plan for the College, which was in process at the time of our visit. By "in process," we mean specifically that the Dean had created a template for planning that was then in the hands of the department chairs, who were to fill in the specific details of their programs so that the Dean could create one unified plan for the College based on faculty input.

As time went by, we asked repeatedly for copies of the Engineering strategic plan, since some of the programs in the College had assessed badly and we were eager for a plan that would provide some balance for this report. At the time of each request, the template was still in the hands of faculty; and to date, we still have not received a strategic plan for the College. We have, however, received copies of a number of reports by the Dean to the Provost and to the State Board of Education. From these, it is clear that Dean Elshabini has been *very* energetic—hiring numerous faculty and initiating faculty searches, developing outcomes assessments and measures for each of her departments,[155] and searching for a development director who can lead the College's fundraising efforts.

Our impression, however, is that most of these actions have been operational; that is, they have been aimed at filling in gaps. For all we know, these actions have been essential in raising the College to a minimally acceptable level of performance over where it had been[156]; but we are concerned that, so far as we know, there is still no strategic research agenda for the College and still no strategic identity for the individual departments beyond the notion that they provide an excellent foundation in engineering for their students. We are especially concerned that there is still no evidence of planned significant cross-college research collaboration,[157] especially since the Dean's initial feeling was that there was no need for such collaboration beyond the sharing of courses, and we think that she learned

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[154]This, in fact, had been the opinion of administrators during our first engagement with the University in 2001-02.

[155] So far as we can tell, however, these have to do with undergraduate programs.

[156] Maintenance of each program's ABET accreditation is essential.

[157] This is in spite of the fact that some of the College's faculty could undoubtedly play crucial roles in several of the University's "blue ribbon" initiatives and that there are at least several centers and institutes in Engineering fields that could structure such collaboration.

early that the movement of both resources and activities across the University's traditional channels is very difficult.[158]

We also have particular concerns about the Engineering Outreach program. This program appears to be enormous[159] and is potentially if not actually very lucrative for both the College and the University; but it appears to be largely unintegrated into the ordinary administration of the College.[160] We think this operation needs to be more tightly managed, specifically with regard to its pricing rationale and policies, its strategic place within the College, and its relation to the other programs within the College, both in Moscow and on the remote campuses. Of even greater concern is the distance technology (compact discs distributed by mail) the program uses, which is seriously dated. It is possible that the program could produce greater revenues and improved curricula if its technology were updated. Whatever technology the program uses, it appears to be a perfect vehicle for the delivery of professional—that is, non-research oriented—master's programs, especially for those students who are unable to relocate to Moscow, though we have serious reservations about the delivery of doctoral programs through this means. We recommend that the College undertake a review of doctoral programs offered through the Outreach program, with a view to transforming them into hybrid programs that have a significant residency requirement or eliminating them. We assume that the financial aspects of this program will have a place in the review.[161]

At the time of our visit, the programs in Nuclear Engineering offered at the Idaho Falls campus were also unintegrated into the ordinary activities of the College, though we note that Dean Elshabini has since hired new faculty in this area. We were not asked to assess the Nuclear Engineering program—and could not, since it has no cognates in the comparative cohort for this study and few cognates nationwide; but this is clearly an area of considerable importance and investment for the state, and it needs to be brought more closely under the academic purview of the Dean of Engineering. We attribute this lack of

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[158] Like most of the Deans, for example, she had become mistrustful of the University's research institutes, since they direct resources away from the Colleges and make it difficult for faculty outside the institutes to engage with faculty within them. We are sympathetic with the Deans' misgivings, since many of the institutes and similar structures have been set up in order to make faculty independent of the University's ordinary channels of authority; but we need to point out that this arrangement and the attitudes surrounding it are a serious obstacle to the University's progress in establishing a greater research profile, since centers and institutes, if managed properly, are the best structural mechanism many universities have to bring together faculty from different academic units. Our concern at this time is that attitudes toward centers and institutes are preventing the integration of research and graduate education.

[159] How enormous is an open question, since it has proved impossible to obtain from any source enrollment figures that break out students in the Outreach program from students in the regular programs on campus.

[160] Curiously, faculty in Engineering saw no distinction between their work with Outreach students and their work with students on campus. Our instinct is that this lack of distinction says something about the lack of research activity among Engineering faculty, since their M.S. and Ph.D. students in the Outreach programs are treated too similarly to those students who are obviously not in a position to conduct high-caliber research.

[161] Dean Elshabini's staff has not been visible to us in the course of this assessment. If she does not already have an associate dean in charge of the engineering outreach program, we recommend that she hire one. It was not clear while we were on campus that the director of the Outreach program reported to her.

integration to the general separation of the branch campuses from activities and administration in Moscow; but it is clear that the strategic identity of the College of Engineering will need to take account of this program, however remote from Moscow it is.

Chemical Engineering

The doctoral program in Chemical Engineering was, unfortunately, barely functioning at the time of our visit. This is in part because the Department of Chemical Engineering itself is very small, and a significant number of its faculty are approaching retirement and have little interest in graduate education at this point in their careers.[162] The Chair of the Department states frankly that the Department has no resources and no research activity, and therefore focuses all of its energies on the undergraduate program. He also reports that the Department does nothing to recruit graduate students and that, as a result, enrollment is "terrible." In fact, enrollment in the program is lower than it has ever been. Its students, which the Chair describes as "only fair," are of dubious quality; and the program produced only three doctoral degrees in the five-year period of this study.[163] The most telling statement the Department made to us is that fully 40% of its graduate students come from its own undergraduate program. Of these, one master's student interested in a Ph.D. program chose to leave the University and to enroll instead in the doctoral program at Washington State.

The placement record for program graduates is not only undistinguished relative to those of departments in research universities generally but also fragmented; and it indicates, in our view, that the Department's practice of chemical engineering is dated.[164] There are two students—one doctoral and one master's—currently working in paper and pulp engineering—a dying field in the United States, since the industry that supports it has largely moved overseas and most of the remaining programs in it have been absorbed into wood science and products programs in schools of forestry.[165] Other former students are working at the Idaho National Lab, are scattered in various industrial roles, or have left the field altogether.

Program faculty seem to have no viable sense of the competitive landscape in which they operate, which accounts in part for the datedness of the program; and their sense of their own competitive advantages (supportive environment, close faculty-student interaction, etc.) simply indicates that the program has no academic identity. Moreover, the program is so lacking in critical mass that it offers core courses only every other year, with the program at Washington State offering the courses in alternative years.[166] Furthermore, the current faculty in the program seem not to know how to build and maintain graduate programs.

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[162] We acknowledge that this situation has begun to change since our visit. Two of the program's younger faculty have won major research grants in the last year and another research-active faculty member is transitioning into the Department from Mechanical Engineering.

[163] Program faculty report an 85% completion rate, which we would usually consider quite good; but since enrollment is so small in this program, it indicates a significant failure rate.

[164] There are several faculty doing work in nanomaterials, which is more current, and they have placed one student in the microelectronics industry.

[165] It is not simply that what we see is dated. More to the point is what we don't see: the study of biological and biochemical processes or biotechnology in a larger sense.

[166] This arrangement has been in place since 1981. It is possible that it will free up newer faculty to spend more time on research; but it has not thus far been conducive to the development of a coherent research profile for either department.

Their first objective for improving graduate education is to conduct a successful fundraising campaign. It should be to introduce and build an externally supported research program.[167]

Current program quality is not simply the result of faculty, however. The program indicates that its facilities are inadequate, that they are unable to do any kind of clean research, and that much of their equipment no longer functions. These issues would need to be addressed to bring the program even to a minimum level of competitiveness; but it would be pointless, in our view, to make any investment in a faculty that has no research activity. The program uses its current resources primarily to fund master's students, a practice we consider counter-productive in a research university, where emphasis should be focused on the doctoral degree. In this case, however, we see little sense in using the money for doctoral students, since we do not believe they will receive minimally adequate research training and experiences in the program.

We do support the strategic plan's announced intention to focus on electronic materials, especially in light of the Dean's recent decision that the Department reported to us: to combine the Department with the Department of Material Science and Engineering. This model is more prevalent overseas, where it appears that such combined departments focus on nanomaterials research.[168] There are several examples in this country, however—most notably at the University of Kentucky, though the department there seems divided into two factions.[169] Our concern here, however, is one that we have addressed elsewhere in this document. Both departments are small and unviable, and it is probable that their merger will produce a slightly larger unviable department that has an even more fragmented research profile than the current two. In terms of Chemical Engineering, specifically, we think that the doctoral program should be suspended until the University can ascertain that it has—in combination with Materials or otherwise—a research program sufficient to attract and support doctoral students.[170]

The comparative indicators simply demonstrate the narrative we have already expounded. The Chemical Engineering program *is* small—nine professors versus a cohort mean of 14.3, though several programs in the cohort are smaller. Apart from the program at the University of New Hampshire, the Idaho program has the lowest doctoral production in the group: 0.3 degrees per faculty versus a mean of 1.5 degrees per faculty. As we indicated above, student quality is dubious: the program has the lowest average incoming GPA and the lowest average verbal and quantitative scores in the comparative group.

The program's research indicators, as faculty warned, are very poor. Average annual per-faculty grant income for the Idaho program is approximately $11,000. Average annual per-

[167] The draft strategic plan faculty provided to us is, frankly, very short on faculty actions and very long on requests for support from the University. It basically indicates that the Department is starting its research program from ground zero and hopes to raise money from industry to support it. Our own experience is that industry provides money to build on successful enterprises, not to fund start-ups.

[168] The Department of Physics also has at least one faculty member working in the area of nanoscience. Consequently, it only makes sense that the Department of Physics be brought into the equation—informally if not structurally.

[169] Arizona State did have a combined program of Chemical and Materials Engineering, but it split back into two departments some time ago.

[170] The master's program fares better, though it still suffers from a lack of currency. We would subject it to a financial analysis and decide if suspension is warranted on the basis of the program's income/expense ratio.

faculty grant income for the cohort is $183,000. The Idaho faculty publishes significantly fewer papers than any program in the cohort except for those at New Hampshire and Wyoming and receives fewer citations than even the program at New Hampshire, which publishes less. Possibly this situation will change in the not too distant future. The Department has hired two new junior faculty, both of whom have excellent credentials, who appear to be doing well in research, in part because they are collaborating with faculty from both within and outside the College. This should eventually make a difference in the numbers.

As faculty also warned, the program has the smallest research space in the comparative group, and its doctoral stipend is wholly uncompetitive—$13,700 versus a group mean of $18,500—though we think that to compete nationally in electronic materials, its stipend will need to be approximately $21,500. Current time to degree is the shortest in the cohort, which we ordinarily judge to be positive. Given the other indicators, however, we wonder if it indicates that student dissertations are weak.

Most of the students in the master's program, as faculty indicated, come from the University of Idaho itself; but a smaller number of students come from further in the region and some of them come from programs that are quite excellent. It is not clear how they fare at Idaho.

Civil Engineering

The graduate programs in Civil Engineering are among the better graduate programs in the College of Engineering, in part because some of their faculty are actively involved in several of the University's leading research institutes—the National Institute for Advanced Transportation Technology and the Center for Ecohydraulics Research—though as we have already stated in the general section of this document, it is not clear to what extent the work of these institutes is integrated into the degree programs of the Department. It is also not clear what the quality of the degree programs would be without the work of the institutes. At the time of our visit to campus, the programs lacked a director and were managed directly by the Chair of the Civil Engineering Department. We are not sure if this is still the case; but if it is, we think it is urgent that the position of graduate program director be filled. It is not simply a question of recruiting, which is an issue for the program, or of facilitating communications among prospective students, the Department, and the College of Graduate Studies. It is a question of having a faculty champion for graduate studies, of having someone in charge of coordinating program improvement and advancement.

The enrollment figures we have for Civil Engineering are problematic, in part because they fail to distinguish among enrollment in Moscow, on the remote campuses, and in Engineering Outreach, and in part because the degree to enrollment ratios are clearly off for the master's programs, implying that the programs have granted more degrees than the number of students it has enrolled. There are several possible explanations for this. It could be that the numbers are wrong, but there is no better source for such data and it seems more likely that the problem is that the program requires distinctions that the IR system cannot handle. The more likely explanations are that the master's programs at one time had significantly greater enrollment than they do now and that those students are taking unusually long to finish their programs or, alternatively, that students in the Engineering Outreach program stop in and out and thus throw the figures off. Whatever else the figures indicate, they certainly indicate the urgent need for a graduate program director who can

manage the program more tightly than it is currently managed and who can carefully monitor student persistence toward the degree.[171]

We are concerned that the bulk of Ph.D. graduates from the Department are placed in business, industry, and government rather than in distinguished academic positions. This scenario possibly indicates the prominent focus in the Department on transportation; but we think that strong programs take the training of the future professoriate as a serious obligation; and we believe that the academic profile of the Department will not increase significantly until it begins to pay greater attention to academic placement.

Our opinion is that the Department did precisely the right thing by choosing to focus on particular areas of research; and we acknowledge that it chose particularly well, since it was the only one of thirty-six programs selected to receive funding for a tier 1 university transportation center. This choice has not yet been expressed in student recruiting, however. The Department Chair indicated that the program has not yet "identified [its] market and hasn't marketed [its] program."[172]

In turning directly to comparative indicators, we note first that the Department has a small faculty—13 professors versus a cohort mean of 19.8 faculty. It is not unduly small, however. The programs at Wyoming and New Hampshire have the same size faculty; and the one at Arizona is even smaller. Overall doctoral enrollment is significantly below the cohort mean of 30 students, but the program is well enrolled on a per-faculty basis and, in fact, has one of the better enrollment records in the group—one student per faculty versus a cohort mean of 1.3 students per faculty. Master's enrollments—insofar as we can tell what they are—appear to be about average for the group.

The quality of program students does not appear to be a burning issue, though it would certainly be improved with some attention to recruiting. The program's average incoming GRE quantitative scores are among the highest in the comparative cohort and are well above the group mean. Its incoming verbal scores are appallingly low—the worst in the cohort, in fact. The record also indicates a marked decline in scores in recent years. As of now, the program does not require the analytical writing portion of the test, though we think it should. Our feeling is that students with greater demonstrated communication abilities are more likely to enter the professoriate rather than business, industry, or government—and, in fact, industry frequently asks universities to produce more literate graduates. Degree completions for the doctoral program are relatively good in relation to the comparative group—0.85 degrees per faculty versus a mean of 0.88 degrees per faculty. Degree production for master's programs, as we have stated, is unclear.

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[171] We think, in fact, that the Graduate Dean needs to initiate a study of student persistence in general, especially in master's programs, since it is clear that there are widespread issues with enrollment, completion and time to degree.

[172] As we indicated in the general section of this document, it is not clear if the University's centers and institutes are well integrated into graduate education, since none of the information we have addresses this and several remarks of faculty and Deans indicate a possible issue. This is, therefore, a study question for the Graduate Dean. What percentage of doctoral students especially is supported through institute funds? Do the proposals that resulted in the funding of the institutes—or their continuation—include requests for funding graduate students? What is the percentage of doctoral students who have as their committee chairs faculty whose primary affiliation is with a center or institute? These figures should be high; otherwise, there is a significant issue with both integration and the research orientation of the relevant graduate programs.

The research prowess of the program is more difficult to judge definitively, since it is not clear if the research income for the centers and institutes with which the Department is affiliated is included in the figures we have for research funding.[173] In terms of those figures, the program fares badly—$15,000 per faculty versus a group mean of $190,000 per faculty. As a corrective to possibly flawed data, we consulted figures published by the American Society for Engineering Education. These data indicate that in 2005, the Department had $1.4 million in external funding—roughly 25% of the mean per-program funding for the cohort. Publication figures present a similarly dismal picture. The Science Index indicates that Idaho program faculty publish only 73% of the average number of per-faculty publications for the comparative group; and they receive fewer than half the average number of per-faculty citations for the group.

We were unable to collect figures for square footage of research space for all of the programs in the comparative cohort. The figures we do have, however, indicate that the Idaho program has the least space in the group—smaller even than that of the program at Arizona, which has a smaller faculty. We think it likely, therefore, that research space for the program is inadequate.

Though the doctoral stipend for students in the transportation area is clearly very competitive, we think that the average stipend for the program is quite good--$18,100 versus a cohort mean of $17,266. The Chair also indicated that students receive fully subsidized health insurance, a rarity in the University, and a competitive advantage for the program. The doctoral program's time to degree is excellent and among the shortest in the cohort—4.9 years versus a mean of 5.4 years. Time to degree for the master's is, again, not clear from the data we have, but appears bad. We wonder if the two professional master's programs could be consolidated.

Computer Science

Despite a bleak international picture for its discipline and some obvious transitions having to do with the post-crisis financial climate, we think that the program in Computer Science is one of the University's better graduate programs. Apart from the important area of research, it is relatively productive and has chosen research foci that are limited, unique, and fruitful. We think, however, that it needs to recognize that the market for computer science degrees is not likely to return in its former form and that it needs to respond by developing a greater emphasis on software engineering.

The new leadership of the program is competent and dynamic, and we think this bodes well for the future of the program. The new Chair hopes to develop a "cradle to grave" framework for dealing with the program's constituents, initiating contact with students prior to matriculation and maintaining it throughout their lifetimes. This should develop a sound foundation for fundraising efforts. He also has viable plans for recruiting students, despite

[173] We want to be clear that the assignment of dollars to a particular unit for tracking purposes in purely a matter of management. We do not mean to imply in any way that centers and institutes should be eliminated, since they are one of the few mechanisms the University has for bringing faculty from different units together. We have recommended elsewhere in this document that centers and institutes be reviewed from the point of view of newly created polices regulating purposes and procedures. These policies should include a mandate that centers and institutes should mentor and fund graduate students, especially at the doctoral level.

the national breakdown of the market for this degree. The Chair is also strengthening the academic elements of the program, including instituting qualifying exams. We do not think the qualifying exam itself will be the unique marketing niche for which the program has been looking; nor do we think it will effectively address the problem of "drift," that is, students leaving the program in order to accept industry jobs; but we do think that it will add significantly to students' learning experiences and to the quality of the program. The development of database systems in support of bioinformatics initiatives and computer security strike us as good choices of focus that bring the Department into collaboration with faculty elsewhere; but as we have already indicated, we think that the long-term focus will need to be on software engineering.[174] Though we have no firm opinion on this, we wonder—given the traditional nature of the program and its current research foci—if the program might find easier interdisciplinary collaborations if it were housed in the College of Science, especially since we think that any collaboration with the Department of Electrical and Computer Engineering would increase its traditionalism and distract it from more productive directions.

This is a very small program relative to the comparative cohort—larger only than the program at the University of Wyoming and 7.5 faculty below the mean number of faculty in the cohort. The program's enrollments are substantial, however—3.1 doctoral students per faculty versus a group mean of 2.6 students per faculty. Master's enrollments are below the mean for the group, but only slightly.[175] Overall, however, enrollments have been in a state of decline, though this is typical of patterns in the field.

In spite of not having recruited for some time, the program's students appear to be of relatively good quality. The program has a significantly above average incoming verbal score and has the best incoming analytical writing scores in the comparative cohort. The average incoming quantitative score is the lowest in the cohort, however, though it is still respectable. We think this deficiency could be easily addressed with a minimum level of student recruiting activity. The program has one of the best degree production records in the comparative group, second only to the program at Nebraska—1.45 degrees per faculty versus a cohort mean of 0.87 degrees per faculty.

Average annual research funding appears to be $1 million below the mean funding for the comparative group. Our understanding, however, is that program faculty are active in the Microelectronic Research and Communications Institute, and we are not sure if this funding is included in the figures we have. Presumably, this reflection would increase the respectability of the research indicators. The program's publishing record is relatively poor, however. On a per-faculty basis, the program published only about 62% of the mean per-faculty publications for the cohort during the five-year period of this study and were cited only about 2/3 of the mean figure.

The financial package for graduate students, especially doctoral students, is entirely uncompetitive, with the average stipend about $1000 lower than the average stipend for the comparative group. To be nationally competitive, the stipend needs to be about $19,000 for the doctoral program and about $17,500 for the master's. Lack of student health insurance is an obvious competitive disadvantage. Despite lack of a qualifying exam and relatively

[174] It is possible that current work in bioinformatics could expand into an ancillary focus on complex scientific software. The market for this is not big, but there is a shortage of work in this area, and the focus is potentially lucrative.
[175] It is possible that part-time enrollments in the Engineering Outreach program are throwing off the figures.

poor recordkeeping and monitoring protocols, the program does have the best time to degree in the cohort.

Electrical and Computer Engineering

Like many of the programs in the College of Engineering, the graduate programs in Electrical and Computer Engineering are in an obvious state of transition, with new leadership and many gaps that require filling. At the time of our visit, just as for the Department of Civil Engineering, there was no separate director of graduate studies.[176] Though we think it is very important for the Department to fill this role—if it has not already done so—our sense is that transition and leadership issues are much deeper than this; and the program needs first and foremost to settle fundamental issues, including its own strategic identity.

To begin, the Department seemed during our interview peculiarly unable to locate itself within a competitive landscape—even to the point of not being able to identify any aspirational peer programs. Beyond that, the Department's list of research foci seems too long for a faculty of this size, and its hiring plan, to the extent that there was one and despite some interesting and cutting edge research on the part of individual faculty, seems designed to create a program that covers well the basic topics and issues of the field but little else. From the perspective of building a research profile, there are critical mass problems; and we think it is unlikely that such a faculty profile—much breadth but little depth—will ever produce a research program of note.

We are also puzzled by the Department's lack of integration of electrical and computer engineering. This combination is common in many universities and usually results in single degree programs, shared cores—or significant parts of them—where there is not a single degree, and substantial faculty collaboration. Though approximately five faculty are listed as participating in both electrical and computer engineering, the research record we have indicates a limited degree of cooperation between the two groups. This lack of cooperation extends even to lack of a shared core, but this is probably due to the Department's practice of individualizing curricula for individual students.[177] In any case, we think the research fragmentation of the faculty is a serious issue and believe that the question of how to integrate the two types of engineering may be as good a place as any to begin the exploration of possible faculty research collaborations.

We think it is also important that the program develop an enrollment management plan. At the time of our interview, the Chair had little sense of enrollment by campus and through the Engineering Outreach program.[178] The program also seems to have an unusually large number of part-time doctoral students—whether through the Outreach program or otherwise is not clear. This seems to us an issue, since too many part-time students lengthens time to degree and contributes to higher attrition—and, in our experience, decreases the overall

[176] The 2007 Graduate Handbook on the program's web site still lists the Department chair as the graduate program coordinator.

[177] With few exceptions, courses offered by the department allow students in both electrical and computer engineering to satisfy their degree requirements. This is a function, however, of lack of critical mass rather than a shared core.

[178] The Department is now able to separate these figures out, though given the unusually large part-time enrollment and strained faculty resources, we continue to believe that an enrollment management plan is in order. Such a plan would allow the Department to control course offerings and to coordinate admissions with faculty research programs.

research profile of the program.[179] The program also indicated that it has very weak students, though the GRE data we have do not bear this out. It is possible that the figures we have are only for those students who submitted GRE scores, who are a subset of the entire matriculated group. In any case, a solid enrollment management plan should determine enrollment by campus and via distance based on market demand, should stipulate how students in research programs should be funded, and especially, should streamline the procedures for applying for research assistantships.[180]

The comparative figures indicate that this is one of the smallest departments in the comparative cohort—well below the group mean of 26 faculty and larger only than the program at the University of New Hampshire. However, doctoral enrollment, though it has declined over the last several years, is robust—2 students per faculty versus a cohort mean of 1.7 students per faculty.[181] The master's program has also experienced significant declines form previous years and is under-enrolled relative to the cohort. Student quality, as we have stated, appears to be fine on the basis of the GRE data we have. The program has the highest average incoming scores for both the verbal and the quantitative sections of the test, and the incoming GPA, which is higher than the mean for the group, seems to bear this out. Degree production, however, is a problem—less than half the mean for the comparative group—and since enrollment is good, we suspect this is related to the relatively large number of part-time and Outreach students in the program.

In terms of research indicators, the program fares poorly. It has one of the smallest grant records in the comparative group—average annual earnings of $513,000 versus a cohort mean of $3.2 million, or $37,000 per faculty versus a group mean of $106,000 per faculty. As with other programs in the College of Engineering, we wonder if the grant figures we have include income from the centers and institutes, in which faculty from this program are active participants. The publication record is worse. Idaho program faculty published only 58% of the mean number of per-faculty publications for the cohort, and received only 38% of the mean number of per-faculty citations.[182]

The average doctoral stipend for the program is above the mean by about $500 per year for this particular comparative group but still strikes us as low. The program is competing in a field in which the typical stipend is between $18,000 and $20,000 per year, and it is already disadvantaged by the absence of a student health insurance benefit.[183] It is also not clear if the program is able to cover in-state fees. If not, this obviously makes the financial package

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[179] It is an irony that this program has a faculty that is more ambitious and research-active than that of any other program in the College of Engineering, and yet it has the largest Outreach enrollment. Perhaps finances drive this scenario, but we think the future of the program depends on building on its research profile; and Outreach students, in our view, are a distraction from that effort.

[180] Currently, students need to complete an application for each professor who has an assistantship available.

[181] Only three programs in the cohort are better enrolled than Idaho's: Iowa State, Michigan State, and UC Davis. It is not clear if the Outreach program has an effect on this enrollment picture.

[182] This pattern of having fewer citations than papers appears frequently in the College of Engineering and makes us very nervous. We think it speaks to the quality and, especially, the currency of the science that is practiced there.

[183] We do know from the program that the related Institute pays full fees for the students it sponsors. Perhaps, therefore, the stipend figures we have from IR do not take Institute funding into account. In any case, we are mistrustful of the figure we have.

much less compelling. Time to degree for the doctoral program is too long in terms of both the field and the cohort. In our view, this is the result of too many part-time students.

Environmental Engineering

In some senses, it is pointless to assess the master's programs—one professional, one research-oriented, both offered in Moscow and in Idaho Falls—in Environmental Engineering beyond saying that they have never really gotten off the ground, despite having been started approximately ten years ago. The program has only one dedicated faculty member, who has become impatient with lack of results, and reports that the program, for as long as it has existed, has had to "beg, borrow, and steal" from other programs in order to function at all; applications have merely dribbled in for some time; and the program has had only one student enrolled in each of its versions during the last five years.[184] From our point of view, it is time either to become serious about the program or to suspend it.

We think there are three reasons that the program has failed. The first is that it is entirely unique—possibly the only one of its kind in the country; and though it was a very good idea and fit beautifully into the University's overall strength in environmental sciences and studies, it is unrecognizable as a discipline to persons looking at it from outside. The second is that its name is misleading. "Environmental Engineering" usually refers to a degree offered in departments of civil and environmental engineering, and these degrees typically do not have the interdisciplinary breadth of the degree program in question. We think it is likely that students who consider the program are actually looking for the conventional degree and feel that this program is too oddly configured, too focused on biological and agricultural topics, to meet their needs.[185]

The third—and from the point of view of the University's future, the most important—reason for the program's failure is that it lacks an administrative home. Faculty participation, assistantship lines, and the like have always been a struggle for the program, precisely because it belongs to no particular department. It is technically part of the College of Engineering, but the relationship is apparently problematic. Though the title of the program includes the word "Engineering," for example, it is impossible to access the program from the "academics" page of the College of Engineering web site. Lack of an administrative home has deprived the program of necessary resources and has extended over it a cloak of invisibility, with the result that it is dying on the vine, despite its appropriateness for a University with a strong profile in environmental studies.

One possible solution is to move the program to the Department of Biological and Agricultural Engineering, where the bulk of its active faculty reside and which has

[184] We note that we have a report from IR which implies larger enrollment, but the purpose of that report was to identify institutions from which enrolled students have come and the bulk of the enrollment reported in it may have taken place many years ago. We checked with the Graduate Dean, who taught in the program at one time, and she verified the enrollment reported to us by the faculty member with whom we spoke.

[185] It is possible, based on some of the remarks we heard from faculty, which we consider ambiguous, that over time, program requirements have changed so that the program more closely resembles a conventional environmental engineering program. Our comparisons of program curricula do not bear this out. If this were the direction in which the program is going, the simple solution would be to move it to the Civil Engineering department, where students interested in such programs typically look; though, as we have said, we have been unable to verify this change in direction.

demonstrated excellence in managing interdisciplinary programs. This is probably the path of least resistance, though it is not our preferred solution, since it will do nothing to help the University learn how to deal with this kind of program—and it is crucial for the University to learn to create an administrative culture and infrastructure that will allow interdisciplinary programs to thrive. Another possible solution is to attach the program to the interdisciplinary doctorate in Environmental Science, which is administered from the College of Graduate Studies. This solution would be more conducive to fostering interdisciplinary programming, but it is possible that the program would then lose its focus on engineering.

Whatever solution the University ultimately chooses, it will be important for the sake of this and other interdisciplinary and multidisciplinary programs that it take steps to break down the boundaries between colleges and departments, since, given the critical mass issues we discussed in the general section of this document, multidisciplinary research groups represent the University's best opportunities for advancing its international stature. Deans and Department Chairs need to be more focused on *institutional* strategic imperatives and less concerned with the ongoing struggle for greater *unit* resources. In order to foster this effort, we point out that there are a number of universities that have learned how to manage such programs well: Stony Brook University, the University of Chicago, the University of Alabama Birmingham,[186] and the University of California Davis.[187] Unquestionably, part of the advantage these universities possess is critical mass. UC Davis, for example, has a large enough faculty and doctoral student body that it can operate both departmental Ph.D. programs and graduate groups simultaneously. Chicago has a group of degree-granting committees and other units to which faculty are jointly appointed. There are other mechanisms in place, however, from which Idaho could learn, and we recommend that the Graduate Dean take the lead in establishing contact and leading a study of these mechanisms, including visits of appropriate personnel to the model campuses. How do such institutions budget? How do they assign credits and rewards? What are their hiring strategies and how do they navigate interdepartmental faculty appointments? How do they structure research groups, including the placement of graduate students in home units?

Whatever these mechanisms are, it is certain that these institutions have faculty who are focused on solving complex scientific, social, and human problems—that is, who are engaged with their constituent environments. Many of the University of Idaho's faculty are focused on disciplinary knowledge and development in a more narrow sense—probably because they are focused so intently on undergraduate teaching—and have not yet developed a culture of real world discovery. This is why the program in Environmental Engineering is failing; and it is crucial that the University both change its culture and adjust its administrative mechanisms or other similar enterprises, such as the blue ribbon initiatives, will also fail.

[186] For UAB, this is true only of those programs that have a biomedical dimension, whether or not they are connected to the School of Medicine.

[187] A University committee also sponsored last year a workshop for Deans and other administrators on the whole question of interdisciplinary scholarship and its administration. The same committee plans to offer another version of the workshop this year for department chairs. So far as we know, recommendations from this effort have not yet been implemented.

Materials Science and Engineering[188]

The Department of Materials Science and Engineering has its origins in a number of former academic units, including a now defunct College of Mines and Earth Resources, that, because of a combination of program deficiencies and changing market forces, were judged to be no longer viable. These units were merged to create the current materials engineering group, though this has not solved the problem of unviability. The resulting group was also very small (four faculty), each of whom retained his or her individual research interests and proceeded more or less as though the restructuring had never taken place.[189] Consequently, the Department offers *six* separate degree programs in Moscow, the remote campuses, and through the Engineering Outreach program. The group claims six areas of research focus for a faculty of four; and this scattershot approach results in an alumni placement profile that indicates that the program really exists in name only. There is no coherent identity—even to the point of lack of agreement about what kind of scientist or engineer the program is attempting to produce.

In our judgment, the program has collapsed, especially since we were informed during our visit that it was about to lose two additional faculty members whose intention was to take much of the Department's research equipment with them and whose departure will reduce the program's grant income by 78%. Under these circumstances, we see little point in keeping the Department's graduate programs open, even if a regional economic analysis were to indicate a pressing need for advanced materials research, since we estimate that the University would need to hire 18 faculty in this area and the cost of doing so would be more than the University could handle even in an improved budget climate.

This is a very difficult recommendation for us to make, since materials research is at the center of many colleges of engineering, serving as a nexus for multidisciplinary research from many areas and attracting significant federal and industry funding. In our judgment, however, cost and other obstacles will prove to be insurmountable at this time and for the foreseeable future. As we have indicated elsewhere in this document, we are aware of internal discussions concerning the merging of this department with the Department of Chemical Engineering; but our concern is that Chemical Engineering is also not functioning in terms of graduate education and research; and our sense is that merging the two units together will not fundamentally alter this condition for either group, especially since they are bound to go on functioning as separate units for some time.[190] The exception to this would be if the merged department were to create a single graduate degree program with a research focus in nanomaterials; but the research record we have indicates this would be impossible with the current faculty.

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[188] Since our visit, the Dean of the College has moved forward on the intention she announced at the time: to locate programs in Materials Engineering in the Department of Chemical Engineering. The former Department is in the process of phasing out its metallurgy and metallurgical engineering programs, new research-active faculty are being hired, and the focus of the new group will be electronic, nuclear, and polymeric materials and on nanoscience.

[189] At the time of our visit, our understanding was that the Department did not even have a sufficient number of faculty to have its undergraduate program accredited by ABET, though it is possible that Dean Elshabini has hired additional faculty since.

[190] This may be an area in which senior administrators will want to open collaboration negotiations with Washington State; though, at least several years ago, that program was also not as strong as it might be. This represents a possibility for remediation, not a cure.

Nor can we say that the Department is particularly interested in graduate education. Given its small faculty size and minimal graduate enrollment, it routinely has difficulty offering courses that students need to graduate in a reasonable period of time. Almost no graduate program at Idaho recruits students, but this program is far worse. When students call to inquire about the program, they are told simply that the program has "no openings." According to the faculty with whom we spoke, no one even bothers to keep a list of prospective students who inquire.[191]

To turn to comparative indicators, we have already noted the very small—and shrinking—size of the faculty. Though the Department does no recruiting, its doctoral enrollment is only slightly below the mean enrollment for the comparative cohort. Master's enrollment is far below the mean. For reasons unknown to us, we have incoming average GRE scores for one academic year only, rather than for the three-year period that we have for other programs. For that year, the program had the lowest scores in the cohort for both the verbal and quantitative sections of the test. Surprisingly, degree production on a per-faculty basis is above the mean for the group. This anomaly can probably be accounted for by the overly small size of the faculty; but, given everything else we know about the program, we are concerned that students are being "pushed through" and the quality of their dissertation research is possibly questionable.[192]

On a per-faculty basis—and this also reflects the contributions of the faculty who are leaving—the program is earning only 40% of the mean annual research earnings for the comparative cohort.[193] Publication rates are slightly better, though these also reflect departing faculty. During the five-year period of this study, Materials faculty published 81% of the mean number of papers published by faculty in the comparative group. They received, however, only 38% of the mean number of citations per faculty.[194]

The average doctoral stipend for the program appears competitive with that of the comparative group, though we are concerned that some students are apparently not covered for a full 12-month period. Lack of student health insurance is an issue. Mean time to the doctorate for the cohort is 4.6 years. The Idaho program's average time is longer—five years—and we think this is probably the result of the excessive work load of departmental research assistants.

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[191] Several administrators and faculty from other departments told us that the Materials Science faculty frequently conducts "raids" on other departments, persuading students who have already matriculated in other degree programs to transfer to Materials Science and Engineering. Some of these students have failed qualifying exams in their original programs, but they are needed as research assistants. If they transfer, they are sometimes coerced into working so many hours in faculty labs that their own programs suffer. It is not clear if this experience contributes to student dissertation research.

[192] It is also probable that doctorates were produced by the faculty who are leaving the University, since they had the bulk of the program's research funding and were able to afford research assistants.

[193] It is possible that the figures we have do not include research funding for IMAP, in which this faculty participates; but that funding is probably also diminished by the departing faculty.

[194] We have commented before on this pattern of faculty in Engineering having fewer citations than publications. We think this indicates that they are doing outdated—and therefore inconsequential—research.

Metallurgy and Metallurgical Engineering

The assessment of the degree program in Metallurgy and Metallurgical Engineering is covered in our discussion of Materials Science and Engineering above, since this degree program belongs to the same department. We wish to add only that outside of some universities in Canada and several other countries, Metallurgy as a field has disappeared; and most programs in this area have been absorbed into larger programs in Materials Science or Materials Engineering. There are no other programs in this area in the comparative cohort for this study.

Changes in economic imperatives, shifts in federal and industry funding patterns, and the virtual disappearance of these programs from the U.S. higher education landscape indicate that the discipline itself is out of date. Our fear is that students trained in this program are being disadvantaged in their scientific careers. We recommend that the program be closed, though presumably faculty will have a place in the Materials Science and Engineering program, in whatever form it eventually takes.

Mechanical Engineering

In terms of both curricula and research focus, the University of Idaho's programs in Mechanical Engineering are configured fairly traditionally, with attention to such areas as acoustics, mechanics, thermodynamics, manufacturing, fluid mechanics, heat transfer, and dynamic systems. The program is also—and unusually—interested in engineering pedagogy, which is rare at this time.[195] The faculty is also involved in a number of interdisciplinary research collaborations, having formal affiliations with the Center for Intelligent Systems Research, the National Institute for Advanced Transportation Technology, and the Microelectronics Research and Communications Institute. In some ways, Mechanical Engineering faculty are at the center of the College of Engineering, touching virtually every other department, as well as departments in other colleges.

In some of the country's foremost colleges of engineering, this is a role that is usually adopted by materials faculty, for whom federal funding opportunities are greater.[196] We think it is problematic that this role has been assumed at Idaho by Mechanical Engineering,[197] simply for the reasons that the possibilities for multidisciplinary funding are narrower than they might otherwise be and that there is a danger that the College's funding base will become more industrial than federal.

It is not that there is anything particularly wrong with the Department of Mechanical Engineering. Its work appears to be both current and collaborative, and its external funding

[195] By coincidence, Candis Claiborn, the Dean of the College of Engineering and Architecture at Washington State, is also interested in engineering education, and was planning an initiative in it several years ago. We have no knowledge of the state of that initiative but think it would be worthwhile for the two institutions to discuss collaboration in this area, since it is both sorely needed nationwide and unique at this time.

[196] There are a number of leading Engineering colleges in which the research profile is lead by faculty in biomedical engineering, but this is obviously not an option at Idaho.

[197] We do not mean to imply that Mechanical Engineering assumed its stature by design. Our sense is that the situation simply evolved, and has as much to do with the weakness of the other programs in the College as it has to do with the relative strength of Mechanical Engineering.

is respectable; but the program lacks vision precisely because it lacks focus,[198] and the Department is clearly focused on its undergraduate and master's programs, which require the kind of breadth which the department has achieved. The current student profile of the Department is 50% part-time, and we think this "says it all." The Department is oriented primarily to preparing students for work in industry and undoubtedly does this quite well; but it does not have the kind of research profile that will result in distinguished academic placements; nor can it lead the College to a position of scholarly prominence.

We note also that the program has no dedicated graduate program director; that function is managed personally by the Chair of the Department—one of three graduate programs in the College of Engineering to be so managed. As we have indicated elsewhere for the other programs, we think it is critical that the Department fill this void. There is a respectable research profile here on which the Department could build. It will take leadership to move the program in the right direction; and, as we will note below, we think that doctoral students in the Department are in need of greater attention than the Chair can give them.[199]

As with most programs at the University, we begin our comparative analysis by noting that the program is small—15 faculty versus a cohort mean of 21.5. Only the programs at Montana State, the University of Wyoming, and the University of New Hampshire—none of which is particularly strong—are as small. The doctoral program is under-enrolled, with 12 students (or 0.8 students per faculty) versus a comparative group mean of 37.8 students (or 1.5 students per faculty), but the master's program—especially the professional version of it—is quite large. It appears that students are of reasonably good quality, with both verbal and quantitative GRE scores well above the mean for the group. In fact, Idaho's average incoming quantitative score is the highest in the cohort. Despite under-enrollment, doctoral degree production is good relative to the cohort—0.8 degrees per faculty versus a cohort mean of 0.7 degrees per faculty—but it appears to us that degree production in the cohort overall is low, and the program should benchmark itself against some of the field's more prominent programs.

The Department's research profile, as we have stated, is respectable, with average annual earnings slightly above the mean for cohort.[200] The program is under-published, however. On a per-faculty basis, it is publishing only about half the mean number of publications for the cohort and is receiving only about 39% of the mean number of per-faculty citations in the cohort.[201] The data also bear out what faculty reported to us: there is a serious issue with the

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[198] Not one of the areas of research focus embraced by the Department is supported by a critical mass of faculty and students. Most of these areas are only several faculty deep, so to speak, and only thermodynamics and heat transfer, with five faculty, approaches critical mass. This is not the area in which, nationally, the most groundbreaking work is taking place.

[199] We think it is also significant that the faculty is very heavy at the level of full professor, with almost no representation of the other ranks. This is not healthy.

[200] As with other programs in Engineering, it is not clear to us if research awards for the centers and institutes are included in our figures. If they are not, the program's comparative research performance will obviously be significantly better.

[201] For other programs in the College of Engineering, we have attributed this pattern of low citations relative to papers to the datedness of faculty research. In the case of Mechanical Engineering, we believe faculty research to be well aligned with the direction of the field. We wonder instead if low impact on the field in this case relates to the Department's focus on preparing students for work in industry, resulting in less attention to its work from the academic world. We do not have information on research awards by source, but it would be

[continued on next page]

amount and quality of research space for the program. Our estimation is that the program would need to increase research space by about 20% in order to reach what appears to be the standard level of the field.

The doctoral stipend for the program is not competitive, especially if the program does not cover in-state fees. In order to reach parity with this comparative cohort, it would need to be about $17,000; but we think $19,000 would be the more appropriate figure to compete nationally—and if any Engineering program at Idaho is going to compete nationally, it will be this one. Lack of student health insurance, as with other programs, is a competitive issue. Time to the doctorate is too long—the longest in the cohort, in fact, though it is matched by that of the program at Nebraska—and needs to be reduced by a full year. Our sense is that this relates to the lack of a dedicated program director, who would necessarily be more available to advise students and monitor their progress than the Department Chair could be.

interesting to see sources for this program. Everything else points to an unusual degree of funding by industry. If this turns out not to be true, then we are at a loss to explain the program's relatively low impact on the field.

College of Graduate Studies

Introduction

Throughout this document, we have discussed the difficulty with which faculty cross departmental and college boundaries to conduct interdisciplinary research or to participate in multidisciplinary graduate programs. Nowhere is that difficulty more prominent than it is in the programs in the College of Graduate Studies. One of the consequences of the current unit infrastructure and culture is that faculty productivity indicators, such as research grants and student credit hours generated, are credited to the faculty member's home department so that the Department is not disadvantaged in assessment and budgeting processes. As a result of this procedure, programs in this College look artificially weak, since there is currently no system in place to attribute faculty productivity to them. This is a system deficiency that needs to be addressed and that has definitely impacted the interdisciplinary programs in the Graduate College.

Bioinformatics and Computational Biology

At the time of our first visit to campus, the graduate program in Bioinformatics and Computational Biology was in an awkward state of transition. The program was an excellent idea and had both crucial start-up funding through a federal grant program and the potential for significant external funding moving forward. Despite these conditions, the program has never really gotten off the ground. It has had a completely inadequate application pool, is critically under-enrolled, and is hampered in its development by both critical mass issues and the resistance of Deans and Department Chairs to funding extra-departmental and extra-college initiatives. We also think that the program made several important mistakes at the proposal stage that have had a lasting impact. Since many of the program's three-year faculty agreements were due to expire in the next year, there was much discussion of the direction in which the program should move and the criteria that should be used to determine faculty participation in the program.

For all the reasons we have stated throughout this document, it is crucial that the University get this program right. Computational Biology itself is a critical emerging field, one that represents the immediately foreseeable frontier of the life sciences and thus one that is rapidly becoming the center of biosciences enterprises at many of the country's leading research universities, attracting significant attention and funding from the federal agencies. For this reason alone, it would not be in the University's best interests to abandon this program, especially if the principal reason for doing so is simply because it is difficult to navigate funding negotiations with Deans and Department Chairs, who are jealously protective of internal resources. The more important reason for the University, however, is that the program represents an opportunity to build and regulate the infrastructure for maintaining vital interdisciplinary programs—an opportunity which we consider to be the University's future in terms of graduate education and research. It is our opinion that the relevant Deans and Chairs need to be brought into discussions regarding the program's future shape, since the success of the program will depend not only on agreements about participation criteria and commitments of faculty time and other resources, but will need to be supported by strategic hiring plans in the departments and colleges.[202]

These discussions need to take place in the context of the apparent direction and standards of the field. In the first place, we are concerned that the use of the term "Bioinformatics" in the title of the program may signal a research emphasis on computing and software

[202] In our view, the outcomes of these discussions are important enough to justify the Provost's imposing agreement if the relevant parties cannot come to consensus.

architecture beyond which the field has already moved. As recently as eight years ago, there were many programs in research universities that carried the designation of "Bioinformatics." Today, there are few left. Most of these programs have already undergone transformation into a much greater emphasis on bioscientific applications—genomics, molecular genetics, computational biology, etc. Our second concern is that such programs tend to be virtual productivity machines. Faculty grantsmanship tends to be extraordinary, and the sheer volume of publishing is greater than we have seen in any other field. If the Idaho program is ever to have an impact on the field, we think that faculty and the administrative infrastructure that supports their work need to gear up for significantly increased levels of productivity, particularly in terms of scholarly publishing.

In turning to the origins of the program, we note first that the program proposal was developed at the height of the financial crisis. One of the effects of that crisis was that both faculty and administrators developed the habit of "thinking small." In our view, enrollment projections were too low from the start, as though faculty were thinking primarily in terms of constrained resources, of what they thought could be achieved under the scenario then current rather than what was possible in terms of building a nationally competitive program. A practical consequence of this is that faculty—perhaps in an attempt to produce what they believed to be a more competitive proposal—seriously underestimated the amount of funding necessary for student support. As a result, the current stipend for the program, though we have ambiguous information on it, is significantly less than the $25,000 per year that is now the standard in the field.[203] The program also has two students—one at the master's level and one at the doctoral—who are not currently fully funded, a situation that is virtually unknown in the field. We think that this accounts in part for the program's inadequate applicant pool and low matriculation rate.

We think that the program also gives undue emphasis to its master's degree, insisting that students be admitted first to this, and that they complete the master's before matriculating into the doctoral program, reflecting the faculty bias toward the master's degree that we discussed above in the general section of this document.[204] Common practice in the field is to admit graduate students directly into the doctoral program and to award the master's along the way, eliminating the master's thesis altogether. So long as the Idaho program operates contrary to common practice in the field, we think it will continue to suffer from two practical effects of its current practice. First, it will be unable to attract students of higher quality and well-developed research interests—a scenario that will have a negative effect on program outputs, especially in terms of publishing. Second, it will have a much longer time to the doctorate than most other programs. Two to three years in a master's program and an additional three to four years in a doctoral program is far too long a time to degree for this field.

[203] The program proposal also plants the seeds for critical mass issues in another way. It requests only 3.5 assistantships for an enrollment projected at 14 students. At the time of our visit, the faculty were having difficulty offering enough courses to make the program fly and were wondering if students more advanced in the program could be tapped to teach students less advanced.

[204] In a recent communication, the program director clarified that the program is interested primarily in Ph.D. students. These are admitted directly from the bachelor's degree and are not required to complete a master's degree program. Perhaps our confusion results from faculty's reference during our interview to "master's students," indicating the existence of a separate program. Our point here is that, generally, the field does not accept students who do not declare an intention to pursue a doctorate.

Long time to the doctorate is also a function of another unusual feature of the program. In their interview with us and in the documentation that they provided, faculty gave unusual emphasis to a structured curriculum and to course work. In our view, the program is too course intensive relative to other doctoral programs in the life sciences. The sheer number of core and depth courses detracts from the research experience of students who, in our opinion, should—as early in the program as possible—be in labs working on viable research projects under the direction of a major professor, not in the classroom.

Despite the obstacles of the master's program and the unusually heavy course requirements, the program appears, ironically, to be quite good at doctoral production, having produced as many degrees in the last five years as the program at Iowa State, which is far larger. The program's placement record, however, is particularly undistinguished and gives further evidence of the University tendency to inbreeding that we noted in the general section of this document. Two of the program's graduates now have staff positions at the University of Idaho. It is not clear if these graduates also came from U of I undergraduate programs; but we do know that of the program's five original students, two came from the University. In our opinion, this is not a healthy situation.[205]

Among the program's initial assumptions was that the continuing costs of the program, including the funding of students, could be generated from the F&A derived from faculty grants. Because we were unable to obtain information from the University on grants attached specifically to the program, it is not clear if faculty grants have not materialized or if the indirect costs associated with them are allocated to the faculty's home departments, which then keep those funds for their own purposes. We suppose that both possibilities are true; but in any case, this is a crucial issue, since several years later, faculty are talking about lack of funding and it is customary for programs in this field to support their students fully from faculty grants.

One of the questions facing the program at the time of our visit was whether it should select an area of emphasis in addition to experimental evolution. In spite of critical mass issues that in our view call for greater focus, we think it is crucial that the program go ahead and choose a different area, since the amount of grant funding available to experimental evolution is probably lower than that available for almost any other field in the life sciences. Experimental evolution was in some ways a logical choice, since it is the field in which many Idaho biologists work; but we think that the development of some field related to genomics or molecular genetics is important for the sake of updating the program to an extent sufficient to attract greater funding levels.

Comparative productivity analysis is difficult, since there were only two cognate programs in the comparative cohort for this study. One of these—the program at the University of Nebraska Lincoln—was unable to participate, since all of the tracking mechanisms at that institution operate only at the department level, and the administration there is unable to isolate figures for interdepartmental programs, leaving us only the cognate program at Iowa State. For that program and for the Idaho program, we lack data on average annual grant income—and for the same reason: the offices of sponsored research at the institutions in question track proposal and award data only at the level of the department. Consequently, we are deprived of the specific comparative base that we prefer, but we have worked with similar programs, and we are able to use that general comparative sense.

[205] It is difficult to believe but nevertheless true that that the program is unable to keep track of the small number of graduates it has produced. The program, for example, granted only two master's degrees but is ignorant of the whereabouts of one of those students.

The absence of a specific comparative base aside, we are unable in any way to comment on the size of the faculty. We have from the program web site and other materials the number of faculty who participate in the program, but this does not relate to FTE. We also have the number of faculty provided by Institutional Research (24), but this differs sharply from the number provided by program faculty in their interview (10). Whatever the faculty count, we are certain, as we have said, that the program is under-enrolled. Similar programs at other universities tend to have very large enrollments; and having a small enrollment handicaps the Idaho program in many important ways, but especially in terms of publication productivity. It is our sense that pre-doctoral students account for as much as 60% of the publishing in other programs; and as we will see below, the Idaho program is *very* under-published relative to the field. In some senses, if the Idaho program is unable to develop the resources to support a critical mass of doctoral students, there is little point to continuing the program. We think that the faculty need to negotiate with relevant administrators to secure a greater number of assistantship lines for first-year students and then develop the necessary level of grantsmanship to support students in subsequent years.

The quality of the program's students is also difficult to determine without a specific comparative data set, but we would be surprised if it is nearly as high as it might be. The average incoming GRE verbal and quantitative scores are below those of the program at Iowa State; but we think the more telling points are the ones we have already discussed: lack of direct entry to the doctorate; an uncompetitive student financial package; long time to degree; lack of immediate research opportunities with a major professor; and an inadequate applicant pool. As we have already stated, the program is—notwithstanding all of its obstacles—quite good at degree production. The program at Iowa State, which appears to be significantly larger, granted the same number of degrees as the Idaho program over the five-year period of the study. On a per-faculty basis, degree production is twice that of the Iowa State program—an impressive record, especially given the program's heavy curricular demands.

As we have previously stated, we have no basis on which to judge grant productivity. The figures reported to us informally by Idaho faculty are impressive; but we think that grant opportunities are limited without the choice of a more contemporary area of research focus. Program publications, on a per-faculty basis, are about half of what they need to be and Idaho program papers are cited at only roughly one third of papers generated by the Iowa State program. Our sense is that if we were making specific comparisons to programs nationwide, Idaho's publication indicators would be even less favorable.

The stipend data we have are confusing. The department provided one figure from the NIH start-up funding, but even this is about $5000 below what it should be to compete in the field. The average stipend figure of $16,000 provided to us by IR, if true, does not even approach the level of funding common in biosciences programs. As we have already stated, we think this single element is more to blame than any other for the program's shallow applicant pool. For those students who have finished the doctorate, the time to degree provided by IR is 6.1 years, which is about a year longer than it ought to be.[206] We think the

[206] Data on this question are problematic, since the program is only about four years old and may refer to the total length of time that it has taken for some students who have completed other degrees at Idaho to finish all of their degrees rather than simply this one. We have let this observation stand, however, as another illustration of the University's difficulty in tracking the performance of inter-departmental programs. Given the current system, as well as the need to ascribe credit to the home departments of major professors, performance [continued on next page]

solutions to this are to reduce the course requirements for the program, to begin student lab rotations—and hence, the choice of a major professor and dissertation topic—earlier, and to admit students directly into the Ph.D. program.

Environmental Science

Of all the University of Idaho programs we have examined, the graduate program in Environmental Science is the most difficult to assess—precisely because it demonstrates all of the challenges and obstacles experienced by interdisciplinary programs at the University. We have various sets of data on the program from different sources—the program itself, Institutional Research, and the Office of Sponsored Research. It is not simply that these data disagree with one another or that the numbers don't add up. In some cases, the numbers for such fundamental elements as faculty size, enrollment, and stipend are so discrepant from one another that it is difficult to believe they describe the same program—even if those numbers come from the same source![207] The data set we received from IR, for example, shows a three-year average enrollment of 17 Ph.D. students for the program. An August 2006 memo from the Director of the program to the Director of Institutional Research, however, gives an enrollment figure of 40 students for roughly the same period.[208]

In some areas, though we have no discrepant data from different sources, the data we do have make no sense on their own terms. The program director, for example, reported that the program currently has 3.5 TAs involved in field activities related to EnvS 102, a required course for freshman majors. We know that some graduate students in the program have their own academic homes in other departments and that they are supported by those departments. The data make it difficult to see, however, that most of the program's students are supported in some way, especially because of everything we know about the difficulty of funding interdisciplinary students at the University. How many students do not receive

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indicators for inter-departmental programs need to be tracked manually in many cases, resulting in this kind of error. It is important for the University to address this situation if its ability to offer strong interdisciplinary programs is to be improved.

[207] The reason for this, undoubtedly, is that the infrastructure for collecting and analyzing data permits analysis only at the level of traditional academic units, such as colleges and departments; and our supposition is that when IR figures differ from one another in various reports, it is because the purpose of the reports was different and the definition of data elements shifted based on the purpose. Adding to this is the—so far as we can tell—completely unique structure of the academic unit called "Environmental Science." It is common for graduate programs that involve faculty and students from various departments to report to the Graduate School or the Vice President for Research; and though this arrangement is not currently working well at Idaho because of the structural obstacles and cultural barriers that we have discussed throughout this document, it works very well at many of the country's leading research universities. We have never encountered, however, an academic unit reporting to the Graduate School that also grants an undergraduate degree—a free-floating academic unit that functions like an ordinary department but that is comprised entirely of faculty who have their academic "homes" in other units and that, therefore, has no autonomous resources of its own.

[208] The program director reports in a more recent memo that the actual enrollment for the period we studied is approximately 20. This illustrates precisely the point we are making: hard data about inter-departmental programs are difficult to come by.

adequate support is almost impossible to tell, but there are clearly some.[209] We think it is amazing that program enrollment is as high as it is.

The data we have on stipends both differ by source and make little sense in either case. The amount provided by IR is $20,400, while the amount provided by the program director is $24,000.[210] Whichever amount is correct, the doctoral stipend is significantly greater than it needs to be for the sake of competitiveness—especially if there are not sufficient resources to fund all the doctoral students enrolled in the program. To be competitive with the particular programs in the comparative cohort for this study, the stipend needs to be $17,000. To be competitive nationally, it need be no more than about $18,000.[211]

We note also that there is little difference between the doctoral stipend and the master's stipend. To begin with, the range for the master's stipend is unusually wide—from $14,000 to $22,000. Beyond this, as we have already stated in the general section of this document, the issue becomes more complicated. The master's program as it currently exists is academically oriented, a preparation for the Ph.D. program, reflecting an apparent bias on the part of Idaho faculty toward this type of master's program. Unfortunately, there is no clear standard practice in this field as there is in the biological and physical sciences, but we refer the program to some of the recent national studies on the doctorate, including the "Re-envisioning the Ph.D." project out of the University of Washington, which have found that the academic master's is a significant factor in doctoral attrition and in the lengthening of time to the doctorate. In this particular field, in which a great number of post-degree jobs do not require a terminal degree, the master's degree, in our opinion, ought to be professionally

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[209] The program director told us that the program is considering hiring some of its graduate students as graders paid at an hourly rate, both in order to ease faculty work load and to provide needed support to graduate students. This suggests that many students require at least additional funding. Our principal points here are that reliable information about interdisciplinary programs is hard to come by and that it appears that financial support for students in this program is inadequate. We want to caution, however, that the standard for research universities, codified in policies of both the Council of Graduate Schools, and the Association of Graduate Schools of the Association of American Universities, is that graduate assistants are appointed to quarter- or half-time appointments for which they receive annual stipends, not hourly wages.

[210] It is perhaps possible that IR is able to track only that money which flows through University sponsored lines and that other stipends or supplemental amounts are provided through faculty grants, which IR is unable to track. Our opinion, as we have already stated in the general section of this document, is that stipend policies, including amounts, need to be regulated by the College of Graduate Studies, even if the source of the money is faculty grants. IR should be able to track all money allocated to graduate students, regardless of the funding source.

[211] In a recent comment from the program director, we have learned that IGERT stipends drove the average figure for stipends up considerably. The actual range of stipends, as we have said, is very wide and depends on the student's focus on the social, biological, or physical sciences. Presumably, this is related to funding from the student's major professor. In any case, we think it is evident that the program's efforts to fund students competitively are substantial. The program director also reports that it is rare for doctoral students to be unfunded. Full-time students resident in Moscow are always supported; and only those students who are not progressing adequately or whose major professors have left the University are stranded without support. The TA stipend does require improvement.

oriented;[212] and the majority of students, therefore, should pay full tuition for the degree. In that context, we believe that if the program must award a master's stipend, it should be considerably lower than that for the doctorate. In an institution in which money is unbelievably scarce for doctoral programs and in which stipends are generally woefully uncompetitive, to do otherwise strikes us as a waste of resources.

This question of supporting students in an academic master's program is related to another practice of the program which we believe to be mistaken—the requirement that students complete a master's degree prior to matriculation in the doctoral program. Again, there are no clear standards in this particular field, but we think there are several compelling reasons for the program to change its practice. To begin with, the Ph.D. program itself is focused primarily on science rather than policy,[213] and science programs generally permit direct entry from the bachelor's. Second, requiring a separate master's program can mean that a student's time to the doctorate is as long as seven or eight years, and we don't believe that the job market in this field justifies that length of time. Third, the usual reasons for requiring students to take an initial master's degree are that either their academic accomplishments are questionable or that their research—and career—interests are not sufficiently defined for them to do doctoral-level work. This program has thus far had no attrition at the doctoral level and has lost only 6% of its master's students.[214] In our view, this indicates that the program is attracting students whose career intentions and consequent research interests are firm enough to permit direct entry to the Ph.D., and we therefore urge the program to alter its practice in this regard.

To return to the general question of lack of reliable information for interdisciplinary programs and to the specific question of structure that we raised in note 185 above, we note that the financials of the program are very murky to us, even beyond the issue of sources of income. Since we were concerned with assistantship stipends that are seemingly much higher than they need to be and with the unnecessary awarding of assistantships to master's students, we examined a data chart related to program finances provided by the program. To us, the chart is deeply ambiguous. The chart refers to decreasing cost allocations per student, but it is not clear to what levels those cost allocations refer. Is it the entire "floating unit," the undergraduate program, or the graduate programs? The answer is not clear, but in any case, we think the question ought not to be how much the unit allocates per student but how the unit itself is to become self-funded.

Ultimately, this is an important question because the program is moving even further in the direction of interdisciplinary research, with many of its faculty involved in the Sustainable Idaho blue ribbon initiative, and because the program has experienced the institutional tension related to competing for scarce resources that emanates from the traditional academic units. Given this hostility and several other factors—the external reviewers' observation that program students frequently feel like the step children of the departments

[212] It is possible, though not conclusively demonstrated, that the program could create a professional master's degree simply by adding—or implementing—a non-thesis option to the existing master's program. In this case, we think it is important for the program to maintain the degree nomenclature of "Master of Science," since nomenclatures designating "professional" degrees are generally not well accepted in many fields.

[213] This practice, frankly, puzzles us, as we will explain in more detail below; but changing it would not alter our opinion that the program should permit direct entry from the bachelor's.

[214] In a more recent memo, the program director notes that there does now appear to be some attrition at the doctoral level, though it is not possible to demonstrate this definitively until a new student evaluation process is implemented.

in which their major professors are housed; the lack of clarity in advising that arises from the interaction of the major professor's home department and the Environmental Science unit; and the resulting infrastructure issues such as the lack of a student handbook[215]—we think it is in the best interests of the program that it be granted several full-time faculty lines so that it can function more like an independent department and so that students in the program can have a clear home, with faculty who are specifically responsible for their progress.[216] Our fear is that without this structure for the clear channeling of resources, the program will die on the vine, simply because by its nature it will never be a clear priority for the traditional units.

There are a number of other ambiguities and issues related to the program. The first is the faculty's identification of its aspirational peers. These include cognate programs at Portland State University and Evergreen State University in Washington. Our sense is that these programs are included because they share the Idaho program's agenda for care of the environment, but we caution that neither of them has the minimum standards for research performance that are appropriate for University programs. We think the right question for future program development is not "What is a good environmental science program?" but "What is a good environmental science program in the context of a research university?"

As we have already indicated above, we are puzzled by the faculty's choice to de-emphasize policy studies in the doctoral program, especially since these are fundamental components of both the bachelor's and the master's degree. Perhaps the choice is related to the lack of a strong social sciences research infrastructure at the University. We point out, however, that some of the country's strongest doctoral programs in this field do in fact have strong policy orientations, and we think that the Idaho program has created a competitive disadvantage for itself in making this choice.[217]

We agree with the program's most recent external review that because it depends on the participation of approximately 90 faculty from a number of colleges and departments, its research activities are extremely varied—and fragmented. We think that the program would benefit by the creation of several unifying themes that would give some direction to faculty research interests and form the basis of a national reputation. This will be especially important if the University adopts our recommendation to provide dedicated faculty lines to the program, since those unifying themes would form the basis of the program's hiring strategy.

The original proposal for the doctoral program—dated January 2003—offers a fellowship opportunity for employees of INEEL—now the Idaho National Lab—and anticipates that many of the program's students will come from Idaho Falls. We assume that the University's campus in Idaho Falls has the appropriate research facilities and equipment necessary to

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[215] The program director reports that, since the time of our visit, the program has, in fact, written and published a handbook for graduate students. This is certainly helpful, though it is not clear to us that the issues to which we have referred have been solved.

[216] This is not a solution we would have preferred; but given the difficulty of operating interdisciplinary programs, we think it is expedient and that it should be in force until institutional procedures for interdisciplinary programming are more clear.

[217] Though it is not located at a top-tier research university, we think that the program in Environmental Resources and Policy at Southern Illinois University Carbondale would serve as a good model for the integration of science and social science in this area. The University's lack of a strong social science research infrastructure is not simply an issue for this program but for all of the University's programs related to the environment.

support the doctoral program; but we return to the issue we raised in the general section of this document. We think it is important that program faculty in Moscow be integrally connected to the implementation of the program in Idaho Falls—to the extent that they regularly teach courses there and serve as committee chairs and members of Idaho Falls students conducting dissertation research. It is not clear to us that the infrastructure to carry this out is currently in place.

Finally, given the fact that the program has not yet really initiated a coherent recruiting strategy, it is natural that a significant percentage of its graduate students should come from University of Idaho undergraduate programs. As we have stated repeatedly throughout this document, we believe this kind of inbreeding to be unhealthy both for the University and for its students; and we think it is urgent that the program develop and implement a national recruiting strategy as quickly as possible.

Since the doctoral program in Environmental Science is relatively new and since it has no clear faculty FTE, direct comparisons with other programs are difficult. The cognate program at Iowa State also has a participating faculty with homes in other academic units, but the other programs in the comparative cohort all have dedicated faculty. Our per-faculty comparisons, therefore, will not be as precise as we would prefer; but this stems from both the structure of the program and the nature of the discipline.

Given the lack of a specific FTE faculty, it is difficult to judge the current health of the program's enrollment; but since it has thus far not initiated any recruiting activities and many of its students come from U of I programs, our hunch is that the program is under-enrolled relative to its peers. As we have already stated, however, it is not clear if the program is able to fully support all of the doctoral students it has; and we would not urge enrollment growth unless it is able to do so. Despite lack of recruitment, the quality of the program's students appears quite good. Both its average incoming GPA and its average incoming GRE verbal scores are well above the means for the comparative group, though its incoming quantitative scores are below average. This relationship between verbal and quantitative scores is unusual for the cohort; and we think it speaks to the program's exclusion of policy studies from the doctorate, since it appears that the students it is currently attracting are more likely to be strong in the social science aspects of the field and less strong in the scientific aspects.

It is impossible to comment definitively on the program's degree production, since it is so new; but we do note that its ratio of degrees to enrollment is very low. The program at Michigan State, for example, granted during the period of this study 14 degrees against an enrollment of 18; WSU's program granted 14 degrees out of an enrollment of 25. The Idaho program has thus far granted one degree from an enrollment of 17—if we accept IR's figure, which is considerably lower than the enrollment figure provided by the program. Presumably, the one student who received his or her degree was not alone in the doctoral cohort for that particular year; and so we have a concern that the program has a time to degree issue that must be addressed.

Research productivity is also difficult to determine, since faculty participating in the program have their research awards attributed to their home departments, and this appears to be the case with at least one other program in the comparative cohort. On the basis of the evidence we have, however—such as it is—it appears that Idaho faculty generate approximately $2100 per year in average annual research income—versus a cohort mean of approximately $54,000 per year. This is consistent with our findings for other Idaho programs, though we acknowledge that there is no clear pattern in the cohort cognate programs for this program in Environmental Science. The program's publication record is

more clear, and appears to be comparatively undistinguished—three papers per faculty versus a group mean of 14.3 papers per faculty and 13 citations versus a group mean of approximately 65 citations. Even if we could establish that the program's research income is higher, we can say that its publishing activities are below standard. We are unable to comment on the program's research space, since IR is not able to attribute space to interdepartmental programs.

The program's competitive indicators are equally confusing. The stipend, as we have said, is very high for the field but the number of assistantships granted—so far as we can tell—is very few, and so the program is both more than competitive and uncompetitive in this regard. The time to degree figure we have is untrustworthy, since it refers to only one program graduate, but since the program requires prior completion of a master's degree, we calculate that time to the doctorate from the bachelor's would take approximately six or seven years. Average time to the doctorate for the cohort is 5.5 years, and so it is important that the program consider the possibility of direct entry to the Ph.D.

Neuroscience

This assessment of the doctoral program in Neuroscience is relatively brief, since the program is in its infancy and direct comparison with other programs is, therefore, largely pointless. We begin by noting that neuroscience is an odd choice for the University of Idaho, since the University has no easy access to either a medical or veterinary school, a context that many neuroscience programs enjoy; and the affiliation with WAMI, as we have already stated earlier in this document, has not produced in the University's biosciences programs a greater emphasis on biomedicine. Perhaps because of this context, program faculty have embarked on a bold course that, though interesting and innovative, is—so far as we know—unprecedented and, therefore, risky.

Ordinarily, neuroscience programs, though interdisciplinary, conform to a single dominant approach—computational, cognitive, or biomedical—depending on the disciplinary and research contexts in which they operate. The Idaho program has chosen to combine all three of these approaches in one program, probably because there are not enough University scientists working in any one disciplinary area to justify a focus in any particular area. As we have already said, this experiment poses a serious risk, in several senses. First, we think it is probable that the program will have difficulty building a coherent research profile based on so broad an approach, precisely because it will lack critical mass in any one area. It is possible that the program could resolve this issue by having faculty collaborate on a limited number of research problems that demand solutions that combine the three approaches; but given the institutional barriers to collaboration and the faculty tendency to pursue individual research interests that we have noted, we think it is unlikely that faculty will adopt this approach—let alone succeed at it.[218]

Second, the program's unusual approach poses a risk in the recruitment of both faculty and students. For potential faculty, there is the double risk that they will not have an appropriate number of colleagues with whom they can collaborate on research projects and that collaborating in such an unusual fashion may preclude their work from being published

[218] The program's promotional brochure, though physically beautiful, gave us pause in this regard. Instead of describing specific neuroscientific research, it lists the ongoing research of faculty in their home departments. Given that description, it is possible for us to believe that neuroscience is simply a side interest of the faculty in the program and not a focus of faculty research.

in the field's traditional journals, which tend to be slow to respond to radical changes in experimental methods and theoretical models. For students, there is the risk of being trained in a novel approach, which may affect their post-degree employment prospects. It will be interesting to see how this experiment plays out; but for the sake of the program's success, it is more important for this program than any other that faculty both choose specific collaborative research projects and build student training experiences directly out of those projects.

For all of these reasons plus the budgetary and resource hostility that interdisciplinary programs typically face at the University, we think it is important that this program have a dedicated core faculty appointed specifically to it. The program would also benefit from the continuous and stable leadership that such faculty could provide.[219]

We are, frankly, surprised that the program's recruiting efforts to date have been so passive. The program currently recruits out of the REU (Research Experience for Undergraduates) program, which we acknowledge to be a distinguished enterprise capable of producing results. Because the program is so unique, however, we think that it will need to be much more proactive in terms of recruiting. It is not simply a question of advertising, however. We think the program will need to establish specific linkages with undergraduate programs elsewhere in biology and psychology—first and foremost to convince faculty in those programs of the legitimacy of the Idaho program's approach.[220]

As we have indicated, direct program comparisons of the sort we have done for other Idaho programs are not always useful in the case of this program, both because of its youth and because FTE faculty counts we use to normalize are dubious for most neuroscience programs.[221] Despite this, comparisons with other cohort programs can provide a set of standards for the Idaho program to observe as it develops. Though FTE faculty counts themselves are uncertain, it is fairly safe to say that the Idaho program faculty is smaller than that of most other programs in the field. Faculty growth over time will be an important component of the program's success.

As the program continues, we think that its enrollment goal should be at least two doctoral students for each FTE faculty, since this will help to establish the critical mass that the program currently lacks. The quality of the program's current students is ambiguous. Though incoming GRE verbal and quantitative scores are in line with those programs in the comparative cohort, we do note that analytical writing scores are the lowest in the group. This is a concern to us because neuroscience programs tend to be very productive in terms of publishing; and the writing of pre-doctoral students is an important driver of this productivity. It is far too early to comment on degree production and time to degree, but we do note that the one student who has graduated thus far took 6.9 years to finish—much longer than the average time to degree of 5.5 years in the comparative group.

We are unable to comment on the current research prowess of the program, since neither Institutional Research nor Sponsored Research is able to track awards between departments.

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[219] The program's current practice of periodically electing a director from among participating faculty seems to us to create a needless precariousness.

[220] The primary driver in selecting a graduate program is the advice and recommendation of undergraduate mentors.

[221] Many programs elsewhere do have core dedicated faculty, but we know of no neuroscience program that does not make heavy use of affiliated faculty who have academic homes in other academic units.

We think it is important for the program director, however, to count up faculty awards specifically related to neuroscience. If the program is to be considered competitive, these should be about $100,000 per faculty. We can comment on the program's publication record, however. At the moment, individual faculty are publishing only 37% of the mean number of per-faculty publications in the comparative group and are receiving only 22% of the mean number of per-faculty citations for the group. Whether research space is adequate is also indeterminate, since IR cannot currently track space except at the level of the department.

Happily, the program's stipend appears to be competitive at this time. It appears, on the basis of the information we have, that the program does subsidize the health insurance premiums of its students, which is unusual for the University. If the information we have is incorrect, then we note that all other programs in the comparative group offer health insurance to students.

College of Law

The College of Law falls outside the scope of this study because the study is based in significant part upon the National Research Council's assessment of research doctoral programs. The NRC's assessment does not include programs offering the Juris Doctor degree. Legal education, as a graduate professional discipline, is subject to separate accreditation and evaluation by the American Bar Association and the Association of American Law Schools. The College of Law recently has undertaken its own comprehensive strategic planning and assessment process for he purpose of fulfilling the University of Idaho's statewide mission in legal education. Moreover, inclusion of the College of Law would have created comparability problems because most institutions in the University's peer group do not contain law schools. This circumstance, of course, is a source of potential advantage and distinction for the University, insofar as it provides unique opportunities for interdisciplinary cooperation bringing law and policy perspectives to the research conducted in other graduate programs. Such interdisciplinary connections and opportunities are noted elsewhere in this report.

College of Letters, Arts, and Social Sciences

Introduction

At this time, the College of Letters, Arts, and Social Sciences is, like many colleges of liberal arts nationwide, in a precarious position. Though it is responsible for most of the teaching of the undergraduate core, it is chronically under-funded; and this situation has been made worse by the removal—through the re-creation of the College of Art and Architecture—of the possibility of offering professional master's programs that would provide the College with a reliable revenue stream.

Given its teaching overload and its small faculty, the College currently has only two doctoral programs, neither of which is functioning adequately at this time, as we will discuss in more detail below. The current budgetary reality of the University means that the development of strong doctoral programs in the College cannot be a priority at this time; but we caution that no university can be truly great unless it has strong doctoral programs in the humanities and social sciences. As the University's financial condition improves, the improvement of the College will need to become a priority.

Anthropology

In terms of its research activities, the master's program in Anthropology appears to be both unique and highly productive at a level appropriate for a master's program. According to the Department Chair, and so far as we know, it is the only anthropology program in the country that engages in Columbia Plateau studies. It is also alone in another sense. Among all the master's programs at the University, this one alone describes itself, via the Department Chair, as a professional master's degree—specifically to prepare students for careers in cultural resource management agencies, such as historical archives and agencies and foundations dedicated to historic preservation. While we favor, as we stated earlier in the general section of this document, the creation of professionally oriented master's programs, is not clear in the case of this particular degree if there is a sizable professional job market nationwide; nor is it clear that a degree in anthropology is the best preparation for most of the organizations included under the wide umbrella of cultural resource management agencies.[222]

This view of the program as professional presents us with several anomalies that require resolution. First, the largest group of the program's alumni, at least over the period we have studied, continues on to doctoral programs elsewhere—the University of Oregon, the University of Washington, and especially, Washington State.[223] A related anomaly is that the program's admission requirements are more stringent than those of any other program in the comparative cohort, requesting prior preparation in statistics and recommending proficiency in a second language—requirements, in short, that are appropriate for a doctoral program and that would not necessarily be needed by someone considering work in a cultural agency.[224]

[222]Most of the ones of which we are aware prefer degrees in either museum studies, history, or—depending on the nature of the organization—arts management. The exception, of course, is those agencies focused on historical archeology.

[223] If some of those students have concentrated on Plateau Indian Ethnography at Idaho, they will not be able to continue to do so elsewhere.

[224] The program is also unique in the cohort in not requiring the GRE, which in our view is appropriate for a professional master's program but inappropriate for one whose primary purpose, stated or otherwise, is to prepare students for doctoral work.

In fact, the program exhibits many of the challenges common to doctoral programs in the discipline. The program, despite having full-time students who are continuously enrolled, appears to have an exceptionally long time to degree, in part because at least some students are required to have field experiences and because the program requires a thesis for all students.[225] The program has one of the lowest degrees to enrollment ratios in the comparative group,[226] and while the Chair reports an average time to degree of three years, he also states that the completion rate for the program is only 62%—if time to degree is stretched to six years.

In short, we think the program has an identity crisis. Perhaps it was conceived as a professional program, but its admission and degree requirements are purely academic, most of the program's students go on to doctoral studies elsewhere, and the program conducts itself as though it were a doctorate. There is nothing wrong with an academic orientation; but in that case, we think the program needs to pay serious attention to its completion and time to degree issues. The way to do this, we think, is to stay very close to the core curriculum and to devote the remainder of the curriculum to developing student research experiences in areas that will be available to students when they go elsewhere.

English

We know from our previous engagement with the University in 2001 that the Department of English was particularly hard hit by the after effects of the financial crisis, experiencing a number of early retirements of key faculty. As a result, tenure-system faculty in the Department were forced to spend an inordinate amount of their time teaching the freshman writing requirement and other lower division courses. At that time, under a previous graduate program director, the Department specifically sought to limit enrollment in the master's degree program. The Department is now in an obvious state of transition, with a new strategic plan in process, new graduate program leadership, and significant hiring requests to build the faculty to its pre-crisis level. At the time of our visit, the strategic plan was not yet finished, but we remember the program's strength in creative writing, and assume this will be a prominent feature of the new plan.

Despite its prior decision to limit master's enrollment and a shortage of faculty, the program now enjoys a large and steady enrollment; and almost alone among University of Idaho graduate programs, it appears to have a robust applicant pool. We are unable to judge independently the quality of that pool, but program faculty considered 95% of last year's pool qualified for admission. We are concerned, however, that only approximately half of students who receive admission offers choose to enroll in the program. We acknowledge, however, that the matriculation rate in the TESOL track is both significantly higher and healthy. Perhaps the low rate outside of the TESOL track is caused largely by uncompetitive assistantship stipends; but the stipend would be the same for every track, and we think it behooves the program to examine its recruiting activities in order to discover if it can learn something from the TESOL track.[227]

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[225] This would be highly unusual if the program were really professional in nature.
[226] Only Idaho State's program is lower.
[227] We are not altogether sure that the program engages in proactive recruiting as it would ordinarily be understood by an outsider. By "recruiting activities," we mean the acts—and the quality of the acts—of responding to prospective students' requests for information and expressions of interest. It is also possible that the TESOL track is, academically speaking, relatively more responsive to student need than the other tracks.

The program reports that it is "in a quandary about getting the word out" about itself, but we note that, over the last three years, it has had the second largest enrollment in the comparative cohort. Our question is whether, in the light of the current faculty shortage and limited resources for student support, the program needs to be as large as it is. Would it be possible to tighten recruiting procedures in such a way that the program could accept fewer and better students? One of the reasons for having a large program, undoubtedly, is that the faculty requires teaching assistants to cover required core courses, but we note that funding teaching assistants—at a competitive level—is a fairly expensive way to cover instruction. Would a larger cadre of contingent faculty be a more financially efficient way for the Department to meet its service instruction obligations to the rest of the University?[228]

The program reports a degree completion rate over the last five years of between 90% and 100%, but we are not sure that the program is tracking completion and time to degree as effectively as it could. The program's degree to enrollment ratio is well below the mean for the comparative cohort, and this suggests issues in both areas—and is another reason to lower enrollment to a level more in keeping with current faculty resources. The program also reports that all of its graduates are being placed, but we think this is also an area for closer examination, since 100% placement would be an anomaly for the field.
That the Department requires additional faculty is beyond question. We have discrepant figures on the current size of the faculty—the program indicates 17 while Institutional Research gives a figure of 24. Even if we take the higher figure from IR as correct, the graduate student to faculty ratio is extremely low. The mean faculty to student ratio for the cohort is 1.31. The Idaho program has 0.3 tenure system faculty for every master's student enrolled. Part of the documentation the program provided to us for this assessment is its hiring requests—one faculty each in the areas of new media, 19th Century British literature, linguistics, and creative writing. It is not clear to us, in the absence of a strategic plan, if these projected hires are strategic or if they are simply meant to replace faculty losses suffered post-crisis.[229] While we agree that the English faculty needs to be larger, we would prefer that these hires follow an approved strategic plan.

We would like to suggest an additional context for that strategic plan. As we have indicated elsewhere, it is a matter of some concern to us that the University lacks strong doctoral programs in the humanities and social sciences; and it does not seem feasible to build either of the existing doctoral degrees into viable programs. We think that the University could establish an interdisciplinary doctoral program in American Studies with a faculty research focus on the American West.[230] The Department of English would obviously play a central role in such a program; and if the University decides to adopt this recommendation, the Department's hiring plan would need to support this effort.

Finally, we note in both its interview and its supporting documentation, the Department gave emphasis to preparing students for doctoral study elsewhere and to creative writing.

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[228] We pose this question in the larger context of the national overproduction of Ph.D.s in English. The job market in this field has been up and down over the last several decades, but no one doubts that job prospects in the field will continue to be poor.
[229] One of the lost faculty, for example, was Roger Wallins, former Associate Dean of the Graduate School and a specialist in Victorian literature. The loss of Professor Wallins could well account for the request in 19th Century British.
[230] This would obviously be a college-wide program in CLASS, but individual students could also choose courses and research involving some of the University's initiatives in the environment.

We heard relatively little about teacher education and think that some effort in this area might produce a significant revenue stream for the University.

History

Contrary to our usual practice, we begin this assessment of the graduate programs in History with a comparative analysis of its productivity indicators. The graduate faculty for the Department is the smallest we have seen anywhere in seven years of program assessment at research universities; and it is certainly the smallest in the comparative cohort for this study—eight faculty versus a cohort mean of 28.7. Given the faculty's other commitments, the doctoral program is under-enrolled, though we point out that the program, in terms of enrollment, is functioning as well as the programs at Iowa State, Michigan State, and Washington State. All things considered, program students appear to be of reasonably good quality. Though their average incoming GRE verbal scores are slightly below the mean for the comparative group, their quantitative and analytical writing scores are above average. During the five-year period of this study, degree production was—amazingly—good, at one degree per faculty versus a cohort mean of 0.78 degrees per faculty.[231]

Externally funded research is not an important criterion for judging research prowess in the humanities, but we note that over the last five years, this Department earned on average $5600 per faculty versus a cohort mean of $5900 per faculty, and the Department has a much better earning record than many other departments in the discipline. Journal publications are also less important in the humanities than they are in other fields, but this faculty is, nevertheless, slightly above the mean for the group. The Department's most recent external review pointed to three books and seven book chapters written by faculty and felt that that level of activity compared well with other departments. Our own experience of benchmarking history programs suggests otherwise, but we agree that this track record is remarkable considering the workload necessitated by thin faculty ranks.

In examining the program's competitive indicators, we see serious issues. The financial package for students is the lowest in the comparative cohort and, in fact, the lowest we have seen anywhere. There is no fee remission; the stipend is only $2500 versus a cohort mean of $11,000;[232] and there is no subsidy for student health insurance. The program also has the longest time to degree in the comparative group—8.3 years versus a cohort mean of 7 years.

We think it is extraordinary that this doctoral program has held on for so long, and it has done so only because some faculty in the Department think it is an important civic obligation to maintain the state's only doctoral program in history. We feel the need to be realistic, however.

The next smallest faculty in the comparative cohort has ten more tenure track faculty lines than this program. The next lowest stipend in the cohort is $6000 greater than this program's stipend. We note also that this program has two assistantship lines, currently being divided among all its doctoral students, whereas UC Davis and Michigan State, as well as many other institutions nationwide, are fully funding all of their doctoral students in history. The teaching load for faculty in this program is 3-2—higher than we have seen in

[231] The Department Chair warned us, however, that degree production going forward would not be as high, since only half the former number of students are moving through the program.

[232] In the last year, several of the country's major research universities have announced financial packages in the humanities of about $19,000 per year. We think this will become the standard in the field, and it will make Idaho's History program even less competitive.

any department at any research university—and the faculty research profile, undoubtedly because of the need to cover undergraduate core requirements, is as scattered as we can imagine: three Americanists; one Latin Americanist; two Europeanists; one Medievalist; and one whose research interests are unknown to us, but who could not make a difference in terms of critical mass to an of the existing groups. The Department has very large service obligations related to the University's general education curriculum, teaching approximately 1000 students per semester. In light of all of these factors, we agree with the program's most recent external review, and recommend that the doctoral program be suspended.

There is ample precedent among the country's land grant institutions not to have doctoral programs in all of the humanities and social sciences disciplines; but we note that most other states have other institutions that can fulfill this mission. Oregon State University, for example, has no doctoral programming at all in the liberal arts, but such programming is offered at the state's other flagship institution, the University of Oregon. There is no such other institution in the state of Idaho; and so we make this recommendation only with great reservations; but we see no other alternative. It is impossible to implement a doctoral program of even minimum quality on the resources likely to be available to this program.

The external review of 2003, to which we referred above, offered a choice—either sufficiently resource the Department or close the doctoral program.[233] Four years have passed since that review was conduced, and the program has not changed in any meaningful way. Faculty lines have not increased; resources are no greater than they were; and current faculty are increasingly frustrated and have long ago lost interest in the program. We think that the time for choice has passed and that the only option remaining is closure. We have recommended elsewhere that the University initiate a college-wide doctorate in American Studies featuring a research focus on the American West. At least the Americanists in the History Department could participate in that program and thus have an outlet for their scholarly ambitions.

The master's degree program in History likewise suffers from limited faculty resources. The program's students are, for the most part, spouses of faculty in other university departments or people who are place-bound to Moscow for some other reason. The program has very few concentration options for these students and doesn't recruit students in any case, and so it is a question to us if this program also is viable.

There are only two circumstances, in our opinion, in which it is purposeful to offer a stand-alone master's degree in history. The first is for the sake of training secondary school teachers, which is currently handled in the University's MAT program. The second is to prepare students for doctoral education elsewhere. In that case, students usually have the academic credentials necessary to be admitted to top doctoral programs, but their research interests are insufficiently defined to do so. A viable academic master's program has the function of developing both research skills and experiences, thereby helping students define their major fields and topics.[234] Such programs are judged successful if they can demonstrate that their alumni have in fact been admitted to distinguished doctoral programs. The Idaho program is currently not able to track the whereabouts of its recent master's students. We do think that a choice remains to the University for this master's program; but keeping it open will require both strategy and resources.

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[233] However, in our opinion, the external reviewers were extremely naïve in their estimation of what it would take to make the Ph.D. program viable. They suggested, for example, that two additional faculty would make a difference. We think that number is closer to ten.

[234] The master's program in History at San Diego State University excels in this function and could be looked to as a model.

As with other graduate programs in the arts, the master's program in Music is difficult to assess—for several reasons. First, there is not universal agreement on the quantitative factors that should be used to assess such programs; and though we have provided in Appendix E the information elements that we usually use to assess master's programs, we acknowledge that they are inappropriate in this case. The following assessment is based on other indicators that we took from the National Association of Schools of Music (NASM). Though NASM primarily represents the special interests of schools of music, many of the data they collect strike us as sensible indicators of quality.

Second, we do not feel comfortable using the regional comparative cohort we have used for master's programs in this study. In addition to Idaho's, there are five programs in Music in this cohort, but none of them strikes us as a good cognate to the Idaho program, since their foci are very different from one another. The Idaho program is interested in performance, composition, and piano pedagogy, though this list is not exhaustive. Idaho State's program is interested in these areas plus three others. Boise State's program's interests overlaps those of the Idaho program in only two areas, and Montana's program has different areas of focus entirely, including composition technology and musical theater. Oregon's program focuses in part on conducting and "intermedia" music. The University of Washington's program, like Oregon's, is interested in conducting, but focuses on choral conducting. We provide these areas of specialization in order to give a sense of the wide variety in the regional market and for possible use in future program development, but since the interests of these programs are so discrepant from one another, our feeling is that it is useless to compare any of these programs to the Idaho program.

We have decided to use for comparative purposes the list of peers provided by the program itself, though this list is not unproblematic. The basis of the list is size, as in numbers of majors and similar factors; and size—except as it relates to critical mass—does not seem to us a viable indicator of program quality.[235] Half of the list is made up of programs in land-grant institutions or other flagship universities, which makes sense to us; but the remainder of the list is drawn from institutions of lesser stature, and we are not sure, therefore, if it sets an appropriately high standard against which to judge the Idaho program. Our judgment, in the end, is that the faculty list is subject to fewer objections than the regional one, and we have therefore decided to use it.[236]

These qualifications aside, we begin this assessment by noting that this program plays a vital role in creating a vibrant arts culture on campus, a culture more vibrant than we have encountered in almost any other university. One of the principal institutions of this culture is the Lionel Hampton International Jazz Festival, which has recently won the National Medal of Arts, the country's highest award for the arts. In so doing, the University has

[235] However, since the list is based on size, we have foregone our customary per-faculty normalization in this case, looking at all factors on a program basis.

[236] The list includes Central Washington University, Colorado State University, Indiana State University, Miami University of Ohio, Ohio University, University of Arkansas, University of New Hampshire, University of New Mexico, University of Northern Iowa, and University of Texas San Antonio. NASM data are not available by named institution. Instead, NASM gives indicators for the client program—in this case, the Idaho program—and then provides the averages for the same indicators for the peer group.

become the only public university to win the award since it was created in 1984—an achievement that is bound to have a positive impact on the Music program for years to come. It is also clear from the NASM indicators that the program is fulfilling its arts mission on campus with far fewer resources than those available to many other programs in music.[237] It is not simply that available resources are fewer, however. One of the dominant patterns in the NASM indicators suggests that the ways the Idaho program chooses to spend money is very different from those chosen by most of their peers. The Idaho program faculty, for example, identify as a competitive advantage the fact that they have only full-time, presumably tenure-system, faculty. It is not clear to us, however, if this is a competitive advantage or a decision that both increases operating expenses and limits the resources that the program can devote to other areas. The other programs in the peer group make extensive use of lecturers, instructors, and visiting faculty and, consequently, are free to spend their operating dollars in other ways.[238]

Those NASM indicators unrelated to financials show that the Idaho program is far less productive than it might be. It enrolls only 37% of the average enrollment of its peers and produces only 22% of the average number of degrees granted by its peers. It is not clear what, if any, relation this bears to faculty credentials, but we note that the Idaho program has only 70% of the average number for the comparative group of program faculty with doctoral degrees.

In terms of expenditures, the Idaho program spends 60% of what its peers spend on equipment, 27% of average spending on guest artists, 50% of average spending on performance scores, 20% of expenditures on library resources, and 31% of peer spending on graduate scholarships.

Faculty generated financial support for the four-year period covered by the NASM data breaks down as follows: the Idaho program earned no publicly funded grants versus an average of $35,000 for the peer group; no corporate or foundation grants versus an average of $78,000 for the peer group; and received only 40% of its peers in gift income—funds generated by donors, usually in cooperation with the university advancement staff. NASM also measures another type of income, a type that we call "entitlement" income—that is, income provided by outside sources but not earned by the program either through competitive or fund-raising activities. In this category, the pattern for the Idaho program reverses itself. Programs in the comparative group collected only 63% of the student fees collected by the Idaho program and received only 33% of the endowment-generated income received by the Idaho program.[239]

In summary, the patterns the NASM data present are not flattering to the program. It enrolls fewer students, produces fewer degrees, has substantially more entitlement income, and substantially less faculty-generated income than its peers. We think the program needs to answer two fundamental questions: how and why is it spending its endowment-generated

[237] The NASM indicators primarily have to do with how music programs generate income and spend money.
[238] We should also note that income and expense figures for the Idaho program are trending upward, so it is clear that figures for the earlier years represent the post-crisis financial climate, while figures for the later years reflect the University's ongoing financial recovery.
[239] We did not use income generated by performances, such as ticket sales, because NASM did not have these data available for all the years of the study. Had we used them, however, we would have seen that the Idaho program, despite the vibrancy of the arts culture on campus, generated far less income than any of its peer programs.

income in the way that it is; and where is the faculty activity to produce self-generated income? We see here that aspect of the faculty culture we discussed in the general section of this document: an entrenched sense of entitlement to financial support that undoubtedly was heightened by the difficulties of the post-crisis financial climate.[240]

We think the program needs to take three courses of action in order to become more competitive. First, it needs to work with University- and College-level advancement officers in order to create short- and long-term fund-raising plans. Second, it needs to work with appropriate personnel in the Office of Sponsored Programs to develop proposals for grants.[241] Finally, it needs to work with staff in the University's public relations office to advertise its performances more effectively. We also think it would be beneficial if it were to book performances in some of the state's population centers, such as Boise and Coeur d'Alene, and in other venues in the greater region. This would not only raise the program's profile but would expand its fund-raising opportunities.

Philosophy

Though the master's program in Philosophy, offered in cooperation with the Department of Philosophy at Washington State University is very small, it is unusually innovative in terms of the intellectual connections it has with other disciplines, including neuroscience, engineering, and religious studies; and it has evolved a very unique mission in environmental philosophy that aligns perfectly with the environmental research strength of the University. Thanks to a flexible curriculum that permits six of twelve credits to be taken in other departments, many of the program's students are also pursuing studies in other areas, so that the program's aim seems to be to provide students with the tools to approach other disciplines and areas of work from a self-reflective point of view, with the ability to think and speak metacritically about whatever mode of discourse in which they happen to be. This is a highly unusual—and unegotistical—approach for a master's program in Philosophy that, for all intents and purposes, transforms the program into a degree in Applied Philosophy; but, in our view, it is appropriate for a department that conceives of its program as professional and that has no aspirations to offer a Ph.D.[242]

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[240] We are not suggesting that the program can support itself through faculty-generated funds to the same degree that programs in the STEM disciplines can, but comparison with peers clearly indicates that there are funds to be had for faculty energetic enough to write competitive proposals.

[241] There is an organization—Strategic Partnerships, Ltd.—in Washington, DC that helps programs in the arts and humanities find grant dollars from various sources. We have not worked with this company, but it has been highly recommended to us by several of our university clients.

[242] Since this is a stand-alone master's program, we have not looked at, and are therefore unaware of, the program's research productivity; but the faculty's approach to its discipline is state of the art, and we think it is unfortunate that it has no aspirations to a doctoral program, especially since the current Ph.D. programs in CLASS are not viable. They are not viable in part because they have no meaningful connections with other disciplines, which alone would give them the critical mass necessary to build a sufficient research profile for a doctoral program. The program in Philosophy does have those connections and could contribute significantly to the University's overarching strength in environmental research. We know of only one Ph.D. program currently in existence in this country—the doctorate in Environmental Ethics at the University of North Texas—but we think this is bound to become an important trend; and there are signs within the discipline of a movement toward a kind of public philosophy similar to the perspective of public sociology that has been
[continued on next page]

The conception of the program as professional is not yet fully developed. The program has the desire to attract non-traditional students but it has not yet created the means to attract such students. Like all of the programs in the comparative cohort, it is very traditionally delivered; and we think it could create quite a competitive advantage for itself—with non-traditional students—if it were to offer some form of distance delivery—hybrid delivery with part of the program online; accelerated weekend delivery at the remote campuses, etc. Nor is the program yet of a professional in its practices regarding revenue generation. The program's promotional materials indicate the availability of "a number of assistantships," though in our view, this is a program for which students should pay. The reality is that students in professional master's programs pay tuition; and this should be the case even if the program is preparing students for a doctoral program elsewhere. Such students are in the program either because they require additional preparation for a Ph.D. or because they need an experience to make them sure of their career intentions. In either case, the Department provides them with a service, and they should pay for that service.[243]

The goal of training students for Ph.D. programs elsewhere, in some ways, makes perfect sense for the Department, though we are not sure if, in the long run and given the current environment in the field, it is compatible with the program's view of itself as professional or with the program's desire to attract non-traditional students. This is a dichotomy the Department will eventually need to resolve, though we are confident of its ability do that. The Department's 2004 external review noted a number of serious challenges related to the then proposed master's degree, and it appears that the Department has overcome many of those challenges.

As it thinks through this problem, the Department will need to examine its notion that the degree it offers will open doors for students interested in careers in business and government. We feel fairly certain that the concentration in environmental philosophy will have this effect; but given the current climate in corporate America, it is not clear to us what doors the program's other tracks will open. We raise this question not to be critical, but to initiate a process of departmental self-analysis that will impact the future development of the program. In addition to the development of non-traditional delivery options, we think that, if the Department is seriously interested in the preparation of professionals—as opposed to academicians—it will need to offer a non-thesis option and develop some kind of practical experience for the track in environmental ethics, since there is competitive pressure from the program at Gonzaga University to do so.

If, in the end, the program decides that a professional orientation is the direction in which it wants to go, we think its current admission requirements are appropriate. If it decides on a more academic orientation, we think it should require for admission a minimum GPA of 3.0 and minimum GRE scores of 600 on both the verbal and quantitative portions of the test. It should also require submission of an analytical writing score.

While the program is the smallest in the comparative cohort in terms of faculty size, it is very well enrolled. The University of Montana, for example, has a significantly larger faculty

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adopted in many departments of sociology. Such a perspective seems to fit perfectly with the approach of this particular Department.

[243] Since it is not within our scope, we have looked only cursorily at the undergraduate core curriculum. The Philosophy Department clearly plays a role in the delivery of that curriculum, though it is not clear that the curriculum is taught by TAs, and so the Department's need for teaching assistants is unknown to us.

and yet it enrolls only four more students than the Idaho program. This is especially remarkable given the newness of the program. The program also seems to be experiencing little to no attrition at this point. As with other programs at the University, there is a degree of inbreeding in this program that makes us uncomfortable. Of its 14 current students, six—or 43%—have undergraduate degrees from Idaho. This is perhaps because the program is new; but in the long run, we think such a high percentage is unhealthy, and urge the program to begin a vigorous recruiting campaign.

Political Science

The Department of Political Science and Public Affairs Research, like the Department of History, is crucial for the College of Letters, Arts, and Social Sciences and for the University itself, simply because it offers the only Ph.D. program in political science in the state of Idaho and the only doctorate in the discipline social sciences in the University. Like the Department of History, however, it is so overloaded with conflicting priorities that it is impossible for the Department to execute any one of them with the attention to quality that they deserve.

The Department—with a faculty of seven—has the following obligations: It offers a large undergraduate program, with two tracks—a B.A. that provides a traditional liberal arts degree and a B.S. that provides greater training in quantitative studies. It offers a very large, active, and financially unproductive M.P.A. program that, in our opinion, drains resources from the Department that could be dedicated elsewhere. It offers a small traditional M.A. program that serves as both a stand-alone degree and initial training for its doctoral students. It offers a doctoral program that is barely functional; and it operates, as a service to the state, the Bureau of Public Affairs Research. On top of this, each faculty member is directly responsible for advising 25 to 30 undergraduates.

Under these circumstances, it seems incredible to us that the Department would attempt to offer three graduate programs, and we repeat for the Department the observation we made in the general section of this document related to the entire University. In response to faculty losses and budget cuts, the Department chose to attempt to continue doing what it had always done—that is, it chose to do more with less. We think that the more productive course would have been for the Department to implement strategic reductions and eliminations and to marshal its limited resources toward building existing areas of strength.

To our mind, an existing Ph.D. program should be the principal focus of any department that offers one. It is clear from the data we have and from our interview with faculty, however, that the focus of the Department is its large M.P.A. program. In fact, so far as we can tell—because of its limited financial resources and other pressing commitments—the Ph.D. program is the Department's last priority; and our impression is that most faculty have lost interest in it.[244] Given the budgetary reality of the University, we would ordinarily say that the M.P.A. ought to be, for the moment, the Department's highest priority, simply because it is capable of generating revenue that might ease the Department's financial struggles and eventually help to underwrite the improvement of its other programs.

[244] We do not mean to imply that faculty do not feel an obligation to keep the state's only Ph.D. program in Political Science going. They feel this obligation keenly, but as with faculty in History, they have ceased to believe that resources to run the program properly are forthcoming.

In this case, however, our understanding is that the majority of students enrolled in the program are, in fact, University of Idaho employees. Consequently, the program is subject to the same $5.00/credit tuition rule that affects programs in the College of Education. For this reason, we recommend that the University conduct a cost and income study of the program over the last five years; and if the program turns out to be the resource drain that departmental faculty present it to be, the program, in our opinion, should be closed.

We have a similarly negative view of the M.A. in Political Science. Our view, as we have stated frequently throughout this document, is that doctoral programs in the arts and sciences should accept students directly from their bachelor's programs, and that the traditional academic master's program simply serves as an impediment to the doctorate. Given the Department's current level of resources, we do not think that the program should be preserved for the sake of students who wish to pursue a master's degree only, since stand-alone master's programs are plentiful, and in fact there is one, as well as an M.P.A., at Idaho State.[245] Under the current scenario, the Department is forced to dual-number undergraduate courses so that graduate students can take them. It is common to attach additional requirements to these courses in order to make them more appropriate for graduate students; but there is no question that the quality of discussion in these courses is suitable for undergraduates; and the practice of dual-numbering courses compromises the quality of graduate programs.[246] Under these circumstances, why preserve a program that students can readily take at Idaho State?

All of the foregoing is simply a way of saying that the Department has no viable strategic direction. In the face of limited resources, it has been unable to judge appropriately what its unique contribution is to the state. Consequently, it has chosen to do everything that a traditional large department of political science ordinarily does; and it is inevitable, therefore, that the quality of everything it does is compromised. We do not point this out to "blame" the faculty, however; and we again raise a question that we posed in the general section of this document: What institutional forces—directives from interim administration; budgetary practices, etc.—were at work to encourage such poor choices? Undoubtedly, faculty culture is partly responsible, but we believe that institutional practices—at least immediately following the fiscal crisis—facilitated that culture.

To turn more directly to comparative indicators, we begin with the question that in some senses we have been discussing all along—program size. The faculty is the smallest one among political science programs in the comparative cohort for this study: seven Idaho faculty versus a cohort mean of 19.3. Not surprisingly, the doctoral program is under-enrolled—four versus a group mean of 39.3, or 0.6 students per faculty versus a cohort mean of 1.7 students per faculty. A doctoral program of this size, in our view, is not viable, since it cannot possibly perform research that will impact the shape of the field.

Despite this—and despite the fact that the program does no recruiting at all—the quality of its students is relatively good, with average incoming GRE quantitative scores that are among the highest in the comparative group.[247] Low enrollment, however, produces few

[245] Given this, we wonder why the Idaho Department chose not to focus on the doctorate.
[246] This issue affects the doctoral program as well.
[247] Should the University decide to continue the Ph.D. program—and it could do so only by deciding to hire additional research-oriented faculty—its strategic hiring plan will need to focus on faculty whose research is quantitatively driven, since this kind of research is more capable of attracting external funding than that which is narrative-driven. It is ironic that
[continued on next page]

degrees, and the program's doctoral degree productivity is the lowest in the cohort, on both a program and a per-faculty basis.

The program's research indicators are extremely poor. Over the five-year period of this study, the program won no external research grants at all. Possibly the faculty wrote no grant proposals; but we think the real significance of lack of grantsmanship is that the faculty's approach to its discipline is, as we indicated in note 220 below, primarily non-quantitative and, therefore—from the National Science Foundation's point of view—outdated. As a program, the Political Science faculty is under-published, producing only 23% of the mean number of publications in the comparative group. We think this is a function of faculty size and low enrollment, however; since on a per-faculty basis, the program is publishing at 76% of the mean volume in the cohort. Whether we look on a program or a per-faculty basis, Department research appears to be relatively non-influential. Program faculty receive only 43% of the mean number of per-faculty citations for the comparative group.

The overall student financial package is not competitive, since it does not cover remission of fees and subsidization of health insurance. The stipend itself is not bad—$12,000 versus a cohort mean of $12,900—but, of course, the need for students to pay tuition badly diminishes the stipend. As it is, the allocation of assistantships seems arbitrary and is not integrated into faculty research programs.

Given the availability of other master's programs in the state, we think the Department needs to turn its focus to the doctoral program or risk being judged as not fulfilling its unique mission in the state. This will involve both changing the orientation of the current faculty and the strategic hiring of new faculty, but it is clear that the situation cannot go on as it is. If resources for strategic investment are not available, we think that the Department's current graduate programs should be suspended.

Psychology

On the positive side, we acknowledge that faculty for the master's program in Psychology, which is oddly housed in a Department of Psychology and Communication Studies, have a national perspective on their discipline and are knowledgeable about the competitive landscape in which they operate—characteristics that are relatively rare among Idaho faculty. We note also that program faculty are eager for interdisciplinary collaboration; and in fact, the human factors track of the program is an active collaboration between faculty in Psychology and faculty in Mechanical Engineering.

Knowledge of its national competitive landscape has not necessarily led the program to strategic thinking or appropriate standards, however. We begin with the question of standards. When asked during our interview to identify their peers, the program listed virtually every human factors and industrial and organizational psychology program in the country, including those at institutions that could only be described as third- or fourth-tier.

This is not simply an academic question. It is a matter of calibrating performance standards for both faculty and students and for identifying a particular level at which the Department intends to function. External research awards for this Department, for example, are minimal (about $92,000 per year in the last five years), but there are significant external funds available for the field. Among the Psychology programs of similar focus with which we

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the program's current students seem better suited to a kind of research that is not currently widely available among faculty.

have worked over the last five years—Clemson, Kansas State, Michigan State, North Carolina State, and San Diego State—average annual grant income over a five-year period ranged from approximately $519,000 to more than $7,000,000. We think it is important for this program, on a number of levels, to identify the landscape in which it actually competes.

It is common for departments of psychology to divide themselves into a number of tracks that, for all practical purposes, operate as separate programs; but the trend we have observed in these particular areas of psychology is to merge separate tracks in human factors and industrial/organizational psychology into one. The practice at Idaho seems to be to keep the tracks as separate as possible—separate faculty, separate curricula, and very little overlap of core courses.[248] Apart from ordinary institutional inertia, we think the reason for the separation of tracks is that the I/O curriculum and, presumably, research activities are dated. In fact, it seems as though at least one of the required courses for the I/O track is a remnant from a former track in experimental psychology that no longer exists.[249]

We acknowledge that the Department has a fairly complicated history of reorganization and consequent turmoil, but we wonder what possibilities would open up if the human factors program were transferred to the College of Engineering. We think it is possible that moving in this direction could both raise the research profile of the program and increase opportunities for revenue generation, either in the form of increased tuition or in the form of external research grants. Such a combination could also eventually produce a new doctoral program. The I/O program could be integrated more closely with faculty in Communication Studies to form a degree in Organizational Communications, in which faculty from the College of Business could also participate.

As the program is currently constituted, we think that its application pool is too shallow, which is not usually the case for psychology programs. We also observe that the program's degree to enrollment ratio is less than 50%, which we find worrisome for this discipline. (Oregon State's program has a ratio of 85%.) It is possible that off campus students enrolled in one or both tracks take longer to complete than usual and are distorting the program's completion figure. In any case, this is an area that requires serious exploration and discussion.

Another anomaly related to the program is that it is entirely professional in content and audience. Consequently, the majority of its students should be paying tuition and fees. Because of the Department's heavy obligations to undergraduate service instruction, it is forced to grant assistantships to many of its students, and it is possible that, financially, the program does not break even.[250] As we have already indicated in the general section of this document, we think there are more cost-effective ways to cover undergraduate service instruction than with teaching assistants.

[248] The only requirements shared by the programs are two courses in research methods. At the time of our visit, Provost Baker was of the opinion that some I/O faculty were conducting research in human factors, but we have found no evidence of this.
[249] We are not sure why the experimental psych track at Idaho has been closed, but we note that nationwide, experimental psychology is disappearing as a field. Many programs in this field have transformed into some version of biological or physiological psychology.
[250] This is at least partly a recruiting issue, however. The Department does almost no recruiting for this program. Consequently, the number of students who pay tuition is much lower than it should be.

Since the program has to offer teaching assistantships, our deeper concern is that it pays its assistants embarrassingly low wages—$400 to $600 per semester or $1350 per year—figures that are not remotely competitive for the field. We think it is possible that this is related to the program's apparently low completion rate. At this degree of financial support, it is possible that the program attracts only those students who have been denied admission and/or funding elsewhere.

Theatre Arts

As we indicated with the master's program in Music, we do not believe that the criteria we ordinarily use to examine master's program are adequate for evaluating a program in theater arts, since they are unable to account for performance productivity and expenditures on vital equipment, guest artists, and events related to theater.[251] In the case of the Music degree, we were working with a professionally accredited program and were, therefore, able to obtain comparative data appropriate for the discipline for both the Idaho program and a group of program-selected peers. The M.F.A. in Theatre Arts is not professionally accredited, and so this option was not available to us. We have, therefore, had to rely on our general comparative sense derived from working with similar programs elsewhere, many of which offer graduate degrees.[252]

There are several very positive aspects of the program. Like the other programs in the arts, it brings a vibrancy of culture to the University's campus and contributes significantly to the quality of life in Moscow and the immediate area. Unlike other programs, however, it goes one step beyond and travels in order to deliver productions elsewhere in the state—a practice that unquestionably raises its profile and gives evidence of the benefits it provides to both its students and its external constituents. As we have both stated and implied throughout this document, this kind of action is crucial, and the program in Theatre Arts serves as model in this regard to other University programs.

The program's scope has historically been regional, but faculty feel that this is about to change, for several reasons. The program has recently been awarded a prize from the John F. Kennedy Center for the Performing Arts in Washington, DC, which has brought national attention; and faculty member David Painter has been appointed one of three members of the American College Theatre Festival Selection Team for 2008, which should also bring the program to the attention of a wider audience.

Beyond these elements, the program suffers from lack of funding and from being stretched too thin—conditions common both to theater programs nationally and to programs at the University of Idaho. There is some evidence that faculty in this program have dealt with these issues rather well. For example, though the program is forced to dual-number undergraduate courses for M.F.A. students—a practice that we think is always bad and should be avoided at all costs—it has been able to contain dual-numbering to 16% of the M.F.A. course requirements—far less than many other Idaho programs.

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[251] Those criteria are not completely useless, however, as they are with music, since there is an academic aspect of theater degrees that is typically not found in music degrees—courses, for example, in history and criticism.

[252] These include programs at Clemson University, Southern Illinois University Carbondale, Montclair State University, University of North Carolina at Charlotte, Loyola University Chicago, San Diego State University, Stony Brook University, University of Alabama Birmingham, University of Maine, University of South Carolina, University of Toledo, University of Vermont, and Michigan Tech.

Other lack of funding issues are more serious and require greater attention. Faculty reported to us—and this was confirmed in the Department's most recent external review—that there are some safety issues associated with the program's space, including ventilation concerns and fire hazards, that have result in warnings from the Occupational Safety and Health Administration. We think the University needs to investigate these conditions; and if they prove to be hazardous, it will need to work with the program to develop a plan to address them as quickly as possible.

We have no stipend data for programs in the comparative cohort for this study, since we assume that, by and large, master's students should pay their own expenses. It is inevitable that some students need to be funded, however; and arts programs everywhere generally pay stipends that are pitifully low. Our sense is that the Idaho program's stipends are low even for the field and are further reduced by the need to pay tuition and fees. In fact, student financial support is so low that we wonder if in fact the University has the resources to operate a master's degree in this discipline.[253]

Though we think that in some ways the program has dealt admirably with its shortage of funds, we also think that the degree of being stretched too thin is for this program extreme in the contexts of both University of Idaho programs and theater programs nationally. In other institutions with which we have worked, administrators decided to reduce or eliminate graduate degree programs so that the Department could concentrate on its undergraduate efforts. In the case of this program, there is also the option of eliminating that part of the Department devoted to film studies in order to build greater critical mass in theater.

Before the University decides on either of these courses of action, we think the Department ought to have an extended period to work with both the Office of Sponsored Programs and

[253] In order to both deal with this issue of funding students and in order to alleviate the Department's heavy teaching load, the program has developed the practice—apparently off the radar screen—of using budget funds allocated for other purposes to fund otherwise unfunded graduate students. This is a practice that is deeply troubling to us. The Council of Graduate Schools has developed a number of clear policies related to the use of graduate assistants. In general, these policies stipulate that graduate assistantships are primarily training and professional development experiences for students and that their principal purpose is not to help a department or some other entity cover its undergraduate instruction obligations. Accordingly, CGS, through its Preparing Future Faculty Program, has developed a set of standards and practices that govern the pedagogical training which teaching assistants should receive both before and during their teaching experiences and the regular feedback they should receive from faculty mentors who supervise their instructional activities. CGS has also stipulated a standard that no graduate student should devote more than 20 hours per week to his or her assistantship. Assistantships that fall short of half-time equivalency are strongly discouraged, since they generally are not adequate to support students financially and force students to seek additional means of employment. In our view, the practice of hiring unfunded graduate students off the radar screen makes those students primarily instructors of undergraduate courses rather than graduate students, and has the effect of potentially removing students from the whole range of instructional experiences, mentorship, support services, and regulated protections to which they are entitled. *We are not saying that Theater graduate students are currently being abused*; but we think that this arrangement opens the door to a host of issues, including legal liability, that could severely damage students, the program, and the University. We have encountered this practice in another university only once before, and our strongest recommendation is that it be abolished.

Institutional Advancement to raise funds from foundation support, grants,[254] and private donors throughout the state. Academically speaking, this is a fine program that, as we have said, contributes significantly to the quality of life of the University community; but there is currently not an adequate base of financial support for it; and program faculty as well as administrators need to take responsibility for increasing that financial base.

We are unable to judge the robustness of the program's admission efforts, since the faculty do not keep careful records related to the rate at which applications and admission offers convert to matriculations. It is certain, however, that the program would benefit from at least minimal student recruiting activities.

The ratio of degrees to enrollments over the last three years—12%—is the lowest we have seen in any master's program anywhere and gives us great pause. It unquestionably indicates issues with completion and time to degree. We have no doubt that these issues are related to student financial support—are, in fact, common to the field—but the degree for this program is, once again, extreme and requires the immediate and energetic attention of both faculty and administrators.

The number of program graduates is so small as to be insignificant; and consequently, it is impossible to discover meaningful patterns in post-degree placement. Of those who have graduated, however, we note that as many have accepted academic positions as have taken professional positions in the theater. As we say, the sample is too small to permit a judgment, but we raise the question of whether part of the program's being stretched thin relates to training students for both professional and academic jobs.

[254] One faculty member has already established a track record in grantsmanship. Perhaps this activity could be expanded, though we acknowledge that grant opportunities in this field are limited relative to the science and engineering—are limited, in fact, even related to the humanities. We refer the program to the organization to which we referred the Music program—Strategic Partnerships, Ltd.—which helps programs in the arts and humanities to find financial support. We stress here, as we did with the Music program, that we have no experience with or official connection to Strategic Partnerships, but that they have been highly recommended to us by some of our clients.

College of Natural Resources

Introduction

The College of Natural Resources is, historically, the strongest of the Colleges at the University of Idaho. It has certainly received the lion's share of external research funding for the institution; and for the last seven years—and probably long before that—has been the largest producer in the country of doctoral degrees in Natural Resources.[255] It is primarily because of the efforts of this College that the science and social science of the environment has become the dominant programming on campus and the principal area for which the University is known in the academic world; and it is all but a foregone conclusion that those natural resources programs eligible for participation in the NRC national assessment of doctoral programs will fare quite well relative to other programs in the country.[256]

There are, however, worrisome signs of impending trouble for the College. Enrollments in the College's various doctoral programs dropped substantially enough that it was forced to abandon its departmental doctoral programs and merge them into one College-wide program in Natural Resources.[257] More troubling is the fact that master's enrollments have always been too low and are also declining. We think this is caused, in part, by the way the College conceives of master's programs, which we will discuss in more detail below; but we think the main issue is that the College—like many other University of Idaho academic units—is in a state of transition that faculty have made unnecessarily awkward; and we think that unless it is able to navigate this transition effectively, the College's national standing in terms of both research and degree production will decline precipitously. The 2018 NRC Study—if there is one—will show quite a different picture of the natural resources enterprise at Idaho unless the College begins now to take active steps to complete a transformation that is inevitable.

For some time, there has been contention among faculty, including administrators, in the College. Though we have no knowledge of the positions of particular faculty, we think it is probably too simplistic to describe the conflict as between senior and junior faculty, though there is undoubtedly some of this.[258] The degree of contention and the particular form of the argument also varies from department to department, but we think that the argument relates to two principal issues. The first has to do with paradigmatic changes in the natural

[255]This level of success is evident even in small ways. Alone among the University's Colleges, for example, this College has produced professional and attractive marketing materials. Certainly it has the financial resources to do so, but it is also a question of pride in both national identity and level of accomplishment.

[256] This is, as we have already said in the general section of this document, a double-edged sword for the University. Research strength in natural resources and environmental science is wonderful; but opportunity for external research funding in these areas is limited relative to other sciences; and we think that one of the University's principal strategic challenges over the next decade or so will be to develop equal strength in the life and physical sciences, since we think funding patterns will continue to hold as they are, despite possible changes in national government.

[257] As we will discuss in greater detail below, the Departments nevertheless continue to operate the single doctoral degree as discrete departmental ones, and we think this represents a lost opportunity for the College.

[258] Because of the College's track record in excellence, its advancement and development efforts have paid off in ways currently unachievable for the University's other colleges. To some extent, this has made faculty less anxious to write proposals for competitive grants; and the College is suffering from a degree of complacency that is more often found in senior faculty and frequently resented by less senior faculty.

resources disciplines that have been fueled by disciplinary and interdisciplinary developments in the life sciences in general. We think that what is happening is that the natural resources fields are moving away from a scientific approach that is strictly ecological and characteristic of environmental science as it was practiced roughly in the 1970s and more toward perspectives, approaches, and techniques for the more complex study of ecosystems, some of which have developed in the physical—especially earth—sciences and the molecular life sciences. We think that the future of the natural resources disciplines is tied to closer alignment with these other sciences, and that the College has thus far been slow to embrace these changes.[259]

The other disciplinary change taking place in the natural resources fields is a closer alignment of scientific and policy studies, which the College has also been slow to accept. This is nowhere more evident than in the apparent disdain that many College faculty feel for the College's sole professional program—the master's in Natural Resources—precisely because to them it is focused too little on science and too much on policy and social science. We think that the cause of the disdain for policy studies is that Ecology as a science implied a policy directive within itself, since conservation was among its first principles. This is not the case in the next generation of the relevant sciences, however; and social science is necessary both to advance a conservation policy agenda and to study the effects of new technologies on both environmental and social processes. In our view, any approach that excludes or attempts to separate science and social science is misaligned with the development of the discipline.[260]

The second issue fueling contention in the College is the very high value that CNR faculty assign to the master's thesis, which is symbolic of the value they assign to the master's degree itself. We have referred elsewhere in this document to contemporary studies related to the doctorate, such as the "Re-envisioning the Ph.D." project spear-headed by faculty and administrators at the University of Washington and the Carnegie Foundation's Initiative on the Doctorate. Many of these studies were designed to address significant problems in doctoral education nationwide, including poor completion rates and increasingly—and unreasonably—long time to degree; and many of them also have found that the greatest impediment to timely completion of the doctorate is the master's thesis.

We would extend this by asserting that we think the academic master's program as it has been commonly understood is obsolete, since no one has been able to demonstrate convincingly that the separate completion of a master' thesis contributes to the development of more, different, or deeper research skills than those developed during the process of proposing and completing a doctoral dissertation. It is our view that students in *academic* fields who aspire to the Ph.D. should be admitted to doctoral programs directly from their bachelor's programs and that they should receive the master's degree in recognition of their achievement of milestones on the way to their completion of the doctorate. Apart from solving long-standing problems related to doctoral education, this approach opens up the possibility of *professional* master's education designed to advance the careers of students who have less need of independent research skills; and because the degree has the specific

[259] The intensity of the contention over this issue became evident to us through the degree to which faculty stepped gingerly over discussions of it.
[260] We wonder if the development of the interdepartmental doctoral degree in Environmental Science would have been necessary if CNR faculty had been less resistant to changes in their disciplines.

purpose of advancing students' potential for lucrative advancement in their careers, it should be paid for by the student, for whom it provides the greatest benefit.[261]

With specific reference to the College of Natural Resources, we note that the overwhelming majority of students who graduate with departmental master's degrees treat those degrees as terminal and take positions in business, industry, and government—and specifically do not enter doctoral programs at the University of Idaho or elsewhere. Given the job titles we have seen, we doubt that these students require the advanced research skills imparted by the master's thesis; and we think that the research orientation of CNR master's programs is precisely the reason that enrollments in them continue to drop. It is our opinion that each departmental master's degree should feature both academic and professional tracks, and that professional tracks should feature fewer courses in research methodologies and capstone projects rather than master's theses.[262]

This is not simply a question of being responsive to market demand. It is a question of conserving existing resources and generating new ones. To begin with, the amount of faculty time and energy devoted to supervising master's theses is significant, and this time could be spent writing grant proposals or increasing doctoral production, which we believe will become an issue for this College in the next five years or so. Second, academic master's programs in the manner of the current ones are, from a financial point of view, cost centers, since students enrolled in them are absorbed into faculty research projects and therefore need to be supported through assistantship funds. Third, students expect to pay tuition and fees for professional master's programs, and the revenue that can be generated from them is potentially significant—enough to underwrite the cost of more expensive research programs and other initiatives of the College and its departments. As we have already stated, we do not believe that the funding climate for environmental and natural resources research will change favorably over the next decade or so. In fact, we think that funding opportunities will shift more markedly toward the kind of scientific and social scientific research that the College has been slow to embrace; and in that event, the revenue generated by revenues from professional master's programs will be more or less sorely needed, depending on how quickly the College can transition to state of the art practice of its disciplines.[263]

We close this introductory discussion of programs in the College of Natural Resources by noting that the current Dean of the College is singularly strategic in his approach to managing it. Recognizing loss of critical mass as a result of faculty departures and declining enrollments, he has identified areas of focus for the College and is attempting to relate individual faculty research interests to those areas of focus. He is also fostering faculty research collaborations, both within the College and with faculty from other University academic units. In our view, his strategic initiatives are driven by market realities, an accurate understanding of the direction in which his fields are evolving, and the budgetary

[261] This is already the standard approach for graduate education in many of the sciences and social sciences. Based on our conversations with deans of colleges of engineering throughout the country, we think it will also become the standard for engineering disciplines.
[262] We obviously favor the inclusion of research methodology courses in the academic tracks but think these too would benefit from the requirement of a shorter research paper rather than a full-blown master's thesis.
[263] In anticipation of faculty argument that the currently scorned M.N.R. degree is appropriate for professional students and can generate revenue on its own, we respond that most students in the program have said that they prefer a departmentally based degree. This is why enrollment in the M.N.R. is also low. It also is not market responsive, but in a different way from the departmental master's programs.

and cultural realities of the University of Idaho. Unfortunately, the Dean and several of his progressive faculty have faced considerable resistance to his initiatives, resistance with its roots in both institutional and disciplinary inertia. Our hope is that this analysis of the College and assessments of its graduate programs will support progressive faculty and staff in their attempts to persuade faculty to move in new directions. As we have already stated, the transition—in our view—is inevitable, and its completion will take place. The question—vital for maintaining the leadership position in its field that this College has enjoyed for decades—is how to accelerate that transition.

Doctoral Program in Natural Resources

The assessment of the doctoral program in Natural Resources is problematic, in part because of the way that faculty in the College implement the program and in part because the natural resources infrastructures for universities in the comparative cohort differ significantly from one institution to another. As we have already stated in the introductory section for the College of Natural Resources, the doctoral program in Natural Resources is in theory one program. In reality, it is several programs, because students are admitted to the program through particular departments and faculty in those departments tend to treat what are technically their program tracks as discrete programs. Thus, at the University of Idaho, the doctoral program is of significantly greater in scope than almost any other doctoral program in the comparative cohort. Idaho's program encompasses each of the sub-disciplines of the College: conservation social sciences, fish and wildlife, forest products, forest resources, and rangeland ecology and management.

The doctoral enterprise at Iowa State, for example, is comprised only of fisheries biology, forestry, and wildlife biology. At Michigan State, the program consists of fisheries and wildlife and forestry. The remainder of the institutions in the cohort, except for the programs at the University of New Hampshire and UC Davis, offer doctoral education in only one of the sub-disciplines offered at Idaho. The program at New Hampshire, uncharacteristically for that institution, is massive—bigger even than Idaho's program—and encompasses all of natural resources and earth systems science.[264] The program at Davis unifies all of the natural resources disciplines under the umbrella of ecology. Consequently, though some general patterns are clear, there is no possibility of one to one comparisons among any of these programs.[265]

We point out these differences not simply to provide the necessary qualifications to our judgments but to raise the general question of structure. On a practical level, the departmental doctorates at Idaho were merged into one degree program because of declining enrollments and the consequent difficulty in offering required courses and the like. While the creation of the single degree has, for the most part, solved the problem of offering courses, it has not solved the problem of declining enrollments, despite the fact that departments in CNR have been more energetic in terms of recruiting graduate students than nearly any other unit on campus. Enrollments have tended to ebb and flow over time, and at least one department—Rangeland Ecology—has stopped actively recruiting as a result.[266]

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[264] We think that the program at New Hampshire is the one to watch, since it represents most closely what we take to be the structural future of the field—the merger of life, agricultural, and natural resources sciences with earth sciences.

[265] Given this diversity of structure, it is not surprising that the provision of program data from each institution is at a different level—sometimes at the level of the program, as in the case of Idaho, but more frequently at the level of the Department.

[266] There were, of course, additional factors to this decision that we will address below.

Our questions—and they are questions meant to spark College-wide discussions rather than recommendations—are several.

First, is the unification of the departmental degrees an opportunity actually to create a single, unified program that trains students to solve natural resources problems from a variety of disciplinary perspectives rather than simply a matter of convenience? Second, can the structure used to deliver doctoral education be reflected in faculty research groups? Third, does the way that faculty are organized—that is, the current departmental structure—help or hinder the resolution of natural resources questions? If it hinders, does this require relatively minor adjustments, such as the merging of unproductive units together or is the relative loss of productivity—in terms of enrollments, degrees, research earnings, etc.—a sign that particular disciplines are either dying or transforming into something else? The answers to these questions depends on how the faculty decides to deal with—and to shape—the evolution of the disciplines we discussed in the introductory section of this document for CNR.

However the faculty and administration decide these questions, they must take into account developments in the earth and molecular life sciences, and those developments must be reflected in the structure of the doctoral program. What would be the effect, for example, of organizing faculty around research in molecular genetics, with appropriate linkages to faculty in other relevant units, such as MMBB, so that a single group of faculty could study molecular genetics with various "objects"—humans, animals, plants, and forests? What might be built if the College fostered the bringing together of scientists from a number of units who have an interest in questions related to remote sensing and imaging? One purpose of all of these discussions should obviously be the preservation of the leadership position of CNR in the field and the strengthening of research and the doctoral program in natural resources; but another purpose must be to consider how the leadership in research excellence in the College of Natural Resources can be leveraged to build excellence in other areas of the University. We have a concern that research excellence in CNR currently benefits only CNR; and we think that if this concern—essentially the isolation of CNR from the rest of the institution—is not productively addressed, the cost will not only be continued relative weakness in the other units but the loss of research leadership in CNR itself—precisely because of the interdisciplinary evolution of the field we discussed in the previous section of this document.

All of our examples to date have focused on linkages of CNR and its doctoral program with other science disciplines. We have a particular concern that there is currently no viable institutional infrastructure for social science research outside the College; and we think this is an issue the University must address. As we indicated in our discussion of doctoral programs in the College of Letters, Arts, and Social Sciences, there is ample precedent among the land-grant institutions not to have strong doctoral programs in many of the disciplines of the humanities. There is no such precedent for most of the social science disciplines. Since the expense of building a social science infrastructure from the ground up is beyond the means of the University at this point, we think it makes sense that it build its capacity for social science research related to natural resources and the environment. For this reason, we think it is important for faculty in CNR to develop a greater respect for policy studies, not simply because doing so will enrich their own programs but because it will help to strengthen CLASS's efforts in the social sciences.

None of this discussion has been meant to imply that the doctoral program in Natural Resources is not strong. Though, like the College in which it is housed, it is in a state of

awkward transition, it is in fact quite strong.[267] Unlike any other program at the University of Idaho, it is quite large in size, well above the average faculty size in the comparative cohort, with a faculty smaller only than those in the programs at UC Davis and the University of New Hampshire, both of which have brought faculty from other academic units into their programs. The program is also very well enrolled, with a student population second only to the one at UC Davis. Enrollment per-faculty, however, is only average, falling precisely at the cohort mean; and so we think that there is a greater capacity for doctoral students than the program is currently handling. Michigan State, for example, enrolls three to four students per faculty, while the Idaho program, on average, enrolls one to two students per faculty.[268]

Surprisingly, students in the program are of relatively lesser quality than students elsewhere in the cohort, and we think this reflects both the program's lesser emphasis on social science and the rapidly dating nature of some of the faculty's approach to the discipline. Though the Idaho program's average incoming GPA and GRE quantitative scores are above the means for the comparative group, its GRE verbal and analytical writing scores are below average—substantially so. Disappointingly, its degree production is also slipping, slightly below the cohort mean on a program basis and substantially below on a per-faculty basis. This is important, since the program has long led the country in doctoral production, and this is not a leadership position that we think the program wants to lose.

In terms of average annual research earnings, the program is well above the mean for the comparative group, and ahead of every program in the cohort except for the one at the University of New Hampshire, though we think that the New Hampshire figure is artificially inflated because it includes earnings outside of natural resources. We note, however, that the programs at Michigan State, despite the relative narrowness of their scope, are coming quite close to the performance level of the Idaho program; and on a per-faculty basis, their earnings are much greater. In fact, average annual per-faculty research earnings for the program are significantly below per-faculty earnings for the cohort. Perhaps this reflects the complacency that we addressed in the previous section of this document. As is the case with most other programs at the University, publications are the program's weakest suit, with both the volume of publications and the citations they receive well below the average figures for the cohort, on both a program and a per-faculty basis.

Competitive indicators for the program are generally good, with a stipend level second only to that of the UC Davis program and an excellent time to the doctorate. We are concerned about the lack of health insurance coverage for students, however; and it is not clear if the program covers in-state fees. Lack of health coverage is not currently an issue in terms of this particular cohort, but it is bound to become one in the near term and will become a serious competitive issue for a program otherwise so well ranked. This will be an issue in terms of attracting top students especially.

Conservation Social Sciences

More than any other unit in the College of Natural Resources, the unit in Conservation Social Sciences suffers from the lack of an institutional infrastructure in the social sciences.

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[267] There is no question, however, that its performance indicators are beginning to change in direction, reflecting the transitions we have been discussing.

[268] We think these productivity ratios are badly affected by the way the University tracks data related to inter-departmental programs. Many CNR faculty mentor students who are technically in such programs, and the University cannot track this adequately.

As such, this faculty bears almost entirely the burden of social science research for the College and for the University.

We see a worrisome pattern of instability in applications and enrollments for both the master's and doctoral programs. In the doctoral program, average GRE scores are increasing and student quality appears to be getting better, but this trend is short-lived, and quality has been going up and down for some time. Master's enrollments have steadily declined. Part of the problem, no doubt, is that there is no real recruiting activity on the part of the program. Faculty directly recruit students on an individual basis as the need for research assistants in particular areas arises, but this is not the same thing as building a continuously refreshed pipeline of prospective applicants.[269]

We think that the name of the program is another issue. What, after all, is "conservation social science?" "Resources, Recreation, and Tourism" at least gave some concrete indication of what the program is about. Nor is the issue is the stipend, which is competitive for the field, or the program's track record—its placement record for both master's and doctoral programs is distinguished.

We believe that the program is missing opportunities at the master's level, especially since, despite enrollment instability, the program is bigger in size than its two closest cognates and nearest competitors—Montana's Resource Conservation and Recreation Management programs. We attribute this, as we indicated in the introductory section on the College of Natural Resources, to the program's over-emphasis on research—and, more specifically, to the faculty's preference for the master's thesis. Both Montana programs give a genuine option for the thesis, and most students choose not to complete it. In our opinion, especially since the majority of the program's graduates pursue work outside of the academy, the program needs to be reconceived as a professional degree—and this especially means the elimination of the thesis.

All of the programs in the comparative cohort are traditionally delivered, and we think this program could create a significant market advantage for itself by offering a distance version of the degree. At the least, the program could create a distance component, offered either online or on one of the University's remote campuses.

Fish and Wildlife Resources

The program in Fish and Wildlife is one of the stronger programs in the College of Natural Resources, both in terms of its enrollment trends and its competitiveness in the field. Thanks to less than adequate recordkeeping on the part of the Department, we do not have reliable figures on the program's application and matriculation patterns; but we do have the list of institutions from which enrolled students received their previous degrees, and this indicates that the program's application scope is international and that its admission environment is relatively robust—despite obviously greater capacity in both the master's and the doctoral programs.

The program's placement record is also robust; and though many of its master's students especially are slated for careers in industry and government, it has a more distinguished academic placement record than any other program in the College. Most of its academic

[269] At the same time, program recordkeeping related to enrollment is particularly bad and prevents the Department from both understanding its enrollment performance and learning from whatever patterns might exist.

placements are regional, which is perhaps natural, given both the program's location and its probable focus on "western" questions; but we think it should make a deliberate attempt to create a more national placement profile, especially since there are several programs among eastern land grants that have very similar curricula and research profiles.

The program faculty with whom we spoke repeatedly stressed that the program's stipends are not competitive, but we are unable to verify this on the basis of the information we have for the comparative cohorts in this study. The stipend itself is more than competitive for the field; but given the idiosyncratic nature of Idaho's terminology concerning tuition and its remission, we are not certain that what we would ordinarily all tuition remission is complete. If it is not—that is, if students are required to pay any part of their tuition and fees—then we think the program has a competitive issue at the doctoral level especially.

We believe that this program, like those of other departments in the College, is under-enrolled at the master's level because its master's program is overly research-oriented. We acknowledge, however, both that a greater proportion of this program's master's students enter Ph.D. programs and that the other master's programs in the comparative cohort place great value on research methodologies and the completion of a master's thesis. Perhaps this is typical for the field; but we point out that so long as this is the Department's dominant approach for the master's degree, that degree will be more of a cost center than a tuition revenue generator. We think it is at least worth it for the Department to experiment with offering a professional track for students without academic career ambitions, and that that track should not require the completion of a master's thesis.

Program faculty also noted that federal funding for fish and wildlife research is decreasing, and that though some states are filling in the funding gap, this is not true in the state of Idaho. For this reason, we think that the program should take particular note of the questions we have raised in previous sections of this document. What would happen if the program were to reconceive itself as a life sciences—versus a natural resources—discipline, seeking research collaborations with faculty in the University's biological sciences departments, many of whom are focused on research related to fish? Our sense is that funding is decreasing precisely because the discipline is changing, and faculty will need to adjust their research programs in order to continue to be eligible for external funding.

We can isolate specific external funding figures for two of the fish and wildlife programs in the comparative cohort for this study—those at Iowa State and at Michigan State. The Idaho program outperforms the one at Iowa State by a significant measure; but it doesn't begin to approach the funding level for the program at Michigan State. Though there are several factors at work in this pattern, we note that the Michigan State program has forged precisely the kind of research collaborations we have recommended here, and these have paid off quite well. The scope of Michigan State's natural resources research is significantly more narrow than the University of Idaho's, but the average annual external research funding for MSU's two natural resources programs is nearly equal to that of the entire College of Natural Resources at Idaho.

Forest Products

In the general section of this document, we recommended that the University create internal viability tests for graduate programs, with criteria such as minimum applicants, enrollment, degree production, and the like in order to determine whether they should remain open or be closed. In our opinion, this is one of the programs that should undergo such testing. The enrollment figures that we have, from both the program and from Institutional Research, suggest that the program is too small to survive; and since most of its students are of

necessity taking courses elsewhere in the College of Natural Resources, we wonder why Forest Products needs to be a separate department with separate degree programs.

Not only is the program possibly not viable in terms of enrollments and degree production, it has positioned itself to be a financial drain on the College. The majority of its students are not pursuing Ph.D. programs and are interested in jobs in business, industry, and government. Such students generally pay tuition for programs that lead to a professional degree; yet this program fully funds all of its master's students with stipends of $15,000 to $16,000—an unusually high stipend for a master's student. We see this as an unwise and un-strategic use of resources.

As with other programs in the College of Natural Resources, the Forest Products program is very research oriented, and from that point of view, has a number of competitive advantages. It does not, however, have an identity in terms of a professional master's program, and is thus missing its market. We suggest the program needs to conduct a review of its research interests and activities to determine if they are aligned with the industries in which its graduates are working; and we think that review will indicate that its target industry is not simply wood products, but biotechnology. If the Department can make this adjustment in its research program, it is possible that it could begin to attract professional students from the greater Northwest and solve its viability problem. Naturally, changes in the faculty research program would need to be reflected in the curriculum.

Currently, all of the master's students in the program are working on research-based theses. From the Department's point of view, this is appropriate, since all of its graduates will work in product development research. We point out, however, that the cognate program in the comparative cohort—the one at Oregon State—requires simply a research report; and we believe this to be the dominant practice in those institutions that still have a separate degree program in Forest Products. The reality of the field is that separate forest products programs are either being absorbed into larger forest resources programs or are transforming into something else; and it is not likely, therefore, that there will ever again be a sizable market for a doctorate in forest products. The market for this program, in its current form, is for professional students seeking product development positions in industry. To be responsive to market demand, we recommend seriously to the program that it at least offer a non-thesis version of its master's program.

The degree to enrollment ratio for the master's program is very low, suggesting that as few as one third of the program's students complete the degree either at all or in a reasonable period of time.[270] The probable cause of this is that the program does not have a fixed curriculum but uses an individual plan of study approach—a plan of study drawn up by the student and an elaborate faculty committee structure more appropriate to a doctoral degree.

In the self-study that the Department provided to us, it constantly uses the phrase "graduate program," indicating that they conceive the master's and doctoral programs as one. We think this is precisely the issue. The five-year placement record for the Department consists of one student who entered a Ph.D. program at Louisiana State and five students who took non-academic jobs. This record should tell the Department something. It does not have one graduate program, but two; and its master's program requires a professional orientation.

[270] The Oregon State program had only one student during the period of this study—probably as good a sign as any that the discipline in its current form is dying—but it graduated that student.

The Department also says in its self-study that its resources are currently too limited to fulfill the outreach component of its mission. Its proposed solution for this—to hire an extension specialist—is, in our view, both outdated and ineffective, since it could have only the smallest of impacts and add cost to the program. We think the more effective solution would be to develop an online or some other distance version of its program, which would then reach a much wider audience.

As we have already indicated, there is only one cognate program to Forest Products in the comparative cohort for this study and that program has had only one student over the last three years—facts, as we have said, that indicate fundamental changes in the discipline. Given this, comparing the two programs seems almost like posting a letter into the distant past; but doing so is another way to make the necessary point. In terms of admission prerequisites, the OSU program asks only for a background in mathematics and science; the Idaho program wants a specific degree in forest products or a related field. We think this signals the Idaho program's excessive research orientation and a preference for a degree of specialization that is probably unhealthy given the evolving direction of the natural resources fields.

The comparison to be made in terms of degree requirements we have already noted, but it bears repeating. The Idaho program encourages students to write a master's thesis and says that most students do. The OSU program requires simply a research report. We acknowledge that the Idaho program's enrollment—as small as it is—is much larger than that of the program at Oregon State; but so far as we can tell, the Idaho program has difficulty pushing its students through in a reasonable amount of time.

Forest Resources

In terms of science, the graduate programs in Forest Resources, like others in the College of Natural Resources, are in an obvious state of transition—away from what the program director termed "empirical science" and toward what she referred to as "more process-based approaches to ecosystem studies, such as nutrient processes and water cycles and processes." The program director also stated that the program is currently turning away graduate students, usually because the areas prospective students want to study do not match faculty research interests or because the relevant faculty do not currently have grants to support students. This combination of statements leads us to believe that program faculty are deeply divided on fundamental issues, transitioning away from ecology—that is, environmental science as it was practiced in the 1970s—and toward something like forest molecular genetics and a predictive approach to ecosystem research, a transition that is taking place in most life sciences programs in the country, as well as in those fields that are influenced by the life sciences, including the natural resources disciplines. This transition has proved to be awkward for faculty in many institutions; but, as we have stated elsewhere, it is inevitable in the field—and deeply necessary for this Department if the Department is to renew its focus on graduate education and research, since external research funding is clearly and solidly on the side of the "newer" science.

The current ratio of Ph.D. to master's students in the Department is off, as it is elsewhere in the College, with greater emphasis on the doctorate in terms of numbers if not effort; and we think this has to do with the lack of a viable master's program.[271] The immediate effect of this is that the master's program is, for the College and the University, a cost center rather

[271] We acknowledge that this situation has begun to change since the time of our visit, as many of the Department's students who participated in the IGERT program have graduated.

than a source of revenue, since all master's students are currently supported.[272] Over the last several years, the enrollment of new master's students has been volatile—in our opinion, because the current form of the degree is not responsive to market demand—that is, it is a research degree appropriate for preparing students to enter a doctoral program and not a professional degree for students desiring to advance themselves in non-academic positions.

Lack of market responsiveness has not only led to poor enrollments. It has caused the program to have a weak applicant pool altogether. As of now, nearly 75% of the students to whom the program offers admission actually accept these offers and matriculate, but there is no question that the pool is dwindling and it stands to reason that the "yield rate" may also decrease over time. This is a serious issue for an institution with a principal strength in natural resources and the environment. Another sign of the market unresponsiveness of the degree is the program's placement record. 25% of its master's degree alumni enter a Ph.D. program; 75% of alumni go into non-academic positions. In our opinion, market demand is clear; and the Department should respond by offering a professional—non-thesis—track in its master's program.

The program's enrollment problems are compounded by the fact that it has stopped its recruiting activities. As a result, a significant percentage of its current domestic graduate students come from the state of Idaho.[273] We think this is also a serious issue for an institution with a principal strength in natural resources, programs in which should have a national audience of prospective students who want to study with leaders in the field and who, at the master's level, will pay to do so.

Part of the program's being unresponsive to market demand is its lack of understanding of the competitive environment in which it operates. It cannot at this time identify those programs to which it loses potential applicants—and we would think that this would be a question of burning interest to the program, given the increasing rate at which students reject its offers of admission. Our sense is that if the program cannot identify to whom it loses students, it also cannot identify why it loses students; and we think that if the program continues to remain so ignorant of market conditions, it will continue to face declining enrollments—not only in the master's program, but in the Ph.D. This is not simply a question of market ignorance, however; it is also a question of the obstructed transition to which we referred at the beginning of this assessment. Apart from the area of remote sensing, every one of the focus areas which the Department is attempting to build strikes us as outdated; and, in our opinion, it is urgent that the program now begin to pursue research collaborations with the molecular life sciences, as we stated in the introductory section for the College of Natural Resources.

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[272] The open faculty bias among program faculty is not to take students whom they cannot fully fund—an appropriate bias for a doctoral program, but not, in our opinion, for a master's program.

[273] This is a complicated issue that cannot currently be resolved by the data we have. Traditionally, the Department has drawn its graduate students from across the United States. Some students, however, come to Idaho from elsewhere for their undergraduate degrees and elect to continue for their graduate programs. Students are also eligible to seek Idaho residency shortly after moving to Moscow. In the database from which our data reports were drawn, such students appear to come from the state of Idaho and not from elsewhere. Our point is that if the program is not actively recruiting graduate students, its national draw will inevitably be compromised.

Because graduate enrollment has become unstable, the Department has come to depend on dual-numbered courses for its special topics offerings to graduate students. As we have stated frequently throughout this document, we believe this to be a desperate measure of last resort that inevitably compromises the quality of graduate education.

Dual numbering is not simply an effect of a lack of critical mass of graduate students. The faculty profile is especially fragmented, and no one of the areas in which it focuses has critical mass, though two areas—forest ecosystem management and ecology and ecosystem processes—are approaching critical mass. Ironically, these are precisely the areas away from which we think the discipline is transitioning. The Department's grant record indicates that it also is straining away from these areas and toward areas which give greater emphasis to collaboration with the earth and life sciences, but the transition is slow—too slow—and this undoubtedly has to do with the departmental argument over what constitutes current forest science and the proper balance between forest science and forest management.

In terms of admission requirements, we think the Department would benefit from stipulating minimum scores on the Graduate Record Exam—500 for verbal; 600 for quantitative; and 4.0 for analytical writing. In terms of degree requirements, we note that several of the program's competitors, including the program at Washington State, offer professional tracks in their master's programs. On paper, the Idaho program offers a non-thesis option, but faculty clear push students toward the thesis; and other programs clearly offer a genuine choice.

Natural Resources (MNR)

Unfortunately, there is no way to begin this assessment of the master's program in Natural Resources delicately. At this time, it is, from the perspective of CNR faculty, the ugly stepsister of the College of Natural Resources—for several reasons. It is a genuinely professional program, whereas all of the College's other master's programs are research-oriented. Nor does it have a departmental home, whereas all other CNR graduate programs do. In fact, the program has a separate admissions committee from other College programs, as though it is not considered to be part of the ordinary work of College faculty. In terms of revenue generation, however, it is the most important master's program the College offers; but we note that apart from the Dean, who talked about it briefly, and the program director, no other faculty member in the College so much as mentioned it. Consequently, we have relatively little information on program requirements and other important matters.

The program's status as the ugly stepsister of the College illustrates precisely the point that we have been making throughout this chapter on the College of Natural Resources. Most of the College's faculty are largely unaware of and/or unresponsive to the needs of professional master's students. This precludes College and Departmental flexibility to reallocate faculty time to more strategic approaches to graduate education, denies the College's and the University's obligation to serve the current and emerging needs of the professions, and deprives their own departments, the College, and the University of potentially substantial revenue streams.

We have wondered throughout this assessment if the better alternative would be to eliminate this program in order to introduce professional departmental master's programs, especially since the director of this program has indicated that most of its students have expressed a preference for discipline-based degrees and that programs at other universities have this competitive advantage over this program. It is clear, however, that there is a market need for this program. Of the twelve institutions in the comparative cohort that we are using for master's programs in this study, eight have interdisciplinary master's degrees

focused on natural resources or environmental administration and policy. Whatever form this area of study takes, therefore—a stand-alone master's program or professional versions of departmental master's degree programs, we think that the College needs to improve its attitude toward policy studies and embrace them as a legitimate aspect of the field.

Perhaps this process is already underway. The College has appointed a new director for this program, is tightening up admission standards, and is making funds available for it; but none of this will make any significant difference if the majority of faculty continue to regard policy studies as less than appropriately rigorous. The very nomenclature of the degree—M.N.R.—suggests that faculty consider the degree less than credible; and we think that the program's graduates would be more competitive in the marketplace if they had an M.A. or an M.S., depending on the amount of science included in the program core or as a prerequisite for admission—and considerable science there must be, since the clear direction of the field is to produce science-based policy analysts.

At the time of our visit, the program was considering the introduction of two tracks and four areas of specialization, all of which we consider less than optimal. As we have already indicated, the fact that the program is focused on policy and administration does not mean that it should be deficient in science. We think that the better approach is to organize tracks and specializations around the particular scientific areas that will be the subject of planning and management rather than around planning and management techniques. In determining its future shape and direction, one of the analyses that the program needs to perform is a tracking of the experiences of its alumni. Has this degree in fact advanced their professional careers and how has it done so? That it has done so is, at this time, a supposition that needs to be demonstrated.

Though the majority of students offered admission to the program choose to enroll, the applicant pool itself appears to be neither numerous nor of particularly high quality. In our view, this indicates that the program needs to initiate a serious student recruiting campaign. In terms of admission requirements, we think that the program needs to require a minimum GPA of 3.0; and since it is a professional degree, we think it should also require one or two years of related job experience, as is common in professional degree programs. It should not require that students take a standardized test. We think it would also be helpful if the program designated a variety of science areas as prerequisites for admission.

In terms of degree requirements, we think that the credit hour requirement is well aligned with that of competitors, but we think that the program should stipulate specific science and management cores. The program currently has a major competitive advantage in offering an online version of itself; though thanks to lack of marketing and recruiting, this has not yet resulted in substantial enrollment increases. We also think that the curriculum should require some internship or other practical experience, since this is a prominent feature of he programs at both Boise State and the University of Oregon.

As the program director indicated, the program is currently under-enrolled, though two programs in the comparative group have smaller enrollments. We are more concerned that the degree to enrollment ratio is the lowest in the cohort and indicates a low completion rate, long time to degree, or both. We are not sure why this is the case; but we wonder if marginal students apply for admission to this program and then later transfer to departmental master's programs.

Rangeland Ecology and Management

The Department of Rangeland Ecology and Management began its interview with us by providing a brief history of the program in the context of the College of Natural Resources.

That history focused on the merging, roughly several decades ago, of the departmental doctoral programs into one College-wide doctorate because of small faculty sizes in the departments. That merger may have partially solved the problem of offering courses in the doctoral program, but it did not solve the problem of small faculty sizes in the departments; and given the current economic climate for the University, this problem is not likely to be solved in the foreseeable future.

The particular face of that problem in Rangeland Ecology and Management is that the Department has a tenure-system faculty of only six professors[274] who are currently "focused" in seven areas of research: ecophysiology; fire ecology and management; invasive plant management; grazing; restoration and rehabilitation; flood plain and riparian ecology; and spatial ecology. We think that the Department needs to look at both its ongoing research projects and the long-term research interests of the faculty and determine if it is possible to develop no more than two unifying research themes that would give a coherence to such a broad array of research. That determination, in our view, should take account of possible research collaborations with faculty in other departments, both within and outside the College of Natural Resources. We think it is particularly important for the Department to complete these discussions before departmental faculty retire and need to be replaced, since our sense is that faculty hiring will need to happen strategically rather than on a replacement basis.

Graduate enrollments in the Department have tended to ebb and flow for some time, and the Department has in fact largely stopped its recruiting efforts. The principal indication of this is that enrollment for the Department is simply something that happens—versus something that can be managed and controlled. In a very important way, this decision makes the Department difficult to manage, since it cannot control the interests of its students and, therefore, cannot control the courses it offers and when it offers them. It also cannot control how students contribute to faculty research programs and what, therefore and ultimately, what the reputation of the Department will be in the field.

At the moment, enrollment in the Department's master's program is about average for enrollment in the comparative cohort, though in fact, we think it is under-enrolled, since natural resources is the principal strength of the University. As with other departmental master's programs in the College, this one is conceived as a preparation for doctoral study rather than in professional terms, and we think this accounts for low enrollments. As with other departmental master's programs, the graduates of this one primarily seek jobs in industry and government; and in our judgment, therefore, the program is not market responsive.

At this time, many of the programs students are from outside the United States. We see nothing wrong with this per se; but we note, as we learned from a faculty member in this Department during our first engagement with the University in 2001, that range land constitutes the largest segment of land mass in the United States. Given this, and the fact that there are so few programs in this area, there ought to be a relatively large market for range science in domestic students. An active recruiting program could reach that market.

Since enrollment in the program is so small, we consider its 20% attrition rate to be high, and we attribute this also to the non-professional orientation of the program. We repeat that

[274] We are concerned that such a small faculty size—the smallest in the comparative cohort for this study—could preclude the possibility of the Department's offering a large professional degree.

the majority of its master's alumni over the last five years have been placed in agencies rather than academia, and this calls, in our opinion, for changes to the program. Currently, all but two of the program's master's students are funded by the program. Though we recognize the Department's need for research assistants and agree that it is necessary to fund RAs, we also think that retooling the program for another audience—or at least offering a professional track—would attract a critical mass of students who pay rather than who are paid for.

In addition to the research foci cited above, the program also states that it focuses on public land and on western issues. Western issues makes great sense to us, naturally; but though we usually prefer narrow focus for programs with limited financial resources, we think that in this case, the focus on public land limits the program's impact on the environment. So far as we know, the greatest impact on rangeland environment is private development, and so we think the program would do well to pay attention to private land.

It strikes us that the Department's thinking about itself is vague and uncritical, possibly because many current faculty worked for the Department when it was much larger, and so their point of view relates to a sense of both the public sphere and the land grant mission that is no longer viable.[275] We think that the program is ripe for a retreat—not of its entire faculty but of those who are likely to remain employed by the program for the next decade and therefore have a stake in its future. That retreat needs to focus on what distinctive mission is possible with current resources or slightly increased resources and should consider this question in light of possible collaborations with faculty outside the Department. Our sense is that, at least in terms of funding, the future of this program is connected to remote sensing and its various applications, and we think that this should drive the Department's planning. The Department also needs to plan for a large enough enrollment of professional students to decrease its current over-reliance on dual-numbered courses.

Comparison of this program with others in the comparative cohort yields several suggestions. In terms of admission requirements, we think the program should require a minimum GPA of 3.0—not 2.8 with a 3.0 in the last 60 credits. It should also continue to require the GRE, but we think it should refrain from stipulating a minimum score. In terms of degree requirements, the program is competitive in the area of credit hours; but its closest cognate and nearest competitor—the program at Oregon State—advertises loudly that full-time students can finish their programs in two years, while the Idaho program is silent. In our view, it is not simply a question of publishing a time to degree. It is a question of plotting out a sequence of core requirements and electives that demonstrate that two-year completion is possible. We make this suggestion not merely for the sake of competitive marketing. The program's degree to enrollment ratio, while respectable in relation to the entire comparative cohort, is much lower than the one for Oregon State, the Idaho program's principal competitor.

[275] Though we do not have enough information to make a definitive judgment, we think it is possible that the program's practice of science is as dated as its sense of the land grant mission. This seems to be implied in an unhelpfully vague statement in the program's most recent external review: "The University of Idaho and the College of Natural Resources need to increase their commitment to the scientific and educational understanding of rangeland ecology and management, not only in the state of Idaho, but also the nation and the world." If by this statement, the reviewers meant that there needs to be less focus on ecological management and more focus on the biological, geological, and geographical study of range terrain, we agree with them.

College of Science

Of all the academic colleges at the University of Idaho, we are most concerned with the quality and condition of the College of Science. Though it has one program that is among the University's strongest, even that program is beset with issues that have to do with its isolation in the College. Another program is quite good, but it is *very* small and is also isolated from collaboration with other units that might help it build excellence and critical mass in at least one of the areas in which it has strength. Beyond this, we need to say that at the time of our visit—and it is highly doubtful that significant improvement could have been achieved since under interim leadership—the College was dysfunctional in almost every conceivable way. Whereas it should be the University's principal center of grantsmanship and the largest beneficiary of indirect cost allocations from external research funds, it is instead obsessed with the production of undergraduate student credit hours and the delivery of *service* instruction.[276]

We are specifically *not* pointing a finger at any of the College's previous deans. The College has had more than its share of changes in leadership and restructuring. That history of disruption, coupled with the University's fiscal crisis, has produced a *collective* style of leadership, and especially budgeting, that has provoked a downward spiral for the College, implementing a set of priorities that caused most of these programs to develop in ways that are out of touch with state of the art science. More importantly, it forced the development of departments into disciplinary silos with walls that are all but impenetrable. For example, there is a Geology department with research interests that completely separate it from appropriate alliances with the Department of Geography—in the same college—and with rare exceptions, from faculty in the College of Natural Resources. There is a Physics department that, until recently, touched virtually nothing else in the University and is, according to the faculty with whom we met, overly dependent on EPSCoR funding, and a Chemistry department that is only now beginning to develop—at least ten years too late—work on the biological applications of Chemistry. Worst of all, there is a strong Biological Sciences department that, if it had been permitted greater collaboration with other University units in the life sciences, might have developed greater strength in human biology and less focus on ecology and evolutionary biology, disciplinary areas that are no longer at the cutting edge of the field and are relatively less fundable than other disciplinary areas that might have developed.

According to the previous Dean, the College has stated research foci in nanoscience, informational biosciences, and health and ecology. It is also developing strength in the earth sciences, though it is unclear at this point if she saw that strength in Geology or Geography. The developments in both nanoscience and health appear nascent, though there is a great focus, as we have already indicated, on ecology.

[276]Though this appears true in all of the University's colleges, there is a decided bias in this College against the use of contingent faculty, with the result that tenure system faculty who should be spending most of their time writing proposals, conducting research, and mentoring doctoral students—which is the principal function of science faculty in research universities—are bogged down in teaching lower division courses, frequently to non-majors and on an overload basis. When we questioned this bias against the use of contingent faculty, we were told that they do not conduct research; but neither do many of the tenure-system faculty in this College to any meaningful degree, even if they desire to do so. We think the real issues behind the bias is an ethic of egalitarianism and a fear that contingent faculty will somehow erode the position of faculty in the tenure system.

We are sensitive to the College's history of organizational turmoil and to the fact that there is a search in progress for a permanent Dean of Science; but if we were free to choose, we would combine the College of Science with the College of Letters, Arts, and Social Sciences to produce a single college of arts and sciences.[277] We believe fundamentally in the arts and sciences model, since the experience of many research universities is that this structural arrangement is most productive in terms of creating multidisciplinary intellectual stimulation.[278] We also think that combining arts and sciences has the effect of helping to fund perennially poor programs in the humanities and social sciences, since a combined college could spend some of the IDC allocations generated by grants in the science disciplines to support programs not capable of significant grantsmanship.[279]

Biological Sciences

Despite the administrative turmoil of the College in which it is housed, we are delighted to note that the graduate programs in Biological Sciences are among the strongest in the University, and we have many positive observations to make about them. Unlike most graduate programs both in the College of Science and elsewhere in the University, this program is outstanding in terms of recordkeeping, energetic in recruiting graduate students, and consequently, selective in its admission of students. We acknowledge also the strong entrepreneurial spirit in the Department and its willingness to engage in grantsmanship in order to be competitive in providing financial support to its students—though, unfortunately, the current financial package is competitive in neither the comparative cohort for this study nor the field in general. The Department's selectivity in admissions also results in positive outcomes for its students. Its academic placement record is superb. As a result, this Department comes closer than any other unit in the University—with the obvious exception of Natural Resources—to achieving national prominence. As a result, we consider it to be a prime candidate for institutional investment, either on its own or in conjunction with other life sciences groups.

None of this is to suggest that the Department is free of challenges. Its principal challenges are those of most of the University's academic units: insufficient time and other resources and lack of critical mass. Lack of critical mass is more consequential for this program than it is for most others, however, since it is the program's principal obstacle in achieving a national reputation, especially since the program's current three research groups have little to no coherence with one another. Among the solutions to this problem we have considered is the movement of the MMBB program to the College of Science in order to produce a single biosciences program, though we are specifically not making this recommendation at this time because, though it would clearly ease critical mass issues for both units, we are unable to judge the negative effects it might have on the College of Agriculture and Life Sciences. Though we are not making a specific recommendation at this time, we think that this is an option that deserves careful consideration by both the Departments in question and University administrators.

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[277] We might also move the School of Music and the Department of Theatre and Film to the College of Art and Architecture, both to strengthen that College and to make a college of arts and sciences more manageable.

[278] President White may wish to consult President Andrew Sorensen of the University of South Carolina, who, several years ago, successfully merged two colleges into a powerful College of Arts and Sciences.

[279] For the sake of clarity and to answer objections in advance, we state that the bulk of IDCs earned by science programs should be spent on the improvement of research efforts in those sciences.

Because we are urging consideration of this question, we want to be particularly clear about what we are *not* recommending. We are *not* proposing—for reasons of scientific currency and in order to maximize the possibility of external research funding—the creation of a doctoral program in general biology that is focused on ecological or environmental questions and that is dominated by research that employs a whole organism approach. Instead, we are suggesting the merging of the two groups, either officially or through the formation of research groups that include other faculty working in the life sciences so that the groups themselves constitute critical mass in contemporary areas of biological research. One of these groups will certainly focus on reproductive biology, which would also involve collaboration with faculty in the School of Molecular Biosciences at Washington State, who are recognized nationally as one of the foremost research groups in the country working in this area.[280]

To us, the focus of the other research groups is unclear at this point, but we think they should serve several purposes. First, they should lead biosciences faculty further in the direction of human and animal biomedical science so that this area has at least equal prominence with questions of environmental import. Second, they should advance research—whether the objects of that research are humans, animals, microbes, plants, or ecosystems—in molecular biology, genetics, and genomics, so that these areas eventually supercede if not replace altogether research in whole-organism biology. Third, they should seek to open up possible collaborations with scientists in the engineering disciplines especially, in order to introduce new work in such areas as biomaterials, biomimetics, and sensing and imaging. Accomplishing these objectives is critical if the University is to advance its grant profile in the biological sciences.

Whether the Department of Biological Sciences is planning for its short-term future in its current form or its long-term future in collaboration with other units, we think it is important for faculty to perform a thorough analysis of the competitive landscape in which they are conducting their work. What are the most prominent programs in the field addressing? Where are the greatest critical masses of doctoral students and post-docs? What are the topics that command the greatest attention from the federal funding agencies?

Direct comparisons of this program with cognate programs in the comparative cohort are difficult for the same reason that it was difficult for the MMBB program. No biosciences enterprise in the institutions in the comparative cohort—or anywhere else—is precisely the same in terms of structures. In some cases, we are comparing this program with single programs elsewhere; in other cases, this is not possible. We have tried instead to extend the comparisons to include programs that address most of the scope of the Idaho program, which at this time is very broad.

That said, we note that the Idaho program has the second smallest faculty in the comparative group and is roughly only half the size of the mean faculty size in the cohort. Not surprisingly, its doctoral enrollment is the smallest in the group—only about 21% of the mean enrollment in the cohort—and its doctoral student to faculty ratio is also the lowest in the group. We think this is due, in part, to program faculty's commitment to the academic master's degree as a means of preparing relatively less strong students for careers in biosciences research. Our opinion is that it is critical for faculty to abandon the Department's separate master's program and to focus on the doctorate, awarding the

[280] Collaboration with WSU faculty in reproductive biology is already underway.

master's degree in recognition of students' achievements of milestones en route to the doctorate. If there is any field that requires focus on the doctorate, it is surely this one. The department may wish to continue professional degrees in bioinformatics or biotechnology; but in our opinion, these should be professional degrees that do not require completion of a master's thesis and for which students pay to enroll. We believe that in no case should they be the principal focus of the faculty; and our opinion is that if resources are not sufficient for faculty to focus on all of its programs, it should abandon the master's degree in favor of the doctorate.

Despite low enrollment, the Department has excellent students. In terms of average incoming GRE scores, it has the highest scores in the comparative group in both the verbal and analytical writing sections of the test and among the highest scores in the group for the quantitative section. However, doctoral production is quite low at only 83% of the cohort mean. We think the reason for this is excessive time to degree, which needs to be reduced by about 14 months. We attribute this in part to the Department's commitment to the master's degree.[281]

The Department's research indicators are mixed. On a per-faculty basis, its average annual grant income is well above the mean earnings for the comparative group: $257,000 per-faculty for the Idaho program versus the cohort mean of $169,000 per faculty. The publication record is not quite as good. On a per-faculty basis, they are publishing only 79% of the mean per-faculty volume for the cohort. This performance is not bad, but reflects faculty priorities imposed by the College and faculty job descriptions that assign lowest priority to research. The citation record, probably because of lack of critical mass, is less impressive, with individual faculty receiving only about 54% of the mean number of per-faculty citations for the group. The program also has the smallest amount of research space of any program for which we have these data, but we expect that the collaborations we envision will alleviate this problem.

We acknowledge that the doctoral stipend has improved because of faculty grant efforts, but it is still uncompetitive for the life sciences. It is not clear to us if the program is able to cover in-state fees, but if it cannot, the stipend is even more uncompetitive. A competitive financial package—and it is crucial for this field—is complete coverage of tuition and fees, full subsidization of health insurance, and a stipend of about $20,000.

Chemistry

Perhaps as a result of lost faculty lines and diminished budgets, both the management of the graduate program in Chemistry and its mentoring of graduate students appear to be less careful than it could be. During the Department's interview with us, the program director stated frankly that graduate students disappear at the end of the spring semester and that no one knows for certain if they are returning until the following fall semester—this in a Department that has averaged a doctoral enrollment of fewer than 30 students over the last three years, an unusually small enrollment for a doctoral program in Chemistry.

The program's application patterns give concern. Last year, the program had only 35 applicants, the smallest Chemistry applicant pool we have ever encountered. The

[281] It is possible that degree completion counts are off because the Department has only relatively recently abandoned the nomenclature of Botany and Zoology and adopted the label of Biology for its degree. This speaks also to the dated scientific approach of a segment of the faculty, and does not affect our observations on excessive time to the doctorate.

Department considered 85% of those applications qualified for admission, made offers to 12 students, and enrolled six students. This is an application and admission environment that we consider far from robust, especially considering that most of the applicants came either from China and Taiwan or from the undergraduate Chemistry program at the University of Idaho.

That the application and admission environment is not robust is not surprising, considering the quality of the program's recruiting efforts, to which the program pays little attention. To be fair, the program does *some* recruiting, but its practices are out of date and its principal activity is to mass-mail posters to other departments.[282] Of all the programs with which we met, this one kept the poorest records, not only in terms of applications but also in terms of where their alumni go.[283]

The research profile of the Department is incoherent. Much of it, in our opinion, is dated, though the Department has recently begun to give attention to nanomaterials and to biological Chemistry. We are also concerned that every area of "focus," is only one or two faculty deep; and the bulk of the Department's grant funding is brought in by one faculty member working in fluorine chemistry. In our discussion of lack of depth in any area, both the department chair and the graduate program director gave replies that indicate an opposition to any kind of strategy, which concerns us especially in the economic climate the University faces. The Department's preferred hiring practice, which is basically to hire the best faculty it can find—preferably "marquis names"—whenever positions open is more appropriate to institutions with unlimited resources. It is not likely that the University of Idaho will be able to hire "marquis names" for every open position in every department.

This is a small program, as we have already said—13 faculty versus a mean cohort faculty size of 23.5. Its faculty size is not unique, however. It is approximately the same size as the programs at New Hampshire, Wyoming, Kansas State, and Montana State. The doctoral program is especially small in terms of enrollment—2.2 students per faculty in the Idaho program versus a cohort mean enrollment of 3.1 students per faculty. The program does accept students directly from their bachelor's degree programs, as is common in the field. Master's enrollments are also small; and we wonder, frankly, why the program attempts to continue to offer these programs in an atmosphere of constrained resources.

As we would have expected given the program's recruiting activities, its students are not on par with those in the cohort in terms of quality. The Idaho program has an average incoming GPA below the mean for the comparative group; and has the lowest incoming GRE verbal score and the second-lowest GRE quantitative score in the cohort. Surprisingly, the program's degree production is about average—2.15 degrees per faculty versus a group mean of 2.18 degrees per faculty.

The program's research indicators are its weakest suit. Average annual per-faculty research earnings are well below the mean per-faculty earnings for the cohort--$167,000 for Idaho program faculty versus approximately $200,000 per faculty elsewhere. The more worrying fact, as we have said, is that most of the Department's funding is in the hands of a very few faculty; and so we think the more telling comparison is to examine total program funding in programs of similar size. The Idaho program, with a faculty of 13, has average annual

[282] The brochure that the program sends to students is so old that it lists Jean'ne Shreeve as the University's Vice President for Research.
[283] This program alone could not provide a list of placements over the last five years, but the program director said that most graduates find work in national labs.

funding of about $2.2 million. UNH, with the same number of faculty, is at $2.8 million per year; and Montana State, with only two more faculty, has more than double the funding of the Idaho program. Clearly, faculty will need to pay more attention to external grants. During the five-year period of this study, individual faculty published only 72% of the mean number of per-faculty papers in the cohort and received only 54% of the average number of per-faculty citations. We are unable to judge the age and quality of the program's instrumentation, about which faculty complained, but the amount of research space the program has is about on par with other programs in the comparative group.

The program's stipend is relatively competitive--$18,030 versus a cohort mean of $18,495. It is not clear, however, if the program is able to cover full tuition and in-state fees for its students, and if not, is at a serious competitive disadvantage.[284] The program's time to degree is slightly long, though not problematically so—5.3 years versus a cohort average of 5.0 years.

Geography

In terms of several performance indicators that we consider very important—enrollment and degree production per faculty, external research grants, and publications—the graduate program in Geography is quite excellent; but thanks to cuts in faculty lines, the Department is very small—too small, in fact, to go on operating in the way that it has. Despite this, the Department is offering two graduate programs and a post-baccalaureate certificate and is participating with other programs in various interdisciplinary initiatives. The Department has had to cut corners, however. Because of small faculty size and lack of resources, it has resorted to dual-numbering undergraduate courses so that graduate students can enroll in them, a practice on which we have commented frequently in this document as compromising the quality of graduate education.

Even in the context of the almost total absence of graduate student recruiting at the University, this program is especially passive. As a result, we are certain that the students who enter the program—the ones who come in over the transom, so to speak—are those who are unable to be admitted into or receive financial support from graduate programs elsewhere.

The program is, however and as we have implied, energetic, and wants to focus on doctoral education and research—a desire we want to encourage, since some of its most important performance indicators are quite good, and we feel that if size and resources were not an issue, the program might make a significant impact on its discipline. During our interview, the program spoke almost obsessively about the necessity of regaining the faculty lines that it lost as a result of the University's fiscal crisis. We consider that discussion unproductive and think that the program should explore with the administration and other faculty a number of alternative strategies. Could this Department merge with the Department of Geology in order to create a larger faculty? Could its faculty help to form an earth and environment research group with faculty from a number of academic units, including Geology, Natural Resources, and the Biological Sciences?[285] In any case, research active

[284] The Department indicated that it covers full tuition, though IR reported that tuition coverage is only partial. The program's web site mentions coverage of fees, but it is not clear if this refers to the large in-state fee about which we have heard.

[285] We have discussed a number of times in this document the creation of faculty research groups, usually on an informal basis. In principle, we favor the creation of interdisciplinary research groups that grant degrees, such as the graduate groups at UC Davis or the
[continued on next page]

faculty in the Department require a larger context in which to satisfy their research ambitions and train graduate students; how to accomplish this strategically without negative impacts to such a productive unit should be further discussed.

Of the Geography programs in the comparative cohort, this is by far the smallest—literally 20% of the mean faculty size for the group. Consequently, it enrolls only about one third the average number of doctoral students in the cohort. The program has, however, the highest per-faculty enrollment in the group—a sign that the program, unlike many others in the University, is attempting to focus on doctoral education despite its resource limitations.

As we have already indicated, however, the quality of the program's students is relatively quite poor, probably because of the total lack of recruiting activity. Average incoming GRE scores for the program are alarmingly low—in fact, the lowest in the cohort for both the verbal and the quantitative sections of the test. The program also has among the lowest average incoming GPAs in the comparative group. Nevertheless, the program has—on a per-faculty basis—a degree production record that is significantly above the group mean and the highest in the cohort. This is a testament, we think, to faculty commitment to doctoral education. On a *per-faculty* basis, the program both enrolls and graduates students at a high level, despite relatively poor student quality.

Per-faculty excellence continues when we turn to research indicators.[286] Grantsmanship in the program has improved significantly over the last five years or so, so that despite its small size, the program has an average annual research income that is only slightly below the mean for the group. Its per-faculty earnings are outstanding, however, and are the highest in the comparative cohort. Publications follow a similar pattern. As a program, the Department is publishing only 46% of the mean number of papers for the group, but on a per-faculty basis, they are publishing nearly double the mean number of papers. As a program, the Department receives only 35% of the mean number of group citations; but individual faculty receive on average 40% more citations than the per-faculty mean for the cohort. In short, this is a research-oriented faculty that is highly productive.

Research space appears, for now, not to be an issue, as it is about at the mean level for the comparative group, though it may become an issue as the program grows. The stipend for the program is above the mean for the group, though it needs to be about $16,000 to compete nationally. It is not clear if the program is able to cover in-state fees; and if it can't, the stipend could not even begin to attract better students. The program is competitive in terms of student health insurance, and its time to degree is excellent.

In summary, apart from its lack of recruiting and consequent poor quality of students and the course compromises necessitated by faculty size, this is an excellent program. We think that the program should work with the University to increase its size through external

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interdisciplinary committees at the University of Chicago. We have thus far refrained from recommending this course for Idaho because of the University's history of turmoil and its need for larger reorganizations. Our intuition, however, is that this Department, on an experimental basis, could take the lead in establishing a degree-granting earth sciences research group that might pave the way for later groups, once critical mass ceases to be such a burning issue.

[286] We note that we do not have data on external research funding for the program at UC Davis, since that program is offered by a graduate group and the University tracks research earnings only at the level of departments.

collaborations and to find creative means to cover its service instruction loads, since the faculty is clearly poised to make a difference in the field.

Geological Sciences

Our sense is that the faculty with whom we met place a significantly lower priority on doctoral education than they do on their other programs (undergraduate and master's programs and service instruction) and that they justify this lesser priority with a number of assertions that negatively affect their chances of having a nationally competitive doctoral program. We think these perceptions are rooted in isolation from both current trends in their discipline and scholarly developments in related fields, especially in terms of how those trends and developments are being played out in other University academic units, as well as a misreading of the intentions of the state and a misinterpretation of the competitive environment in which their program operates.[287]

A prominent feature of the interview was the Department's assertion that the field is over-producing Ph.D.s in the geosciences and that, in the last year, the market for doctoral graduates has gone soft and the state of Idaho had consequently decided to limit support for geological education. This assertion seemed incredulous to us, since we have worked with many Geology programs over the years and have not once heard of overproduction of Ph.D.s and since we could not believe that market demand could shift in the course of a single year. We checked, therefore, with both the Geological Society of America and the American Geological Institute, and were able to verify neither a shortage of jobs for doctorally trained geoscientists nor any evidence of doctoral overproduction. In fact, AGI asserts quite otherwise: "The demographics suggest that the workforce is aging at such a rate that the coming wave of retirements over the next 5 to 10 years will severely strain the projected pipeline levels. In other words, it is likely that there will be more geoscience jobs available than there are geoscience students to fill them. Companies may well have to meet their needs by hiring from other physical sciences."[288]

The Department's own track record with its master's program graduates belies its understanding of educational and employment conditions in its field. Recent master's program graduates have gone on to doctoral study at the University of Chicago, UC Davis, UC Berkeley, the University of Colorado, the University of Washington, the University of Wisconsin, and UT Austin, among other institutions. In the last five years, at least ten Geology graduate students have left the University of Idaho for doctoral study at very distinguished institutions, and yet the leadership of the Idaho program insists that market conditions precludes the production of Ph.D.s in the field. Why should these institutions and others produce doctorally trained geoscientists while the University of Idaho cannot?[289]

This is only one of several "disconnects" between what Department faculty told us and what performance indicators and our own understanding of the field suggest, leading us to believe that many of the Department leadership's strategies are based on unfounded prejudice, lack of interest, or a dated understanding of the discipline. Faculty, for example, report that only

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[287] Of course, it is impossible for us to know precisely if the lack of interest and misinterpretations belong to the Department or to the faculty with whom we met. We suspect that what we heard represents the thoughts of a segment of the faculty and that there are other faculty who are in fact interested in doctoral education and research.
[288] See http://guide.agiweb.org/employer/Welcome/index.html.
[289] We acknowledge that the quality of education in the master's program must be superb in order to have accomplished so distinguished a placement record.

15% of their proposals are funded; the Office of Sponsored Programs indicates that the figure is 42%.[290] The Department reports that it has a large "professional" master's program, yet its master's students are fully funded. The Department claims to be an actual peer to the program at the University of Arizona, but the Idaho program has $895,000 in average annual grant income while Arizona has $4.9 million in funding. The Department identifies the program at the University of Wyoming as an aspirational peer, yet that program has only $2.3 million in funding—less than half the funding of the "actual" peer, Arizona.

When we asked the faculty for what their program was best known, the Department Chair replied "research productivity." Not only are the Department's research productivity indicators below average, we think that the Department lacks a strategic vision at all for research. When we asked how the program might be improved, the Chair responded that the University should increase the Department's TA budget from $100,000 to $240,000. We encountered no sense in the faculty with whom we spoke that it is possible for faculty to support graduate assistants through their own grant activities. When we asked what interdisciplinary center institute the Department would create if it had the funds—a question designed to test faculty inclination to multidisciplinary collaboration—the Chair responded that he does not believe in centers and institutes.

We wonder if this response actually means that the Department does not believe in multidisciplinary collaboration, especially since we have a Department research list that includes 13 faculty and 12 separate areas of research specialization.[291] Only three of those specializations are repeated in the list and none of these is repeated more than once. We think this indicates a rigidly traditional department that is attempting to have one faculty member in each of every possible subfield in the discipline, is organized around the imperatives of undergraduate instruction, has no critical mass in terms of research and apparently little inclination to collaborate outside of the Department for the sake of achieving critical mass in terms of research.

What we do not find on the list of research specializations is any evidence of the two directions in which geosciences departments nationwide are moving. The first direction is the broader field of Earth, Oceans, and Atmosphere, which is unavailable to the Idaho program because of the absence of academic units in Oceanography and Atmospheric Science. The second direction, of which we heard nothing during the interview nor saw anything in the documentation provided by the Department, is participation in a range of multidisciplinary research on geographic information systems. The absence of interest in GIS is curious in a department situated in a University with very strong programs in both Geography and Natural Resources.

The comparative performance indicators we have collected contradict the Department's view of the itself in every matter except size. The Department is small, with 11 faculty versus a comparative group mean of 16.9 faculty, though it is not unduly small. It is larger than the programs at Iowa State and Washington State and the same size as the program at Michigan

[290] Perhaps the discrepancy can be accounted for if the program has a large number of service contracts versus research grants. This in itself would be a serious issue. Or, perhaps, faculty were referring to the average success rate for NSF grant proposals in this field. In this case, the reference makes no sense, since the Department's current success rate, according to Institutional Research, is significantly higher than the average for the field.
[291] Some Department faculty do participate actively in a number of multidisciplinary efforts, however, leading us to believe that the opinions we heard during our interview reflect the beliefs of only some members of the Department.

State. Its doctoral enrollment is slightly below average in relation to the group: 0.9 students per faculty versus a mean of 1.0 students for the group.[292] The scores of entering students in the doctoral program are of mixed quality, which is not surprising since the program's recruiting emphasis is on master's students. The program does have a higher than average incoming GPA, but its GRE verbal scores are below the mean for the group, it does not require the analytical writing test, and its quantitative scores are the lowest in the cohort. Despite this, doctoral productivity is slightly higher than average—0.9 degrees per faculty versus a cohort mean of 0.8 degrees per faculty.

The program's weakest indicators are in the area of faculty research, in part because faculty performance is uneven—90% of external research funding, at the time of our visit, was produced by only three or four faculty members.[293] Overall, the program has an average annual research income of $895,000 (or $81,000 per faculty) versus a group mean of $1.7 million (or $96,000 per faculty). On average, program faculty publish only 68% of the mean volume of papers for the group and receive only 53% of the mean number of citations. With the exception of the program at the University of Arizona, which is much larger, the program has the largest net assignable square footage of research space in the comparative cohort.

The figures we have on the program's student financial package from IR and the program itself are discrepant. Whichever figure is correct, the funding package is uncompetitive. The average HTE stipend amount is only 90% of the mean for the cohort, and to be really competitive for the field, it needs to be about $17,000 instead of the current $14,000.[294] IR reports that the program provides partial subsidization for student health insurance, but unfortunately, the standard for the cohort appears to be full subsidization. The time to degree from the bachelor's, though according to IR considerably shorter than reported by the Chair, is precisely average for the group: 6.1 years.

We think that the program requires new and more visionary leadership related to doctoral education. This would involve an interest in cutting-edge research and the ability to navigate collaborative activity focused on GIS with both the Department of Geography and the College of Natural Resources.

Mathematics

Despite indications from some of our interviews that graduate programs in Mathematics are endangered, we think the graduate program in this Department to be quite healthy and strong enough, in our view, to qualify for additional investment if the funds are available. The Department initiated a conscious shift in strategic identity in the 1990s to specialized areas of applied mathematics, and we think this strategy has paid off well. Though the graduate program is very small, it is highly productive in terms of research and other indicators, and its level of students is quite high.

[292] The whole cohort strikes us as under-enrolled, frankly, but the numbers present a somewhat misleading picture. Faculty in some of the other programs, particularly Michigan State, work in interdisciplinary labs and are principal mentors to students who technically have homes in other departments.
[293] The program supplied us with an external review that was fairly old, but the review noted that research activity is not uniform among faculty.
[294] It is not clear if the program is able to cover the in-state fees that are such an issue for the University, though this appears unlikely based on grant earnings. In this case, the stipend is much more uncompetitive.

Though the program has excellent indicators at this point, it is in a state of transition, having lost faculty lines during the fiscal crisis and replacing them as fiscal health returns and older faculty retire. It is possible as a result of this transition that performance indicators will slip for a time, but we think this will be temporary, especially since the Department appears to be moving quickly to recover.

The Department's current breakdown of faculty research specializations makes great sense to us, since there is enough breadth to cover instruction, including service instruction,[295] and the three most important groups have some depth, with four faculty each.[296] The Department's choice of areas of faculty depth is outstanding, placing math faculty in a position to collaborate with faculty in the biosciences, computer science, and elsewhere. Consequently, faculty in this program are more eligible for external research funding than Math faculty typically are, and this is reflected in the program's per-faculty research funding, as we will see below.[297]

In terms of recruiting and enrollment, we note that, as is the case with most math departments, the overwhelming majority of this program's students are from overseas. We think that, though the situation has improved slightly over the last several years, the enrollment of international students in U.S. universities is likely to remain unstable for at least the next decade; consequently, it is important for this program to develop productive relationships with other U.S. institutions that will result in increased domestic applications. Much of this effort will be long-term; but given the Department's participation in the President's initiative on math education, the Department is in a unique position to reach young students who can be both well trained in mathematics and persuaded to consider graduate education in mathematics. In other words, effective long-term recruiting for this Department means not only working with undergraduate mentors and future teachers but also working with young students at the point when it is still possible for them to make choices that will lead to qualification for graduate study.[298]

Unlike faculty in most of the Idaho graduate programs we have examined, this faculty has a very clear sense of the activities of other departments in the discipline, how those departments operate, and in what particular subfields they are good. We think this is one of the reasons that many of their performance indicators are above average: they are aware of external standards and adapt their actions accordingly.

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[295] We acknowledge that the burden of service instruction is particularly intense for math departments, though we think that this particular faculty's sense of a normal teaching load—1-1—is not usual for land grant institutions. We have more frequently encountered 2-1, as it is at Idaho. Nevertheless, we think that perhaps the initial—easier—investment in this Department is to initiate or increase its budget for contingent faculty so that the University can accomplish the objectives of both having service instruction competently delivered and freeing up tenure system faculty for research and supervision of doctoral students.

[296] We define critical mass as at least seven faculty in a group, though this department comes as close to that minimum as any we have seen at Idaho.

[297] Though we have no firm opinion on this, we wonder if, from a marketing point of view, it might be helpful for the Department to change the name of its graduate programs to "Applied Mathematics." Many of the Department's doctoral dissertations are clearly and increasingly falling into this category.

[298] The Department's current recruiting methods are very passive relying on a web site and word of mouth from international students. Because of budgetary constraints, the program's marketing materials are amateurish, and these need to be brought up to date.

Not surprisingly, the program's academic placements are quite distinguished, including post-docs at the University of Chicago and Stony Brook and a tenure-track position at Utica College. The program also appears to give significant attention to graduate student professional development, including pre-doctoral publications and supervised experiences in teaching and pedagogy.

To turn to comparative indicators, we note that this program's size is *very* small, with 12 faculty versus a cohort mean of 34.8. In fact, the next smallest department has seven faculty more than the Idaho department. Not surprisingly, the program has the smallest doctoral enrollment, even on a per-faculty basis—0.8 students at Idaho against a cohort mean of 1.3 students.[299] Program students appear to be of excellent quality. The program has the second-highest GRE verbal scores in the comparative group; its analytical writing scores are well above the mean and in line with scores we have seen at some of the country's best land grant institutions; and its quantitative scores are the second highest in the cohort—on par with those at UC Davis. As we have already implied in note 299 below, degree production seems low, but our sense is that the figures we have do not include students in other faculty who are supervised by Math faculty. Since it is important for the University build critical mass and productivity through interdisciplinary cooperation, we think that there needs to be a system in place for tracking and assigning credit for this kind of work.

The same tracking issue may be at work for the external research figures we have for the program, since faculty referred during our interview and we have seen in supporting documents a reference to a $10 million grant related to bioinformatics. This does not appear in the data we have from the Office of Sponsored Research. Even without the inclusion of that grant, the per-faculty average annual research earnings for this program are well above the mean for the comparative cohort—literally by 34%. Similarly, the programs number of published papers is 30% above the group mean; and on average, program faculty receive 23% more citations than the average faculty member in the cohort.

We are concerned, as is the Department, about competitive indicators. The program's average stipend of $15,600 appears to be higher than the cohort mean of $14,700; but the program is unable to cover student's in-state fees, effectively reducing the stipend to about $9000. This, combined with lack of health insurance, renders the program completely uncompetitive; and is nothing short of miraculous that it has the quality of students it has. The program's time to degree is slightly long, but is close enough to the group mean not to cause us concern. In all, this is an excellent program.

Physics

In many ways, the graduate program in Physics strikes us as disadvantaged. The Department faculty with whom we spoke specifically said that they feel oppressed and that the Department is sometimes criticized as being over-reliant on EPSCoR funding. Part of the issue is clearly size, since the program is only 30% of the average size Physics department in the comparative cohort for this study, and is probably too small to be viable in its current form.

[299] It is possible that the figures we have for productivity in both enrollments and degrees are misleading, since faculty supervise some Ph.D. students who are technically in other programs, such as Bioinformatics and Computational Biology.

Like most Physics programs, its enrollments are primarily from overseas; but nevertheless, the Department has increased its enrollments significantly over the last five years or so from what they were, with the exception of an M.A.T. degree that has not had an applicant in 12 years and should, in our opinion, be closed—not suspended. Apart from that program, however, we can verify that enrollment has increased despite a negative climate for international students and the Department's own relatively passive recruiting program, consisting of a web site, a poster, and a reliance on University of Idaho undergraduates.

The program also feels that it is pitched in a battle to maintain the academic standards of the field in a general atmosphere of lowering standards. Generally, we applaud this approach, though we note that it does have practical consequences for a program that has not recruited sufficiently to attract high quality students. These include an unusually high attrition rate of 30%, which faculty attribute to the difficulty of the prelim exam, and a degree completion rate of only 60%, which faculty feel is artificially low because of an exceptionally bad year in which the program admitted particularly under-qualified students.

It appears that the program's rigor pays off in at least one sense. The program's post-degree placements are generally academic rather than industrial, though we did not receive a specific list of institutions in which graduates have been placed and are, therefore, unable to determine if academic placements are distinguished.

Because of its small size, the faculty has recognized that it cannot excel at everything and has adopted the strategy of research focus areas, which we endorse and which have worked very well elsewhere, such as in the University's department of Mathematics and Biological and Agricultural Engineering. Unfortunately, the strategy has not yet worked well for Physics, in part because the faculty is so small that it cannot build critical mass even with focus and in part because the areas of focus have not been chosen well. One of these is nuclear theory, an area that has been relatively neglected by the federal agencies for the last 15 years. Despite a modest comeback during the current presidential administration and a strong commitment from both the University and the state of Idaho, the long-term prospects of the field remain uncertain. The Department's other area of focus is solid-state physics; and though we are not acquainted with the details of this particular faculty's research in the field, in general we think that condensed matter is an outdated field and one that is being phased out by many departments of physics at leading universities.

The Department has recently hired a new faculty member in the area of biophysics; and ordinarily, we would stress the importance of developing this area.[300] However, in this case, the University has neither a medical school nor an easy access to one, no school of veterinary medicine,[301] no school of pharmaceutical sciences, and so far as we can tell, no significant research taking place in structural biology. We are not confident, therefore, that biophysics is a viable option for this program, since it would exist in an institutional vacuum.

We do think, however, that development is possible in the area of energy research, which the Department says it would like to develop in order to replace its current focus on nuclear theory. We think that Physics faculty, therefore, should be talking with faculty especially in the Department of Biological and Agricultural Engineering and elsewhere in the University where next generation energy is an area of interest, and this perhaps provides the possibility

[300] At the University of Maine, for example, biophysics has revitalized not only the physics department but also a number of other programs that that department touches.
[301] though there is easy access to one at Washington State.

of a brighter future for the Department.[302] An alternative to next generation energy is nanomaterials, replacing current Department work in condensed matter. This is an area beginning to be explored in the College of Engineering, though we are not sure that it is capable of immediate development.[303]

Obviously, the Physics program would like to become bigger and to develop additional areas of focus. One of these is astronomy, but we would not support this particular strategy, since it could only produce the kind of physics department that is rapidly dating. We think—and so far as we can tell—the program agrees that it is time for the program to reorient itself. The key to doing this successfully is to establish strength in collaboration in such areas as next generation energy and to avoid the temptation to create an old-fashioned comprehensive physics department.

To turn more directly to performance indicators, we begin by noting that the Department is the smallest in the comparative cohort for this study—tied for that position with the program at the University of Wyoming. Enrollment is also small—1.4 students per faculty at Idaho versus a cohort mean of 2 students per faculty. As we have previously indicated, the quality of these students is not especially high. The program has the lowest average incoming GPA in the comparative group and the lowest GRE verbal and analytical writing scores in the cohort. Its average incoming quantitative score is quite high, however—well above the mean for the group and the third highest in the group. As a consequence of under-enrollment, degree production for the group is also low—0.88 degrees per faculty for the Idaho program and an average of 1.0 degrees per faculty for the group.

Research indicators are mixed. The program has the lowest average annual research earnings in the cohort at literally one third of the mean. However, its publication record is better. During the five-year period for which we have data, individual faculty published only slightly below the mean number of per-faculty papers in the group: 31.25 papers at Idaho versus 32.53 papers for the group. The program does not do as well on citations, receiving over five years only 123 per faculty versus a per-faculty group mean of 180 citations. On a per-faculty basis, the program has the smallest research space of any program in the comparative cohort for which we have these data—literally 43% of the group mean.

Apart from lack of health insurance, the student financial package appears competitive, with a stipend of $18,000 versus a group average of $16,600, but the number of stipends available would be only a fraction of the numbers at institutions such as UC Davis.[304] RA funding, as the program reported, appears competitive. Time to degree for the program is excellent, the shortest in the cohort and more than a year shorter than the group mean.

Statistics

The graduate program in Statistics told us, by way of background, that it had separated from the Mathematics Department approximately ten years ago. We have addressed elsewhere in

[302] Bioenergy could create a home for faculty in biophysics, though this arrangement is relatively novel at this point. In any event, we think bioenergy is an area that is bound to explode at the University, especially since it is inevitable that faculty in the College of Natural Resources will move in that direction.

[303] A Physics faculty member is directing the University's strategic initiative in nanoscience, but as we have already stated in the introduction to the College of Science, this effort is nascent.

[304] It is also not clear what effect in-state fees have on financial packages in this program.

this document the proliferation in the University of overly small academic units, the administration of each of which contributes significantly to institutional overhead. Since the Math Department developed a strategy in the mid-1990s of focusing on areas that are applied and interdisciplinary, we question why there needs to be a separate Department of Statistics, especially since it too focuses on interdisciplinary research and contributes, like the Math Department, to the graduate program in Bioinformatics and Computational Biology.

As the Department reports in its 2006 self-study in preparation for its external review, it has three primary audiences: those preparing for doctoral study elsewhere;[305] those wishing to prepare for careers in statistics; and double majors, that is, those students enrolled in other University of Idaho graduate programs who require advanced training in statistics in order to conduct their research. Historically, its largest enrollments have been double majors, and this appears to be a service which a number of important University programs cannot do without.

One of the Department's most notable innovations is its involvement of its master's students in the Statistics Consulting Center, through which students gain practical consulting experience by assisting in the development and deployment of real solutions to real problems for real organizations. We think this is an extraordinary—though, unfortunately, no longer unique—competitive advantage that, if appropriately marketed, could attract a significant number of professional master's students—and a sizable revenue stream—to the program. We think that, despite its success in preparing students for the doctorate, the program's real value to the University lies in its service to what it considers its secondary markets—students preparing for professional careers in statistics and students who require advanced training in statistics in order to conduct their research in another field. Unfortunately, program faculty seem to resent their status as a "service" department, and their whole identity and sense of their future is tied to the notion of offering a joint doctoral program in Statistics with colleague faculty at Washington State. In fact, without this doctoral degree, the program feels that it has no competitive advantage at all.

Our task in this study is to assess the Department's professional master's program, to which we will turn shortly; but since the burning issue raised by the Department in the course of our work is the establishment of the cooperative Ph.D. program, we feel we must address this issue first. Many of the statements faculty made during their interview with us lead us to believe that the Department is ready neither on its own nor in cooperation with Washington State to offer a doctoral program; and we caution the administration by pointing to another Idaho program that established a joint Ph.D. program with WSU without the appropriate faculty research orientation and necessary research infrastructure to support a doctoral program. That program is now requesting that significant investments be made in order to raise itself to the necessary level to execute a Ph.D. program. The lesson to be learned is that faculty research prowess and infrastructure need to be in place *in order* to offer a doctoral program—not developed *as a consequence* of offering one.

Faculty stated repeatedly during our interview that the University does not provide sufficient resources for them to conduct a research program. It has never provided seed money, for example; the research assistantships it allocates are neither numerous enough

[305] We acknowledge that the Department has had particular success in this area, as many of its graduates have gone on to study at quite distinguished institutions.

nor competitive enough to attract good doctoral students;[306] and it has demanded an undue focus on teaching that diminishes time for research. There is no mention in any of this that it is the obligation of faculty to support graduate students from grants—and we find this ironic, since the Department is working cooperatively in a field—computational biology—that is presently one of the most grant worthy disciplines in the academy. It is not simply that Statistics faculty seem incapable of the kind of financial self-sufficiency necessary to support a Ph.D. program. It is that they are not currently properly configured to do so. The faculty indicated during our interview that it was generalist in nature, with breadth and no depth. It has been our point of view throughout this document that faculty depth in particular research areas—that is, critical mass—is the most important prerequisite of a viable doctoral program.

We want to be clear. It is not that we are opposed to the University ever launching a Ph.D. program in Statistics. It is that we think that neither the faculty research orientation nor the necessary infrastructure is in place at this time. Nor does a Ph.D. program address the current market conditions of the program. At this time, 95% of its students are either using the master's program in Statistics to support research in another degree program or are preparing for a professional career. We think that, for now, the faculty needs to concentrate on the improvement of that program; and if the Department were to be absorbed into the Department of Mathematics, its faculty could satisfy their research ambitions by working with doctoral students in both applied mathematics and computational biology. Why then focus on a joint degree with Washington State and the need for more and larger assistantships? If it is able to negotiate favorable financial terms related to the professional tuition revenue that it generates, it is possible for the Department, through its existing professional program and its collaborative grant work with Idaho faculty in other academic areas, to begin to build both the research and the financial base it requires to eventually offer a doctoral program in Statistics.

In terms of assessing the existing professional master's program, we have a number of observations. The program's admission prerequisites are well aligned with most of the programs in the comparative cohort for this study. We think the program should look carefully, however, at the Statistics option at Boise State, which we take to be the program's principal competitor. That program's pre-reqs are much simpler than the ones currently required by the Idaho program, and we think the program needs to respond to this in some way. Regarding admission requirements, our only other observation is that since this is a professional program, we think faculty are correct in not requiring the GRE.

The length of time necessary to complete the program appears to be competitive with those of others in the cohort. We think it would be helpful, however, for the program to delineate clear per-semester course sequences that illustrate time to degree for both full-time and part-time students, and that these delineations should be featured prominently on the program's web site. All of the program's in the comparative cohort are currently traditionally delivered, and so we think that this program could create a significant competitive advantage for itself by developing a blended version for working students who may find it inconvenient to be on campus so often.

We see nothing remarkable in terms of degree requirements that is out of line with other programs in the cohort, though we note that the program at Boise State requires only half the credit hours that the Idaho program does. Perhaps this is simply a matter of expression.

[306] There is no reason that the University would provide doctoral-level stipends for a master's program.

Either way, it is a factor to which the program must respond for the sake of competitiveness. We think that student experience in the Statistics Consulting Center should become a required internship, since three other programs in the cohort feature a practicum requirement. The programs at both Oregon State and the University of Washington specifically describe themselves as providing students with the training to work as statistical consultants. The Idaho program describe itself as providing generalist training in advanced statistics. We think that the program's marketing message needs to be adjusted.

It is not clear to us if the University or any of its units has the authority to establish tuition rates or if this is reserved to the State Board of Education. In any case, we note that the Idaho program's in-state tuition is $600 per year more and its out-of-state tuition is several thousand dollars per year more than the tuition for the program at Boise State. This is obviously a competitive issue.

The program's degree to enrollment ratio is higher than any other program in the cohort except for the one at the University of Washington, indicating good completion rates and time to degree. The program with the lowest ratio is the one at Washington State, with which the Idaho program hopes to collaborate.

Appendix A
Interview Protocols

During the week of September 11, 2006 Yardley Research Group personnel conducted on-campus interviews with directors of graduate study and the relevant department chairs of all of the programs participating in this study. For background purposes and in order to discover institutional strategic intent, we also interviewed the Deans of each of the participating Colleges and some of the University's senior administrators, including the President, the Provost, the Vice President for Research, the Graduate Dean, and others.

For the most part, these interviews were spontaneous conversations rather than scripted question-and-answer sessions. Nevertheless, the conversations were governed by protocols so that we could be certain of acquiring a minimum standard of information from each interview. Questions were designed to be broad enough to encourage the responders to say what they thought to be most important.

Protocols for all interviews are reprinted here.

University of Idaho
President

1. What is your strategic vision for graduate programs at Idaho? Are there specific initiatives in place to achieve this vision? Do you have a personal role in this?

2. What does the University need to accomplish these initiatives? What obstacles are in the way?

3. In what discipline areas is the University primed to be excellent? What is needed to get there? Are there any areas primed for failure?

4. In your view, does every academic area in the University have the same scope? Or are some programs geared to local or regional service?

5. Do you have any thoughts about how graduate programs should be structured? Should they be aligned with departments? What is the University's experience with programs that span departments and colleges?

University of Idaho
Provost

1. What is your strategic vision for graduate programs at Idaho? Are there specific initiatives in place to achieve this vision?

2. What does the University need to accomplish these initiatives? What obstacles are in the way?

3. In what discipline areas is the University primed to be excellent? What is needed to get there? Are there any areas primed for failure?

4. In your view, does every academic area in the University have the same scope? Or are some programs geared to local or regional service?

5. Do you have any thoughts about how graduate programs should be structured? Should they be aligned with departments? What is the University's experience with programs that cross departments and colleges?

University of Idaho
Vice President for Research

1. Discuss the national standing of the University in relation to research funding.

2. What plans are in place or are being developed to improve this standing?

3. Where could the University of Idaho be in terms of technology transfer? What plans are in place to get there? What are the principal obstacles?

4. From a research point of view, where could the centers of excellence be, and how can you get there? What are the obstacles?

5. How is research integrated into doctoral programming and mentoring?

6. Are there formal partnerships and collaborations with organizations outside the University that further its research work? Are they integrated into graduate programming?

7. How could graduate programs be structured to optimize the achievement of research goals?

8. How do you measure research productivity? Are there any ways you incentivize improved productivity?

University of Idaho
Dean, College of Graduate Studies

Enrollment and Recruitment

1. Commentary on Enrollment Numbers

2. Current Recruiting Methods [pertaining to Graduate College activities]

Method	We do this	This works
Faculty networking		
Newspaper advertising		
Radio advertising		
TV advertising		
Direct mail		
Graduate fairs		
Professional meetings		
GRE Locater Service		
Public Relations		
Other (_____)		
Other (_____)		
Other (_____)		

3. What is your most successful recruiting tool? Why?

4. What is your least successful recruiting tool? Why?

5. From what sources do you believe you are most likely to draw prospective students? Identify feeder institutions and programs, academic disciplines, geography, and other appropriate sources.

Academic Competitiveness

1. With which universities do you compete (that is, to which universities do you lose admitted students)?

2. Which universities/programs are your peers?

3. Which universities/programs are your aspirational peers?

4. What advantages do your competitors/peers have over you? (Why do students choose to go there rather than here?)

5. What advantages do you have over your competitors? (Why do students choose to come here rather than there?)

Institutional Vision

1. In your estimation, what are the strongest programs here?

2. In terms of academic reputation, for what is the University of Idaho best known?

3. For what could the University be best known?

4. Is there a specific list of actions you would have to take to raise the University of Idaho to the level of its aspirational peers within three to five years?

University of Idaho
Dean of the College of _____

1. What is your vision for graduate programs in your area?
2. What are your specific strategic initiatives for the next five years?
3. What resources do you need to accomplish these initiatives?
4. What are your obstacles?
5. In what disciplines is the College primed to be excellent? What is needed to get there? Is there a discipline that is primed for failure?
6. In your opinion, what is the University's scope? What should its scope be?
7. Do you see any immediate areas for cross-college collaboration?
8. Do you have any thoughts on how these programs might be structured?

University of Idaho
Program: _____

Student Profile

1. *Current* Student Profile

Full-time: _____	Part-time: _____
% Male: _____	% Female: _____
% U.S.: _____	% Foreign: _____
% In-state: _____	% Out-state: _____
% Trad: _____	% Non-trad: _____
% Minority: _____	% FT Work: _____

Break down by ethnicity:

Typical undergraduate degrees:

Other characteristics of students:

2. *Desired* Student Profile

Full-time: _____	Part-time: _____
% Male: _____	% Female: _____
% U.S.: _____	% Foreign: _____
% In-state: _____	% Out-state: _____
% Trad: _____	% Non-trad: _____
% Minority: _____	% FT Work: _____

Break down by ethnicity:

Typical undergraduate degrees:

Other characteristics of students:

Enrollment Analytics: History and Projections

Number of incoming students last year:	_____
Desired number of incoming students next year:	_____
Number of applications last year:	_____
% of last year's applications considered qualified for admission:	_____
% of admitted students who enrolled:	_____

1. From what sources do you believe you are most likely to draw prospective students?

2. Identify feeder institutions and programs, academic disciplines, geography, and other appropriate sources.

Current Recruiting Methods

Method	We do this	This works
Faculty networking		
Newspaper advertising		
Radio advertising		
TV advertising		
Direct mail		
Graduate fairs		
Professional meetings		
GRE Locater Service		
Public Relations		
Other (_____)		
Other (_____)		
Other (_____)		

1. What is your most successful recruiting tool? Why?

2. What is your least successful recruiting tool? Why?

Competitive Landscape

1. With which universities/programs do you compete (that is, to which universities do you lose admitted students?

2. Which universities/programs are your peers?

3. Which universities/programs are your aspirational peers?

4. What advantages do your competitors/peers have over you? (Why do students choose to go there rather than here?)

5. What advantages do you have over your competitors? (Why do students choose to come here rather than there?)

Program Vision Questions

1. What is the single best thing about your program?

2. For what is your program best known?

3. For what could your program be best known?

4. Is there a specific list of actions you would have to take to raise your program to the level of your aspirational peers within three to five years?

5. If the president of the university were to give you a large of amount of money in order to found a research institute, what would be the subject of the institute? With which other departments on campus would you work?

Appendix B
Instructional and Research Peers

In order to develop the comparative cohort for doctoral programs in this study, we queried the databases of the Department of Education for public or private research universities with spending patterns similar to those of the University of Idaho. In the first query, we looked for institutions that, over a three-year period, spent 20% more or less on instruction than the University of Idaho did in the same period. In the second query, we looked for institutions that had spent 20% more or less than the University of Idaho on research. The query results follow.

Instructional Peer Candidates

American University	Mississippi State University
Appalachian State University	New Mexico State University
Boise State University	Old Dominion University
Bowling Green State University	Pace University
California Institute of Technology	Pepperdine University
California State University Chico	Santa Clara University
California State University Fresno	Southern Methodist University
California State University Hayward	Southwest Missouri State University
California State University Los Angeles	Southwest Texas State University
California State University San Bernadino	St. John's University (New York)
CUNY Hunter College	SUNY College at Buffalo
Duquesne University	Texas Christian University
Eastern Michigan University	University of Arkansas
Grand Valley State College	University of North Carolina Charlotte
Idaho State University	University of San Francisco
Indiana University of Pennsylvania	University of St. Thomas
James Madison University	Villanova University
Loyola Marymount University	Wesleyan University
Middle Tennessee State University	Western Washington University

Research Peer Candidates

Boston College	Kent State University
Brandeis University	Louisiana State University Health Sciences Center
Brigham Young University	Loyola University Chicago
Brown University	Marquette University
Clark Atlanta University	Mercer University
Colorado School of Mines	Michigan Technological University
Creighton University	Morgan State University
Drexel University	North Carolina A&T University
Florida Atlantic University	North Dakota State University
George Mason University	Northeastern University
Georgia State University	Ohio University
Howard University	Rice University
Illinois State University	Rush University
Indiana University Bloomington	Saint Louis University
Jackson State University	San Diego State University

Research Peer Candidates
[continued]

San Francisco State University	University of Delaware
San Jose State University	University of Houston
South Carolina State University	University of Louisiana Lafayette
South Dakota State University	University of Louisville
Southern Illinois University Carbondale	University of Maine
Syracuse University	University of Massachusetts Lowell
Texas Tech University	University of Minnesota Deluth
University at Albany	University of Missouri Kansas City
University of Montana Missoula	University of Missouri Rolla
University of Texas Dallas	University of Nevada Reno
University of Texas El Paso	University of New Orleans
Tufts University	University of North Texas
University of Akron	University of Notre Dame
University of Alabama Birmingham	University of Oklahoma Norman
University of Alabama Huntsville	University of Oregon
University of California Riverside	University of Wisconsin Milwaukee
University of California Santa Cruz	West Virginia University
University of Central Florida	Wheeling Jesuit University
University of Connecticut	Wichita State University

Appendix C
Taxonomy of Program Cognates

After selecting the cohort of benchmark institutions, we then chose the specific comparator programs. We reviewed catalogs and other published descriptive information, searching for similarity of credentials offered, program curricula, and faculty research. This allowed us to compare programs that, whatever their official names, are similar in content, strategic intent, and organization to the University of Idaho program. We did not accept tracks or concentrations that are part of larger programs as cognates, since the arrangement of a track within a program indicates both a different strategic intent and principle of organization, and since no university, in our experience, tracks data at the level of tracks.

Cognate programs are listed below by College. Shading indicates that no cognate program exists at that particular institution.

Doctoral Programs

College of Agricultural and Life Sciences

Animal and Veterinary Sciences

Institution	Program
University of Idaho	Animal and Veterinary Science
Iowa State University	Animal Science
Kansas State University	Animal Sciences and Industry
Michigan State University	Animal Science
Montana State University	Animal and Range Sciences (Animal Science Option)
University of Arizona	Animal Sciences
University of California Davis	Animal Biology
University of Nebraska-Lincoln	Animal Science
University of New Hampshire	Animal and Nutritional Science
University of Wyoming	Animal and Veterinary Science
Washington State University	Animal Sciences

Biological and Agricultural Engineering

Institution	Program
University of Idaho	Biological and Agricultural Engineering
Iowa State University	Agricultural Engineering
Kansas State University	Biological and Agricultural Engineering
Michigan State University	Biosystems Engineering
Montana State University	
University of Arizona	Agricultural and Biosystems Engineering
University of California Davis	Biological Systems Engineering
University of Nebraska-Lincoln	Agricultural and Biological Systems Engineering
University of New Hampshire	
University of Wyoming	
Washington State University	Biosystems Engineering

Food Science and Toxicology

Institution	Program
University of Idaho	Food Science and Toxicology
Iowa State University	Food Science and Technology
Kansas State University	Food Science
Michigan State University	Food Science
Montana State University	
University of Arizona	
University of California Davis	Food Science
University of Nebraska-Lincoln	Food Science and Technology
University of New Hampshire	
University of Wyoming	
Washington State University	Food Science

Microbiology, Molecular Biology, and Biochemistry

Institution	Program
University of Idaho	Microbiology, Molecular Biology, and Biochemistry
Iowa State University	Biochemistry
	Molecular, Cellular, and Developmental Biology
	Microbiology
Kansas State University	Biochemistry
	Microbiology
Michigan State University	Biochemistry and Molecular Biology
	Microbiology and Molecular Genetics
Montana State University	Biochemistry
	Microbiology
University of Arizona	Biochemistry and Molecular and Cellular Biology
	Microbiology
University of California Davis	Biochemistry and Molecular Biology
	Microbiology
University of Nebraska-Lincoln	Biochemistry
	Biological Sciences (Microbiology and Molecular Biology Graduate Research Emphasis Group)
University of New Hampshire	Biochemistry
	Microbiology
University of Wyoming	Molecular and Cellular Life Sciences
Washington State University	Molecular Biosciences

Plant, Soil, and Entomological Sciences

Institution	Program
University of Idaho	Plant Science
	Entomology
	Soil Science
Iowa State University	Plant Pathology
	Plant Physiology
	Entomology
	Soil Science
Kansas State University	Agronomy
	Entomology
	Plant Pathology
Michigan State University	Crop and Soil Science
	Entomology
	Plant Pathology
Montana State University	Plant Science
University of Arizona	Entomology
	Plant Sciences
	Soil, Water, and Environmental Sciences (Concentration in Soil Science)
University of California Davis	Entomology
	Plant Biology
	Soils and Biogeochemistry
University of Nebraska-Lincoln	Agronomy
	Entomology
University of New Hampshire	Plant Biology
University of Wyoming	Entomology
	Soil Science
Washington State University	Entomology
	Crop and Soil Science
	Plant Pathology

College of Education

Adult, Career, and Technical Education

Institution	Program
University of Idaho	Education (Adult and Organizational Learning)
Iowa State University	
Kansas State University	Adult and Continuing Education
Michigan State University	Higher, Adult, and Lifelong Education
Montana State University	Adult and Higher Education
University of Arizona	
University of California Davis	
University of Nebraska-Lincoln	
University of New Hampshire	
University of Wyoming	Education (Adult and Postsecondary Education)
Washington State University	

Counseling and School Psychology and Educational Leadership

Institution	Program
University of Idaho	Education (Educational Leadership)
Iowa State University	Educational Leadership and Policy Studies
Kansas State University	Educational Administration and Leadership
Michigan State University	K-12 Educational Administration
Montana State University	
University of Arizona	
University of California Davis	Education (School, Organization, and Educational Policy)
University of Nebraska-Lincoln	Educational Leadership and Higher Education
University of New Hampshire	Education (Educational Leadership and Policy Studies)
University of Wyoming	Education (Educational Leadership)
Washington State University	Education (Educational Leadership)

Curriculum and Instruction

Institution	Program
University of Idaho	Education (Curriculum and Instruction)
Iowa State University	Curriculum and Instruction
Kansas State University	Curriculum and Instruction
Michigan State University	Curriculum, Teaching, and Educational Policy
Montana State University	
University of Arizona	
University of California Davis	
University of Nebraska-Lincoln	Teaching, Curriculum, and Learning
University of New Hampshire	Education (Curriculum and Instruction)
University of Wyoming	Education (Curriculum and Instruction)
Washington State University	

College of Engineering

Chemical Engineering

Institution	Program
University of Idaho	Chemical Engineering
Iowa State University	Chemical Engineering
Kansas State University	Chemical Engineering
Michigan State University	Chemical Engineering and Materials Science
Montana State University	Engineering (Chemical Engineering)
University of Arizona	Chemical Engineering
University of California Davis	Chemical Engineering
University of Nebraska-Lincoln	Chemical and Materials Engineering
University of New Hampshire	Chemical Engineering
University of Wyoming	Chemical Engineering
Washington State University	Chemical Engineering

Civil Engineering

Institution	Program
University of Idaho	Civil Engineering
Iowa State University	Civil Engineering
Kansas State University	Civil Engineering
Michigan State University	Civil and Environmental Engineering
Montana State University	Engineering (Civil Engineering)
University of Arizona	Civil Engineering
University of California Davis	Civil and Environmental Engineering
University of Nebraska-Lincoln	Civil Engineering
University of New Hampshire	Civil Engineering
University of Wyoming	Civil Engineering
Washington State University	Civil Engineering

Computer Science

Institution	Program
University of Idaho	Computer Science
Iowa State University	Computer Science
Kansas State University	Computing and Information Sciences
Michigan State University	Computer Science and Engineering
Montana State University	
University of Arizona	Computer Science
University of California Davis	Computer Science
University of Nebraska-Lincoln	Computer Science
University of New Hampshire	Computer Science
University of Wyoming	Computer Science
Washington State University	Computer Science

Electrical and Computer Engineering

Institution	Program
University of Idaho	Electrical and Computer Engineering
Iowa State University	Electrical Engineering
Kansas State University	Electrical Engineering
Michigan State University	Electrical and Computer Engineering
Montana State University	Engineering (Electrical and Computer Engineering)
University of Arizona	Electrical and Computer Engineering
University of California Davis	Electrical and Computer Engineering
University of Nebraska-Lincoln	Electrical Engineering
University of New Hampshire	Electrical and Computer Engineering
University of Wyoming	Electrical Engineering
Washington State University	Electrical and Computer Engineering

Materials Science and Engineering

Institution	Program
University of Idaho	Materials Science and Engineering
Iowa State University	Materials Science and Engineering
Kansas State University	
Michigan State University	Materials Science and Engineering
Montana State University	
University of Arizona	Materials Science and Engineering
University of California Davis	Materials Science and Engineering
University of Nebraska-Lincoln	Chemical and Materials Engineering
University of New Hampshire	Engineering (Materials Science Option)
University of Wyoming	
Washington State University	Materials Science

Mechanical Engineering

Institution	Program
University of Idaho	Mechanical Engineering
Iowa State University	Mechanical Engineering
Kansas State University	Mechanical Engineering
Michigan State University	Mechanical Engineering
Montana State University	Engineering (Mechanical Engineering)
University of Arizona	Mechanical Engineering
University of California Davis	Mechanical and Aeronautical Engineering
University of Nebraska-Lincoln	Mechanical Engineering
University of New Hampshire	Mechanical Engineering
University of Wyoming	Mechanical Engineering
Washington State University	Mechanical Engineering

College of Graduate Studies

Bioinformatics and Computational Biology

Institution	Program
University of Idaho	Bioinformatics and Computational Biology
Iowa State University	Bioinformatics and Computational Biology
Kansas State University	
Michigan State University	
Montana State University	
University of Arizona	
University of California Davis	
University of Nebraska-Lincoln	Interdisciplinary Group in Bioinformatics and Biological Modeling
University of New Hampshire	
University of Wyoming	
Washington State University	

Environmental Science

Institution	Program
University of Idaho	Environmental Science
Iowa State University	Environmental Science
Kansas State University	
Michigan State University	Environmental Science and Policy
Montana State University	Land Resources and Environmental Sciences
University of Arizona	Soil, Water, and Environmental Sciences
University of California Davis	
University of Nebraska-Lincoln	
University of New Hampshire	
University of Wyoming	
Washington State University	Environmental and Natural Resource Sciences

Neuroscience

Institution	Program
University of Idaho	Neuroscience
Iowa State University	Neuroscience
Kansas State University	
Michigan State University	Neuroscience
Montana State University	
University of Arizona	Neuroscience
University of California Davis	Neuroscience
University of Nebraska-Lincoln	
University of New Hampshire	
University of Wyoming	Neuroscience
Washington State University	Neuroscience

College of Letters, Arts, and Social Sciences

History

Institution	Program
University of Idaho	History
Iowa State University	History
Kansas State University	History
Michigan State University	History
Montana State University	History
University of Arizona	History
University of California Davis	History
University of Nebraska-Lincoln	History
University of New Hampshire	History
University of Wyoming	
Washington State University	History

Political Science

Institution	Program
University of Idaho	Political Science
Iowa State University	
Kansas State University	
Michigan State University	Political Science
Montana State University	
University of Arizona	Political Science
University of California Davis	Political Science
University of Nebraska-Lincoln	Political Science
University of New Hampshire	
University of Wyoming	
Washington State University	Political Science

College of Natural Resources

Institution	Program
University of Idaho	Natural Resources
Iowa State University	Fisheries Biology
	Forestry
	Wildlife Biology
Kansas State University	
Michigan State University	Fisheries and Wildlife
	Forestry
Montana State University	Fish and Wildlife Biology
University of Arizona	Natural Resources
University of California Davis	Ecology
University of Nebraska-Lincoln	Natural Resource Sciences
University of New Hampshire	Natural Resources and Earth Systems Science
University of Wyoming	Rangeland Ecology and Watershed Management
Washington State University	Natural Resource Sciences

College of Science

Biological Sciences

Institution	Program
University of Idaho	Biological Sciences
Iowa State University	Ecology and Evolutionary Biology
Kansas State University	
Michigan State University	Botany
	Zoology
Montana State University	Biological Sciences
University of Arizona	Ecology and Evolutionary Biology
University of California Davis	
University of Nebraska-Lincoln	Biological Sciences
University of New Hampshire	Zoology
University of Wyoming	Zoology and Physiology
Washington State University	Biological Sciences

Chemistry

Institution	Program
University of Idaho	Chemistry
Iowa State University	Chemistry
Kansas State University	Chemistry
Michigan State University	Chemistry
Montana State University	Chemistry
University of Arizona	Chemistry
University of California Davis	Chemistry
University of Nebraska-Lincoln	Chemistry
University of New Hampshire	Chemistry
University of Wyoming	Chemistry
Washington State University	Chemistry

Geography

Institution	Program
University of Idaho	Geography
Iowa State University	
Kansas State University	Geography
Michigan State University	Geography
Montana State University	Earth Sciences (Geography)
University of Arizona	Geography
University of California Davis	Geography
University of Nebraska-Lincoln	Geography
University of New Hampshire	
University of Wyoming	
Washington State University	

Geological Sciences

Institution	Program
University of Idaho	Geological Sciences
Iowa State University	Geology
Kansas State University	Geology
Michigan State University	Geological Sciences
Montana State University	Earth Sciences (Geology)
University of Arizona	Geosciences
University of California Davis	Geology
University of Nebraska-Lincoln	Geosciences
University of New Hampshire	
University of Wyoming	Geology
Washington State University	Geology

Mathematics

Institution	Program
University of Idaho	Mathematics
Iowa State University	Mathematics
Kansas State University	Mathematics
Michigan State University	Mathematics
Montana State University	Mathematics
University of Arizona	Mathematics
University of California Davis	Mathematics
University of Nebraska-Lincoln	Mathematics
University of New Hampshire	Mathematics
University of Wyoming	Mathematics
Washington State University	Mathematics

Physics

Institution	Program
University of Idaho	Physics
Iowa State University	Physics
Kansas State University	Physics
Michigan State University	Physics
Montana State University	Physics
University of Arizona	Physics
University of California Davis	Physics
University of Nebraska-Lincoln	Physics and Astronomy
University of New Hampshire	Physics
University of Wyoming	Physics
Washington State University	Physics and Astronomy

Master's Programs

College of Agricultural and Life Sciences

Agricultural and Extension Education

Institution	Program
University of Idaho	Agricultural and Extension Education
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	Agricultural Education
Oregon State University	Agricultural Education
University of Montana	
University of Oregon	
University of Washington	
Washington State University	

Agricultural Economics

Institution	Program
University of Idaho	Agricultural Economics
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	Agricultural Economics
Oregon State University	Agricultural and Resource Economics
University of Montana	
University of Oregon	
University of Washington	
Washington State University	Economic Sciences

Family and Consumer Sciences

Institution	Program
University of Idaho	Family and Consumer Sciences
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	
University of Oregon	
University of Washington	
Washington State University	Human Development

College of Art and Architecture

Architecture

Institution	Program
University of Idaho	Architecture
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	
University of Oregon	Architecture
University of Washington	Architecture
Washington State University	Architecture

Art and Design

Institution	Program
University of Idaho	Art and Design
Boise State University	Art Education
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	Studio Art
University of Oregon	Art History
University of Washington	Art History
Washington State University	

Landscape Architecture

Institution	Program
University of Idaho	Landscape Architecture
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	
University of Oregon	Landscape Architecture
University of Washington	Landscape Architecture
Washington State University	Landscape Architecture

College of Business and Economics

Accounting

Institution	Program
University of Idaho	Accounting
Boise State University	Accountancy
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	Professional Accountancy
Oregon State University	
University of Montana	Accounting
University of Oregon	Accounting
University of Washington	Professional Accounting
Washington State University	Accounting

College of Education

Counseling and School Psychology

Institution	Program
University of Idaho	Counseling and School Psychology
Boise State University	
Eastern Washington University	
Gonzaga University	School Counseling
Idaho State University	
Montana State University	
Oregon State University	Counselor Education and Supervision
University of Montana	Counselor Education
University of Oregon	School Psychology
University of Washington	Educational Psychology (School Psychology)
Washington State University	Counseling (School Counseling)

Health, Physical Education, Recreation, and Dance

Institution	Program
University of Idaho	Health, Physical Education, Recreation, and Dance
Boise State University	Exercise and Sport Studies
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	
University of Oregon	
University of Washington	
Washington State University	

College of Engineering

Environmental Engineering

Institution	Program
University of Idaho	Environmental Engineering
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	Environmental Engineering
Montana State University	Environmental Engineering
Oregon State University	
University of Montana	
University of Oregon	
University of Washington	Civil and Environmental Engineering
Washington State University	Environmental Engineering

Metallurgy and Metallurgical Engineering

Institution	Program
University of Idaho	Metallurgy and Metallurgical Engineering
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	
University of Oregon	
University of Washington	
Washington State University	

College of Letters, Arts, and Social Sciences

Anthropology

Institution	Program
University of Idaho	Anthropology
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	Anthropology
Montana State University	
Oregon State University	Applied Anthropology
University of Montana	Anthropology
University of Oregon	Anthropology
University of Washington	Anthropology
Washington State University	Anthropology

English

Institution	Program
University of Idaho	English
Boise State University	English
Eastern Washington University	
Gonzaga University	
Idaho State University	English
Montana State University	English
Oregon State University	English
University of Montana	English (Literature Option)
University of Oregon	English
University of Washington	English
Washington State University	English

Lionel Hampton School of Music

Institution	Program
University of Idaho	Music (Performance, Composition, Music Education, Piano Pedagogy and Performance, Accompanying)
Boise State University	Music (Performance, Pedagogy)
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	Music (Composition Technology, Music Education, Musical Theatre, Performance)
University of Oregon	Arts (Music History, Music Theory)
University of Washington	Music (Choral Conducting, Composition, Instrumental Conducting, Opera Production, Performance)
Washington State University	Music (Performance, Composition)

Philosophy

Institution	Program
University of Idaho	Philosophy
Boise State University	
Eastern Washington University	
Gonzaga University	Philosophy
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	Philosophy
University of Oregon	Philosophy
University of Washington	Philosophy
Washington State University	Philosophy

Psychology

Institution	Program
University of Idaho	Psychology (Human Factors, Industrial and Organizational Psychology)
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	
University of Oregon	Individualized master's program in Psychology
University of Washington	
Washington State University	

Theatre Arts

Institution	Program
University of Idaho	Theatre Arts
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	Theatre
Montana State University	
Oregon State University	
University of Montana	Theatre
University of Oregon	Theatre
University of Washington	Theatre
Washington State University	

College of Natural Resources

Conservation Social Sciences

Institution	Program
University of Idaho	Conservation Social Sciences
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	
University of Montana	Resource Conservation
	Recreation Management
University of Oregon	
University of Washington	
Washington State University	

Fish and Wildlife Resources

Institution	Program
University of Idaho	Fish and Wildlife Resources
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	Fish and Wildlife Management
Oregon State University	Wildlife Science
	Fisheries Science
University of Montana	Wildlife Biology
University of Oregon	
University of Washington	Aquatic and Fishery Sciences
Washington State University	Natural Resources Sciences (Wildlife)

Forest Products

Institution	Program
University of Idaho	Forest Products
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	Forest Products
University of Montana	
University of Oregon	
University of Washington	
Washington State University	

Forest Resources

Institution	Program
University of Idaho	Forest Resources
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	Forest Resources
University of Montana	Forestry
University of Oregon	
University of Washington	Forest Resources
Washington State University	Natural Resources Sciences (Forestry)

Natural Resources (M.N.R.)

Institution	Program
University of Idaho	Natural Resources
Boise State University	Environmental and Natural Resources Policy and Administration
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	Land Resources and Environmental Sciences
Oregon State University	Water Resources Policy and Management
University of Montana	
University of Oregon	Environmental Studies
	Environmental Policy
University of Washington	Quantitative Ecology and Resource Management
Washington State University	Environmental Science and Regional Planning

Rangeland Ecology and Management

Institution	Program
University of Idaho	Rangeland Ecology and Management
Boise State University	
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	
Oregon State University	Rangeland Resources
University of Montana	
University of Oregon	
University of Washington	
Washington State University	

College of Science

Statistics

Institution	Program
University of Idaho	Statistics
Boise State University	Mathematics (Statistics Option)
Eastern Washington University	
Gonzaga University	
Idaho State University	
Montana State University	Statistics
Oregon State University	Statistics
University of Montana	
University of Oregon	
University of Washington	Statistics
Washington State University	Statistics

Appendix D
Comparative Doctoral Program Data

We assessed each doctoral program participating in this study on the basis of productivity indicators that we anticipate will be used by the National Research Council in its pending assessment of doctoral programs. Tables containing these comparative data are organized below by College.

Blank cells in the spreadsheets indicate either that a cognate program does not exist at a particular institution or that the data exist but were unavailable for this study. The comparative charts contain the following data groups:

- Data related to program size. For the University of Idaho, the source of this data was the Office of Institutional Research. (This is the source of all data for Idaho, unless otherwise noted below). For Iowa State, Kansas State, Michigan State, the University of Arizona, UC Davis, the University of Nebraska-Lincoln, and the University of Wyoming, the source of the data is the also the universities' offices of Institutional Research. For Montana State, the University of New Hampshire, and Washington State, the source of the data is the Dean of the Graduate School. In some cases, we confirmed figures that seemed odd with the departments or programs in question.

- Data related to students. The source for this data is as above, except that some degree completion data is taken from the U.S. Department of Education's Integrated Post-Secondary Education Data System.

- Data related to faculty and research. Data on research awards are from the universities' offices of Sponsored Programs, except in the case of the University of Idaho, the data for which was provided by the Office of Institutional Research. Periodical publications and citations counts are taken from the humanities, social sciences, and sciences indices published by Thomson Scientific, formerly known as the Institute for Scientific Information.[307]

[307] Our methodology for counting papers and citations resembles the one the NRC used in its 1995 study. The factor that makes counting complex is that the ISI taxonomy of fields does not necessarily match the structure of academic departments anywhere. The ISI databases measure, therefore, not the publication productivity of *departments* but *institutional* productivity in particular *fields*. We collected from program faculty at Idaho the titles of journals in which faculty had published in the previous five years. This helped us identify the fields in which faculty had been active. We then counted publications and citations in those fields that contained the institutional address "University of Idaho." This obviously results in over-counting—a program in the biosciences, for example, is likely to get credit for papers published by faculty who have been active in the same field but who are housed in the Chemistry department, for example. The alternative is to undercount, using only those fields that resemble the name of the actual department. We have used both alternatives and have found that the comparative patterns are generally the same, whether we over-count or undercount. **It is important to note that when we speak of publications and citations, the phrase "per faculty" is not meant to be taken literally, since the publications and citations of pre-doctoral students and post-docs are also included in the indices. ISI provides *unit* counts. Hence it is easy to see why under-enrollment can affect a program's publication record.** It is also important to note that the data set does not track the movement of faculty and others from one institution to

[continued on next page]

- Competitive indicators. The source of NASF data is either the universities' offices of Institutional Research or the National Science Foundation. The source of stipend and time to degree data is usually the comparator programs themselves, though it is sometimes Institutional Research.

another. Hence, the publications of faculty who have left Idaho are still credited to the University; and the publications and citations of new faculty coming into the University are still credited to their previous institutions.

College of Agricultural and Life Sciences

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho Animal & Veterinary Science	*13.0*	*12.0*	*0.9*	*3.30*	*590*	*3.0*	*620*		*6*	*0.46*
Iowa State University Animal Science	31.0	5.0	0.2						37	1.19
Kansas State University Animal Sciences and Industry	46.0	24.0	0.5	3.20	550	4.0	550		30	0.65
Michigan State University Animal Science	27.4	27.0	1.0						24	0.88
Montana State University Animal & Range Sciences: Animal Science Option	14.0	3.0	0.2		450	3.5	607		1	0.07
University of Arizona Animal Sciences	11.0	5.0	0.5	3.50	600	4.5	700		5	0.45
University of California-Davis Animal Biology	35.0	7.0	0.2	3.70	477	4.5	630		0	0.00
University of Nebraska-Lincoln Animal Science	27.0	30.0	1.1	3.50	550	4.5	750		65	2.41
University of New Hampshire Animal and Nutritional Sciences	16.0	6.0	0.4	3.60	513		551		4	0.25
University of Wyoming Animal & Veterinary Science	16.0	6.0	0.4	3.50	500	4.5	700		11	0.69

	Program Size				Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
Washington State University										
Animal Sciences	17.0	15.0	0.9						9	0.53
Mean	**23.0**	**12.7**	**0.6**	**3.47**	**529**	**4.1**	**639**		**17**	**0.69**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Animal & Veterinary Science	*$409,492*	*$31,499*	*453*	*35.31*	*2,802*	*215.54*
Iowa State University Animal Science	$8,929,968	$288,063	2,083	67.19	11,630	375.16
Kansas State University Animal Sciences and Industry	$1,535,111	$33,372	1,452	31.57	6,574	142.91
Michigan State University Animal Science	$2,539,472	$92,681	2,502	91.31	18,453	673.47
Montana State University Animal & Range Sciences: Animal Science Option	$3,824,035	$273,145	579	41.36	3,769	269.21
University of Arizona Animal Sciences	$583,147	$53,013	2,394	217.64	21,169	1,924.45
University of California-Davis Animal Biology	$3,121,602	$89,189	6,077	173.63	38,692	1,105.49
University of Nebraska-Lincoln Animal Science	$1,129,977	$41,851	1,354	50.15	6,856	253.93
University of New Hampshire Animal and Nutritional Sciences	$561,693	$35,106	308	19.25	2,000	125.00
University of Wyoming Animal & Veterinary Science	$1,533,678	$95,855	357	22.31	1,787	111.69
Washington State University Animal Sciences	$2,642,776	$155,457	1,865	109.71	11,672	686.59
Mean	**$2,437,359**	**$108,112**	**1,766**	**78.13**	**11,400**	**534.86**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Animal & Veterinary Science	*35,260*	*Full*	*9 to 12*	*$12,495*	*Partial*	*None*	*4.1*
Iowa State University Animal Science	161,475	Partial to Full	9	$18,000	Full	None	5.0
Kansas State University Animal Sciences and Industry		Partial to Full	9	$16,500	Partial	None	4.5
Michigan State University Animal Science	391,285	Full	9	$20,205	Full	Partial	4.9
Montana State University Animal & Range Sciences: Animal Science Option		Full	9	$13,500	None	None	5.7
University of Arizona Animal Sciences	12,000	Partial to Full	9	$18,000	Full	None	5.0
University of California-Davis Animal Biology		Full	12	$18,000	Full	None	
University of Nebraska-Lincoln -Animal Science	61,800	Full	12	$16,300	Partial	Partial	5.2
University of New Hampshire Animal and Nutritional Sciences		Full	9	$13,200	None	None	4.8
University of Wyoming Animal & Veterinary Science		Full	9	$18,000	Full	None	4.5
Washington State University Animal Sciences	89,602	Full	9	$14,522	Full	None	4.4
Mean	**125,237**			**$16,247**			**4.8**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho										
Biological & Agricultural Engineering	*9.0*	*7.0*	*0.8*	*3.20*	*495*	*4.0*	*555*		*9*	*1.00*
Iowa State University										
Agricultural Engineering	32.0	42.0	1.3						18	0.56
Kansas State University										
Biological and Agricultural Engineering	18.0	15.0	0.8	3.40	550	4.0	550		15	0.83
Michigan State University										
Biosystems Engineering	37.2	9.0	0.2						9	0.24
Montana State University										
University of Arizona										
Agricultural and Biosystems Engineering	15.0	15.0	1.0	3.60	500	4.3	750		9	0.60
University of California-Davis										
Biological Systems Engineering	21.0	27.0	1.3	3.60	500	4.5	760		32	1.52
University of Nebraska-Lincoln										
Agricultural and Biological Systems Engineering	28.0	10.0	0.4	3.70	500	4.5	750		9	0.32
University of New Hampshire										
University of Wyoming										
Washington State University										
Biosystems Engineering	10.0	35.0	3.5						26	2.60
Mean	**21.3**	**20.0**	**1.2**	**3.50**	**491**	**4.3**	**673**		**16**	**0.96**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Biological & Agricultural Engineering	*$1,006,735*	*$111,859*	*407*	*45.22*	*1,363*	*151.44*
Iowa State University						
Agricultural Engineering	$9,711,237	$303,476	931	29.09	2,743	85.72
Kansas State University						
Biological and Agricultural Engineering	$1,537,815	$85,434	567	31.50	1,576	87.56
Michigan State University						
Biosystems Engineering	$885,442	$23,802	807	21.69	4,874	131.02
Montana State University						
University of Arizona						
Agricultural and Biosystems Engineering	$534,580	$35,639	308	20.53	980	65.33
University of California-Davis						
Biological Systems Engineering	$2,772,173	$132,008	950	45.24	3,721	177.19
University of Nebraska-Lincoln						
Agricultural and Biological Systems Engineering	$485,995	$17,357	709	25.32	2,325	83.04
University of New Hampshire						
University of Wyoming						
Washington State University						
Biosystems Engineering	$2,885,069	$288,507	600	60.00	1,982	198.20
Mean	**$2,477,381**	**$124,760**	**660**	**34.83**	**2,446**	**122.44**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Biological & Agricultural Engineering	*5,481*	*Full*	*9 to 12*	*$14,588*	*Full*	*None*	*5.1*
Iowa State University							
Agricultural Engineering	71,873	Partial to Full	12	$19,200	Full	None	5.0
Kansas State University							
Biological and Agricultural Engineering		Partial to Full	9	$18,000	Partial	None	5.5
Michigan State University							
Biosystems Engineering	33,584	Full	12	$21,600	Full	Partial	4.0
Montana State University							
University of Arizona							
Agricultural and Biosystems Engineering		Partial	9	$19,221	Full	None	5.5
University of California-Davis							
Biological Systems Engineering	41,000	Full	12	$19,298	Full	None	5.0
University of Nebraska-Lincoln							
Agricultural and Biological Systems Engineering	39,000	Full	12	$15,000	Full	None	6.0
University of New Hampshire							
University of Wyoming							
Washington State University							
Biosystems Engineering	22,432	Full	9	$13,229	Full	None	5.0
Mean	**35,562**			**$17,517**			**5.1**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho										
Food Science & Toxicology	*6.0*	*2.0*	*0.3*	*3.90*	*600*	*3.0*	*785*			
Iowa State University										
Food Science & Technology	22.0	30.0	1.4						14	0.64
Kansas State University										
Food Science	40.0	14.0	0.4	3.20	550	4.0	550		32	0.80
Michigan State University										
Food Science	22.0	33.7	1.5						38	1.73
Montana State University										
University of Arizona										
University of California-Davis										
Food Science	42.0	28.0	0.7	3.50	600	4.5	760		25	0.60
University of Nebraska-Lincoln										
Food Science & Technology	18.0	15.0	0.8	3.30	550	4.5	700		23	1.28
University of New Hampshire										
University of Wyoming										
Washington State University										
Food Science	9.0	11.0	1.2						15	1.67
Mean	**22.7**	**19.1**	**0.9**	**3.48**	**575**	**4.5**	**699**		**25**	**1.12**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Food Science & Toxicology	*$318,346*	*$53,058*	*1,094*	*182.33*	*4,707*	*784.50*
Iowa State University						
Food Science & Technology	$11,315,822	$514,356	3,522	160.09	14,784	672.00
Kansas State University						
Food Science	$2,534,539	$63,363	1,863	46.58	6,217	155.43
Michigan State University						
Food Science	$2,402,544	$109,207	3,159	143.59	17,782	808.27
Montana State University						
University of Arizona						
University of California-Davis						
Food Science			7,062	168.14	32,874	782.71
University of Nebraska-Lincoln						
Food Science & Technology	$2,010,771	$111,710	2,085	115.83	8,147	452.61
University of New Hampshire						
University of Wyoming						
Washington State University						
Food Science	$2,353,550	$261,506	2,263	251.44	10,051	1,116.78
Mean	**$3,489,262**	**$185,533**	**3,007**	**152.57**	**13,509**	**681.76**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Food Science & Toxicology	*4,898*	*None*	*12*	*$ 0,595*	*None*	*None*	*NewProgram*
Iowa State University							
Food Science & Technology		Full	12	$18,103	Full	None	5.5
Kansas State University							
Food Science		Partial	9	$17,000	Partial	None	5.5
Michigan State University							
Food Science	59,709	Full	12	$14,000	Full	Partial	5.3
Montana State University							
University of Arizona							
University of California-Davis		Partial to					
Food Science		Full	12	$21,000	Partial	None	5.0
University of Nebraska-Lincoln							
Food Science & Technology		Full	9	$17,485	Full	None	5.0
University of New Hampshire							
University of Wyoming							
Washington State University							
Food Science	16,914	Full	9	$12,722	Full	None	4.3
Mean	**27,174**			**$15,844**			**5.1**

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Microbiology, Molecular Biology & Biochemistry	*16.0*	*29.0*	*1.8*	*3.50*	*422*	*4.0*	*720*		*19*	*1.19*
Iowa State University Biochemistry	31.0	47.0	1.5						14	0.45
Iowa State University Molecular, Cellular, and Developmental Biology	74.0	89.0	1.2						20	0.27
Iowa State University Microbiology	18.0	26.0	1.4						9	0.50
Kansas State University Biochemistry	13.0	28.0	2.2	3.20	550	4.0	600		23	1.77
Kansas State University Microbiology	53.0	41.0	0.8	3.30	550	4.0	600		34	0.64
Michigan State University Biochemistry and Molecular Biology	36.0	63.0	1.8						25	0.69
Michigan State University Microbiology and Molecular Genetics	39.5	39.0	1.0						30	0.76
Montana State University Biochemistry	15.0	17.0	1.1		486	4.4	663		12	0.80
Montana State University Microbiology	9.0	19.0	2.1		512	4.5	633		1	0.11
University of Arizona Biochemistry and Molecular and Cellular Biology	66.0	60.0	0.9	3.60	500	4.5	750		60	0.91
University of Arizona Microbiology	17.0	8.0	0.5	3.50	470	3.8	710		25	1.47
University of California-Davis Biochemistry and Molecular Biology	100.0	90.0	0.9	3.60	500	5.0	760		44	0.44

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of California-Davis Microbiology	14.0	53.0	3.8	3.60	500	4.5	750		34	2.43
University of Nebraska-Lincoln Biochemistry	19.0	25.0	1.3	3.50	550	4.5	750		20	1.05
University of Nebraska-Lincoln Biological Sciences (Microbiology and Molecular Biology Graduate Research Emphasis Group)	24.0	44.0	1.8	3.60	550	4.5	760		19	0.79
University of New Hampshire Biochemistry	8.0	16.0	2.0	3.20	499	3.6	712		15	1.88
University of New Hampshire Microbiology	7.0	5.0	0.7	3.20	513	3.5	550		7	1.00
University of Wyoming Molecular and Cellular Life Sciences	41.0	40.0	1.0	3.50	500	4.5	660		9	0.22
Washington State University Molecular Biosciences	27.0	58.0	2.1						57	2.11
Mean	**31.4**	**39.9**	**1.5**	**3.44**	**507**	**4.2**	**687**		**24**	**0.97**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	Research $ per Faculty Five-Year Average 2001-02 through 2005-06	Papers Published 2001-02 through 2005-06	Papers Published Per Faculty 2001-02 through 2005-06	Citations Received in Periodical Literature 2001-02 through 2005-06	Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06
University of Idaho						
Microbiology, Molecular Biology & Biochemistry	*$4,335,470*	*$270,967*	*616*	*38.50*	*3,313*	*207.06*
Iowa State University						
Biochemistry	$11,706,471	$377,628		79.06		465.65
Iowa State University						
Molecular, Cellular, and Developmental Biology			2,451	33.12	14,435	195.07
Iowa State University						
Microbiology	$817,991	$45,444		136.17		801.94
Kansas State University						
Biochemistry	$2,286,058	$175,851	1,604	123.38	7,761	597.00
Kansas State University						
Microbiology	$10,028,513	$189,217		30.26		146.43
Michigan State University						
Biochemistry and Molecular Biology	$13,553,352	$376,482	3,197	89.05	25,586	712.70
Michigan State University						
Microbiology and Molecular Genetics	$3,817,243	$96,639		80.94		647.75
Montana State University						
Biochemistry	$4,407,739	$293,849	784	52.27	5,114	360.93
Montana State University						
Microbiology	$10,781	$1,198		87.11		601.56
University of Arizona						
Biochemistry and Molecular and Cellular Biology	$9,063,771	$137,330	4,269	64.68	44,529	674.68
University of Arizona						
Microbiology	$1,998,025	$117,531		251.12		2,619.35

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of California-Davis Biochemistry and Molecular Biology	$11,247,341	$112,473	6,621	66.21	46,220	462.20
University of California-Davis Microbiology	$4,030,644	$287,903		472.93		3,301.43
University of Nebraska-Lincoln Biochemistry	$5,976,460	$314,551		74.42		380.53
University of Nebraska-Lincoln Biological Sciences (Microbiology and Molecular Biology Graduate Research Emphasis Group)	$7,313,226	$304,718	1,414	58.92	7,230	301.25
University of New Hampshire Biochemistry	$2,066,861	$258,358	601	75.13	3,528	441.00
University of New Hampshire Microbiology	$338,021	$48,289		85.86		504.00
University of Wyoming Molecular and Cellular Life Sciences	$2,791,022	$68,074	399	9.73	2,827	68.95
Washington State University Molecular Biosciences	$5,711,075	$211,521	2,334	86.44	15,115	559.81
Mean	**$5,342,109**	**$194,106**	**2,208**	**99.77**	**15,969**	**702.46**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	Tuition Remisson	Usual and Customary Stipend Time (Months)	Average HTE Stipend Amount	Health Insurance for Student	Health Insurance for Student's Dependents	Average Time to Degree 2001-02 through 2005-06 (Years)
University of Idaho							
Microbiology, Molecular Biology & Biochemistry	*16,806*	*Full*	*9 to 12*	*$19,948*	*Partial*	*None*	*5.2*
Iowa State University							
Biochemistry	43,320	Partial to Full	9	$22,990	Full	None	5.0
Iowa State University							
Molecular, Cellular, and Developmental Biology		Partial to Full	9	$25,000	Full	None	5.0
Iowa State University							
Microbiology	18,239	Partial to Full	9	$22,990	Full	None	7.0
Kansas State University							
Biochemistry	32,900	Partial to Full	9	$19,260	Partial	None	5.5
Kansas State University							
Microbiology		Partial to Full	9	$21,500	Partial	None	5.0
Michigan State University							
Biochemistry and Molecular Biology	84,703	Full	9	$25,800	Full	Partial	5.0
Michigan State University							
Microbiology and Molecular Genetics	66,650	Full	9	$25,800	Full	Partial	5.0
Montana State University							
Biochemistry		Full	9	$14,301	None	None	4.2
Montana State University							
Microbiology		Full	9	$13,176	None	None	4.2
University of Arizona							
Biochemistry and Molecular and Cellular Biology	36,677	Partial to Full	9	$20,772	Full	None	5.5
University of Arizona							
Microbiology	14,181	Partial to Full	9	$15,698	Full	None	New Program

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of California-Davis Biochemistry and Molecular Biology		Full	12	$22,000	Full	None	5.0
University of California-Davis Microbiology		Full	12	$21,240	Full	None	5.2
University of Nebraska-Lincoln Biochemistry		Full	12	$19,000	Partial	Partial	5.5
University of Nebraska-Lincoln Biological Sciences (Microbiology and Molecular Biology Graduate Research Emphasis Group)	12,675	Full	12	$14,000	Partial	Partial	4.5
University of New Hampshire Biochemistry		Full	9	$13,200	None	None	5.3
University of New Hampshire Microbiology		Full	9	$13,200	None	None	5.7
University of Wyoming Molecular and Cellular Life Sciences		Full	9	$19,000	Full	None	5.5
Washington State University Molecular Biosciences	69,003	Full	9	$15,052	Full	None	5.5
Mean	**39,515**			**$19,196**			**5.2**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Plant Science	*16.0*	*11.0*	*0.7*	*3.80*	*440*		*590*		*13*	*0.81*
University of Idaho Entomology	*11.0*	*8.0*	*0.7*	*3.60*	*570*		*500*		*4*	*0.36*
University of Idaho Soil Science	*7.0*	*5.0*	*0.7*	*3.60*	*310*		*710*		*1*	*0.14*
Iowa State University Plant Pathology	20.0	23.0	1.2						9	0.45
Iowa State University Plant Physiology	36.0	27.0	0.8						13	0.36
Iowa State University Entomology	24.0	21.0	0.9						16	0.67
Iowa State University Soil Science	24.0	27.0	1.1						72	3.00
Kansas State University Agronomy	36.0	22.0	0.6	3.20	550	4.0	550		25	0.69
Kansas State University Entomology	18.0	28.0	1.6	3.20	550	4.0	600		17	0.94
Kansas State University Plant Pathology	20.0	25.0	1.3	3.20	550	4.0	600		17	0.85
Michigan State University Crop and Soil Science	28.0	43.0	1.5						28	1.00
Michigan State University Entomology	21.0	16.5	0.8						11	0.52
Michigan State University Plant Pathology	9.0	9.0	1.0						6	0.67
Montana State University Plant Science	24.0	7.0	0.3		486	2.9	701		5	0.21
University of Arizona Entomology	27.0	11.0	0.4	3.30	570	4.5	700		10	0.37

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Arizona Plant Sciences	23.0	50.0	2.2	3.30	570	4.5	700		25	1.09
University of Arizona Soil, Water and Environmental Sciences: Concentration in Soil Science	23.0	3.0	0.1	3.50	570	4.5	700		3	0.13
University of California-Davis Entomology	24.0	27.0	1.1	3.60	580	5.0	760		11	0.46
University of California-Davis Plant Biology	100.0	68.0	0.7	3.60	580	4.5	760		56	0.56
University of California-Davis Soils and Biogeochemistry	35.0	30.0	0.9	3.60	580	4.5	760		1	0.03
University of Nebraska-Lincoln Agronomy	84.0	40.0	0.5	3.50					38	0.45
University of Nebraska-Lincoln Entomology	20.0	16.0	0.8	3.50					24	1.20
University of New Hampshire Plant Biology	17.0	8.0	0.5	3.30	470	4.3	609		11	0.65
University of Wyoming Entomology	4.0	1.0	0.3	3.50	540	4.5	700		4	1.00
University of Wyoming Soil Science	7.0	6.0	0.9	3.50	540	4.5	700		4	0.57
Washington State University Entomology	20.0	13.0	0.7						4	0.20
Washington State University Crop and Soil Science	31.0	17.0	0.5						16	0.52
Washington State University Plant Pathology	19.0	15.0	0.8						12	0.63
Mean	**26.0**	**20.6**	**0.8**	**3.46**	**529**	**4.3**	**665**		**16**	**0.66**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	Research $ per Faculty Five-Year Average 2001-02 through 2005-06	Papers Published 2001-02 through 2005-06	Papers Published Per Faculty 2001-02 through 2005-06	Citations Received in Periodical Literature 2001-02 through 2005-06	Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06
University of Idaho Plant Science	*$1,698,866*	*$106,179*	*946*	*59.13*	*3,422*	*213.88*
University of Idaho Entomology		*$154,442*	*688*	*62.55*	*2,405*	*218.64*
University of Idaho Soil Science		*$242,695*	*691*	*98.71*	*2,336*	*333.71*
Iowa State University Plant Pathology	$5,433,306	$271,665	946	47.30	3,422	171.10
Iowa State University Plant Physiology	$12,102,759	$336,188		26.28		95.06
Iowa State University Entomology	$2,449,631	$102,068	1,521	63.38	6,611	275.46
Iowa State University Soil Science	$6,865,292	$286,054	691	28.79	2,336	97.33
Kansas State University Agronomy	$6,593,241	$183,146	972	27.00	3,886	107.94
Kansas State University Entomology	$1,402,643	$77,925	1,127	62.61	4,469	248.28
Kansas State University Plant Pathology	$4,304,619	$215,231	1,684	84.20	6,876	343.80
Michigan State University Crop and Soil Science	$6,504,678	$232,310	1,639	58.54	9,481	338.61
Michigan State University Entomology	$5,991,949	$285,331	1,647	78.43	9,716	462.67
Michigan State University Plant Pathology	$2,306,567	$256,285	2,717	301.89	18,426	2,047.33
Montana State University Plant Science	$2,843,082	$118,462	1,026	42.75	4,652	193.83
University of Arizona Entomology	$1,221,186	$45,229	1,730	64.07	9,880	365.93

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Arizona Plant Sciences	$12,007,844	$522,080	2,550	110.87	16,320	709.57
University of Arizona Soil, Water and Environmental Sciences: Concentration in Soil Science	$3,513,713	$152,770	1,630	70.87	9,459	411.26
University of California-Davis Entomology			3,178	132.42	15,630	651.25
University of California-Davis Plant Biology	$3,508,181	$35,082	5,065	50.65	27,333	273.33
University of California-Davis Soils and Biogeochemistry	$7,288,841	$208,253	3,251	92.89	16,009	457.40
University of Nebraska-Lincoln Agronomy	$3,102,319	$36,932	1,103	13.13	4,157	49.49
University of Nebraska-Lincoln Entomology	$655,823	$32,791	1,183	59.15	4,181	209.05
University of New Hampshire Plant Biology	$809,445	$47,614	536	31.53	2,872	168.94
University of Wyoming Entomology	$1,594,436	$398,609	397	99.25	1,254	313.50
University of Wyoming Soil Science		$227,777	368	52.57	1,215	173.57
Washington State University Entomology	$2,543,782	$127,189	1,346	67.30	6,722	336.10
Washington State University Crop and Soil Science	$8,046,882	$259,577	1,326	42.77	6,422	207.16
Washington State University Plant Pathology	$2,958,489	$155,710	2,077	109.32	11,224	590.74
Mean	**$4,406,149**	**$189,540**	**1,557**	**72.80**	**7,804**	**359.46**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	Tuition Remisson	Usual and Customary Stipend Time (Months)	Average HTE Stipend Amount	Health Insurance for Student	Health Insurance for Student's Dependents	Average Time to Degree 2001-02 through 2005-06 (Years)
University of Idaho Plant Science	*12,954*	*Partial to Full*	*9 to 12*	*$12,493*	*Partial*	*None*	*5.1*
University of Idaho Entomology	*12,954*	*Partial to Full*	*9 to 12*	*$12,493*	*Partial*	*None*	*4.7*
University of Idaho Soil Science	*12,954*	*Partial to Full*	*9 to 12*	*$12,493*	*Partial*	*None*	*5.3*
Iowa State University Plant Pathology		Partial	9	$18,000	Full	Partial	5.0
Iowa State University Plant Physiology	150,250	Partial	9	$18,000	Full	Partial	4.0
Iowa State University Entomology		Partial	9	$18,000	Full	Partial	5.0
Iowa State University Soil Science		Partial	9	$18,000	Full	Partial	4.6
Kansas State University Agronomy	88,000	Partial	9	$16,500	Partial	None	5.0
Kansas State University Entomology	26,300	Partial	9	$16,500	Partial	None	5.5
Kansas State University Plant Pathology	39,000	Partial	9	$16,500	Partial	None	5.0
Michigan State University Crop and Soil Science	92,983	Full	9	$20,205	Full	Partial	4.0
Michigan State University Entomology	16,399	Full	9	$20,205	Full	Partial	4.6
Michigan State University Plant Pathology	22,205	Full	9	$20,205	Full	Partial	4.9
Montana State University Plant Science		Full	9	$13,500	None	None	5.1
University of Arizona Entomology		Partial to Full	9	$18,000	Full	None	5.5

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Arizona Plant Sciences	34,500	Full	9	$18,000	Full	None	5.0
University of Arizona Soil, Water and Environmental Sciences: Concentration in Soil Science		Partial to Full	9	$18,000	Full	None	5.0
University of California-Davis Entomology		Partial	12	$18,000	Full	None	5.0
University of California-Davis Plant Biology		Full	12	$18,000	Full	None	5.5
University of California-Davis Soils and Biogeochemistry		Partial to Full	12	$18,000	Full	None	4.5
University of Nebraska-Lincoln Agronomy		Full	12	$16,300	Partial	None	5.0
University of Nebraska-Lincoln Entomology		Partial to Full	12	$16,300	Partial	None	5.0
University of New Hampshire Plant Biology		Full	9	$13,200	None	None	6.4
University of Wyoming Entomology		Partial	9	$18,000	Full	None	5.5
University of Wyoming Soil Science		Partial	9	$18,000	Full	None	4.5
Washington State University Entomology	11,533	Full	9	$14,522	Full	None	5.0
Washington State University Crop and Soil Science	70,802	Full	9	$14,522	Full	None	4.2
Washington State University Plant Pathology	20,635	Full	9	$14,522	Full	None	4.5
Mean	**43,676**			**$16,659**			**4.9**

	Program Size				Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Education (Adult and Organizational Learning)	*11.0*	*78.0*	*7.1*	*3.80*	*465*		*501*		*9*	*0.82*
Iowa State University Kansas State University Adult and Continuing Education	5.0	29.0	5.8	3.20	500	4.0	500		13	2.60
Michigan State University Higher, Adult, and Lifelong Education	13.0	85.0	6.5						77	5.92
Montana State University Adult and Higher Education	19.0	42.0	2.2		482	4.3	521		21	1.11
University of Arizona										
University of California-Davis										
University of Nebraska-Lincoln										
University of New Hampshire										
University of Wyoming Education (Adult and Postsecondary Education)	8.0	60.0	7.5	3.70	500	4.0	500		52	6.50
Washington State University										
Mean	**11.2**	**58.8**	**5.8**	**3.57**	**487**	**4.1**	**506**		**34**	**3.39**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Education (Adult and Organizational Learning)	*$875,593*	*$79,599*	*95*	*5.00*	*91*	*8.27*
Iowa State University						
Kansas State University Adult and Continuing Education	$146,151	$29,230	218	43.60	319	63.80
Michigan State University Higher, Adult, and Lifelong Education	$578,143	$44,473	828	63.69	2,704	208.00
Montana State University Adult and Higher Education	$726,894	$38,258	54	2.84	79	4.16
University of Arizona						
University of California-Davis						
University of Nebraska-Lincoln						
University of New Hampshire						
University of Wyoming Education (Adult and Postsecondary Education)	$32,462	$4,058	95	11.88	179	22.38
Washington State University						
Mean	**$471,849**	**$39,123**	**250**	**25.40**	**674**	**61.32**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Education (Adult and Organizational Learning)		*None*	*9*	*$8,986*	*None*	*None*	*4.6*
Iowa State University							
Kansas State University Adult and Continuing Education		Partial	9	$9,000	Partial	None	4.0
Michigan State University Higher, Adult, and Lifelong Education	8,173	Partial	9	$10,881	Full	Partial	7.5
Montana State University Adult and Higher Education		Full	9	$7,164	None	None	5.0
University of Arizona							
University of California-Davis							
University of Nebraska-Lincoln							
University of New Hampshire							
University of Wyoming Education (Adult and Postsecondary Education)	1,400	Partial	9	$14,750	Full	None	6.0
Washington State University							
Mean	**4,787**			**$10,156**			**5.4**

	Program Size				Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Education (Educational Leadership)	*10.0*	*62.0*	*6.2*	*3.80*	*465*		*501*		*7*	*0.70*
Iowa State University Educational Leadership & Policy Studies	17.0	12.0	0.7						77	4.53
Kansas State University Educational Administration and Leadership	18.0	47.0	2.6	3.20	450	4.0	450		26	1.44
Michigan State University K-12 Educational Administration	11.0	73.0	6.6						56	5.09
Montana State University										
University of Arizona										
University of California-Davis Education (School, Organization, and Educational Policy)	4.0	4.0	1.0	3.40	500	4.5	760		2	0.50
University of Nebraska-Lincoln Educational Leadership & Higher Education	34.0	200.0	5.9	3.30	600	4.5	600		50	1.47
University of New Hampshire Education (Educational Leadership and Policy Studies)										
University of Wyoming Education (Educational Leadership)	18.0	49.0	2.7	3.50	600	4.0	600		12	0.67
Washington State University Education (Educational Leadership)	22.0	133.0	6.0						71	3.23
Mean	**16.8**	**72.5**	**4.0**	**3.44**	**523**	**4.3**	**582**		**38**	**2.20**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Education (Educational Leadership)	*$4,337,305*	*$433,731*	*53*	*5.30*	*88*	*8.80*
Iowa State University						
Educational Leadership & Policy Studies	$797,740	$46,926	346	20.35	1,145	67.35
Kansas State University						
Educational Administration and Leadership	$0	$0	196	10.89	318	17.67
Michigan State University						
K-12 Educational Administration	$492,492	$44,772	863	78.45	2,624	238.55
Montana State University						
University of Arizona						
University of California-Davis						
Education (School, Organization, and Educational Policy)	$1,456,528	$364,132	477	119.25	2,022	505.50
University of Nebraska-Lincoln						
Educational Leadership & Higher Education	$97,893	$2,879	377	11.09	794	23.35
University of New Hampshire						
Education (Educational Leadership and Policy Studies)						
University of Wyoming						
Education (Educational Leadership)	$0	$0	106	5.89	215	11.94
Washington State University						
Education (Educational Leadership)	$845,522	$38,433	314	14.27	799	36.32
Mean	**$1,003,435**	**$116,359**	**342**	**33.19**	**1,001**	**113.69**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Education (Educational Leadership)		*None*	*9*	*$8,586*	*None*	*None*	*4.6*
Iowa State University							
Educational Leadership & Policy Studies	6,349	Partial	9	$10,800	Full	Partial	3.5
Kansas State University							
Educational Administration and Leadership		Partial	9	$9,000	Partial	None	4.5
Michigan State University							
K-12 Educational Administration	8,173	Partial	9	$10,881	Partial	None	6.5
Montana State University							
University of Arizona							
University of California-Davis							
Education (School, Organization, and Educational Policy)		Partial	9	$13,000	None	None	4.0
University of Nebraska-Lincoln							
Educational Leadership & Higher Education		Full	9	$10,800	Full	None	4.0
University of New Hampshire							
Education (Educational Leadership and Policy Studies)							
University of Wyoming							
Education (Educational Leadership)		Partial	9	$10,000	Full	None	4.8
Washington State University							
Education (Educational Leadership)	347	Full	9	$12,714	Full	None	4.5
Mean	**4,956**			**$10,773**			**4.6**

	Program Size				Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Education (Curriculum and Instruction)	*13.0*	*98.0*	*7.5*	*3.80*	*462*		*501*		*11*	*0.85*
Iowa State University Curriculum & Instruction	31.0	47.0	1.5						29	0.94
Kansas State University Curriculum and Instruction	29.0	60.0	2.1	3.60	461	4.5	532		104	3.59
Michigan State University Curriculum, Teaching & Educational Policy	48.0	133.3	2.8						75	1.56
Montana State University										
University of Arizona										
University of California-Davis										
University of Nebraska-Lincoln Teaching, Curriculum, & Learning	24.0	55.0	2.3	3.30	500	4.5	500		65	2.71
University of New Hampshire Education (Curriculum & Instruction)	36.0	62.0	1.7	3.50	526	4.9	534		29	0.81
University of Wyoming Education (Curriculum & Instruction)	19.0	36.0	1.9	3.20	500	4.0	500		26	1.37
Washington State University										
Mean	**28.6**	**70.2**	**2.8**	**3.48**	**490**	**4.5**	**513**		**48**	**1.69**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Education (Curriculum and Instruction)	*$27,000*	*$2,077*	*4*	*0.31*	*9*	*0.69*
Iowa State University Curriculum & Instruction	$2,094,150	$67,553	66	2.13	46	1.48
Kansas State University Curriculum and Instruction	$156,466	$5,395	20	0.69	5	0.17
Michigan State University Curriculum, Teaching & Educational Policy	$3,284,769	$68,433	156	3.25	309	6.44
Montana State University						
University of Arizona						
University of California-Davis						
University of Nebraska-Lincoln Teaching, Curriculum, & Learning	$431,413	$17,976	59	2.46	53	2.21
University of New Hampshire Education (Curriculum & Instruction)	$48,070	$1,335	26	0.72	17	0.47
University of Wyoming Education (Curriculum & Instruction)	$0	$0	29	1.53	25	1.32
Washington State University						
Mean	**$863,124**	**$23,253**	**51**	**1.58**	**66**	**1.83**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Education (Curriculum and Instruction)		*None*	*9*	*$8,986*	*None*	*None*	*4.6*
Iowa State University Curriculum & Instruction		Partial to Full	9	$9,250	Full	None	5.0
Kansas State University Curriculum and Instruction		Partial	9	$12,000	Partial	None	4.5
Michigan State University Curriculum, Teaching & Educational Policy	389	Partial	9	$10,332	Partial	None	4.5
Montana State University							
University of Arizona							
University of California-Davis							
University of Nebraska-Lincoln Teaching, Curriculum, & Learning		Partial	9	$10,800	Full	None	5.0
University of New Hampshire Education (Curriculum & Instruction)		Full	9	$13,200	None	None	6.3
University of Wyoming Education (Curriculum & Instruction)		Partial	9	$8,000	Full	None	4.5
Washington State University							
Mean				**$10,367**			**4.9**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho										
Chemical Engineering	*9.0*	*3.0*	*0.3*	*3.40*	*416*		*665*		*3*	*0.33*
Iowa State University										
Chemical Engineering	17.0	45.0	2.6						40	2.35
Kansas State University										
Chemical Engineering	11.0	14.0	1.3	3.40	577	3.9	790		10	0.91
Michigan State University										
Chemical Engineering and Materials Science	25.0	73.6	2.9						44	1.76
Montana State University										
Engineering:Option in Chemical Engineering	8.0	9.0	1.1		510	4.1	724		1	0.13
University of Arizona										
Chemical Engineering	15.0	33.0	2.2	3.50	550	4.5	750		20	1.33
University of California-Davis										
Chemical Engineering	31.0	52.0	1.7	3.50	600	4.3	790		35	1.13
University of Nebraska-Lincoln										
Chemical and Materials Engineering	12.0	10.0	0.8	3.70	500	4.5	760		9	0.75
University of New Hampshire										
Chemical Engineering	7.0	1.0	0.1		710		800		4	0.57
University of Wyoming										
Chemical Engineering	13.0	19.0	1.5	3.50	500	4.5	700		5	0.38
Washington State University										
Chemical Engineering	9.0	16.0	1.8						9	1.00
Mean	**14.3**	**25.1**	**1.5**	**3.50**	**545**	**4.3**	**747**		**16**	**0.97**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Chemical Engineering	*$95,870*	*$10,652*	*185*	*53.89*	*1,985*	*220.56*
Iowa State University						
Chemical Engineering	$6,782,662	$398,980	2,399	141.12	12,669	745.24
Kansas State University						
Chemical Engineering	$1,326,914	$120,629	824	74.91	4,727	429.73
Michigan State University						
Chemical Engineering and Materials Science	$2,349,179	$93,967	1,922	76.88	13,948	557.92
Montana State University						
Engineering:Option in Chemical Engineering	$805,659	$100,707	553	69.13	2,567	320.88
University of Arizona						
Chemical Engineering	$3,992,212	$266,147	2,736	182.40	15,605	1,040.33
University of California-Davis						
Chemical Engineering			3,429	110.61	18,846	607.94
University of Nebraska-Lincoln						
Chemical and Materials Engineering	$6,796,303	$566,359	1,116	93.00	5,748	479.00
University of New Hampshire						
Chemical Engineering	$417,489	$59,641	359	51.29	2,208	315.43
University of Wyoming						
Chemical Engineering	$1,145,715	$88,132	381	29.31	1,422	109.38
Washington State University						
Chemical Engineering	$1,117,889	$124,210	1,222	135.78	7,611	845.67
Mean	**$2,482,989**	**$182,942**	**1,402**	**92.57**	**7,940**	**515.64**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Chemical Engineering	*3,154*	*Full*	*10*	*$13,784*	*Full*	*None*	*4.7*
Iowa State University							
Chemical Engineering		Full	12	$24,000	Full	None	5.0
Kansas State University							
Chemical Engineering		Partial	12	$24,000	Partial	None	5.0
Michigan State University							
Chemical Engineering and Materials Science	26,909	Full	12	$22,303	Full	Partial	5.4
Montana State University							
Engineering:Option in Chemical Engineering		Full	9	$13,500	None	None	5.3
University of Arizona							
Chemical Engineering	12,905	Partial	12	$21,000	Full	None	5.8
University of California-Davis							
Chemical Engineering	33,217	Full	12	$21,400	None	None	4.5
University of Nebraska-Lincoln							
Chemical and Materials Engineering		Partial to Full	12	$19,800	Full	None	5.0
University of New Hampshire							
Chemical Engineering		Full	9	$13,200	None	None	5.0
University of Wyoming							
Chemical Engineering	18,000	Full	9	$16,500	Full	None	5.0
Washington State University							
Chemical Engineering	7,067	Full	9	$14,039	Full	None	5.5
Mean	**16,875**			**$18,498**			**5.1**

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)			Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math Total		
University of Idaho									
Civil Engineering	*13.0*	*13.0*	*1.0*	*3.60*	*365*		*745*	*11*	*0.85*
Iowa State University									
Civil Engineering	31.0	90.0	2.9					20	0.65
Kansas State University									
Civil Engineering	15.0	16.0	1.1	3.40	500	4.0	650	19	1.27
Michigan State University									
Civil and Environmental Engineering	19.0	38.0	2.0					27	1.42
Montana State University									
Engineering: Option in Civil Engineering	19.0	3.0	0.2		401	4.0	670	1	0.05
University of Arizona									
Civil Engineering	10.0	18.0	1.8	3.70	390	4.3	750	15	1.50
University of California-Davis									
Civil and Environmental Engineering	32.0	89.0	2.8	3.60	500	4.5	760	56	1.75
University of Nebraska-Lincoln									
Civil Engineering	25.0	10.0	0.4	3.70	500	4.5	760	9	0.36
University of New Hampshire									
Civil Engineering	14.0	12.0	0.9	3.30	512	3.6	696	8	0.57
University of Wyoming									
Civil Engineering	13.0	4.0	0.3	3.60	600	3.5	776	5	0.38
Washington State University									
Civil Engineering	27.0	33.0	1.2					25	0.93
Mean	**19.8**	**29.6**	**1.3**	**3.56**	**471**	**4.1**	**726**	**18**	**0.88**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Civil Engineering	*$196,434*	*$15,110*	*258*	*58.31*	*2,405*	*185.00*
Iowa State University						
Civil Engineering	$14,892,599	$480,406	1,745	56.29	6,080	196.13
Kansas State University						
Civil Engineering	$1,625,655	$108,377	1,033	68.87	3,375	225.00
Michigan State University						
Civil and Environmental Engineering	$1,944,945	$102,366	1,920	101.05	9,410	495.26
Montana State University						
Engineering: Option in Civil Engineering	$787,728	$41,459	580	30.53	1,811	95.32
University of Arizona						
Civil Engineering	$1,129,472	$112,947	2,388	238.80	11,099	1,109.90
University of California-Davis						
Civil and Environmental Engineering	$14,040,526	$438,766	3,293	102.91	13,952	436.00
University of Nebraska-Lincoln						
Civil Engineering	$3,548,657	$141,946	1,341	53.64	4,442	177.68
University of New Hampshire						
Civil Engineering	$5,510,864	$393,633	769	54.93	4,050	289.29
University of Wyoming						
Civil Engineering	$1,493,019	$114,848	637	49.00	2,126	163.54
Washington State University						
Civil Engineering	$4,830,692	$178,915	1,434	53.11	6,354	235.33
Mean	**$4,545,508**	**$193,525**	**1,445**	**78.86**	**5,919**	**328.04**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Civil Engineering	*2,347*	*Full*	*9 to 12*	*$18,075*	*Full*	*None*	*4.9*
Iowa State University							
Civil Engineering	66,504	Partial	12	$24,000	Full	None	4.5
Kansas State University		Partial to					
Civil Engineering	6,000	Full	12	$20,000	Partial	None	6.0
Michigan State University							
Civil and Environmental Engineering	14,910	Full	12	$25,905	Full	Partial	5.0
Montana State University							
Engineering: Option in Civil Engineering		Full	9	$12,573	None	None	5.0
University of Arizona		Partial to					
Civil Engineering	19,358	Full	9	$20,000	Full	None	4.6
University of California-Davis							
Civil and Environmental Engineering		Full	9	$24,000	Full	None	5.0
University of Nebraska-Lincoln		Partial to					
Civil Engineering		Full	12	$17,000	Full	None	6.0
University of New Hampshire							
Civil Engineering		Full	9	$13,200	None	None	7.0
University of Wyoming							
Civil Engineering		Full	9	$14,452	Full	None	6.0
Washington State University							
Civil Engineering	21,220	Full	9	$12,722	Full	None	5.5
Mean	**21,723**			**$18,357**			**5.4**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho Computer Science	*11.0*	*34.0*	*3.1*	*3.50*	*568*	*5.0*	*704*		*16*	*1.45*
Iowa State University Computer Science	28.0	99.0	3.5						10	0.36
Kansas State University Computing and Information Sciences	19.0	19.0	1.0	3.50	450	4.0	716		8	0.42
Michigan State University Computer Science and Engineering	25.0	82.0	3.3						51	2.04
Montana State University										
University of Arizona Computer Science	15.0	34.0	2.3	3.60	600	4.5	760		13	0.87
University of California-Davis Computer Science	33.0	130.0	3.9	3.60	590	4.9	750		38	1.15
University of Nebraska-Lincoln Computer Science	16.0	61.0	3.8	3.60		3.5		1250	25	1.56
University of New Hampshire Computer Science	12.0	17.0	1.4	3.60	562	3.6	748		4	0.33
University of Wyoming Computer Science	9.0	18.0	2.0	3.40	550	4.5	710		2	0.22
Washington State University Computer Science	17.0	25.0	1.5						5	0.29
Mean	**18.5**	**51.9**	**2.6**	**3.54**	**553**	**4.3**	**731**		**17**	**0.87**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Computer Science	*$1,056,824*	*$96,075*	*80*	*8.18*	*238*	*21.64*
Iowa State University						
Computer Science	$3,651,645	$130,416	399	14.25	690	24.64
Kansas State University						
Computing and Information Sciences	$2,879,619	$151,559	170	8.95	235	12.37
Michigan State University						
Computer Science and Engineering	$2,574,433	$102,977	367	14.68	2,007	80.28
Montana State University						
University of Arizona						
Computer Science	$1,472,882	$98,192	489	32.60	1,186	79.07
University of California-Davis						
Computer Science			518	15.70	1,208	36.61
University of Nebraska-Lincoln						
Computer Science	$2,964,059	$185,254	231	14.44	364	22.75
University of New Hampshire						
Computer Science	$469,622	$39,135	65	5.42	179	14.92
University of Wyoming						
Computer Science	$201,719	$22,413	53	5.89	113	12.56
Washington State University						
Computer Science	$2,729,185	$160,540	208	12.24	420	24.71
Mean	**$1,999,999**	**$109,618**	**259**	**13.23**	**664**	**32.95**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Computer Science	*3,445*	*None*	*9*	*$14,300*	*None*	*None*	*4.5*
Iowa State University							
Computer Science		Full	9	$13,900	Full	None	5.0
Kansas State University							
Computing and Information Sciences	2,833	Partial to Full	9	$17,005	Partial	None	5.5
Michigan State University							
Computer Science and Engineering	6,539	Full	12	$20,000	Full	Partial	5.2
Montana State University							
University of Arizona							
Computer Science	4,740	Partial	9	$14,269	Full	None	6.0
University of California-Davis							
Computer Science		Partial to Full	9	$19,500	Full	None	5.0
University of Nebraska-Lincoln							
Computer Science		Full	9 to 10	$15,700	Partial	None	6.0
University of New Hampshire							
Computer Science		Full	9	$13,200	None	None	9.5
University of Wyoming							
Computer Science	1,000	Partial	9	$14,452	Full	None	5.0
Washington State University							
Computer Science	8,214	Full	9	$12,270	Full	None	5.2
Mean	**4,462**			**$15,466**			**5.7**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Electrical and Computer Engineering	*$512,866*	*$36,633*	*310*	*57.86*	*2,726*	*194.71*
Iowa State University						
Electrical Engineering	$11,252,186	$204,585	4,520	82.18	26,548	482.69
Kansas State University						
Electrical Engineering	$578,587	$28,929	1,833	91.65	8,205	410.25
Michigan State University						
Electrical and Computer Engineering	$5,337,742	$152,507	3,938	112.51	24,096	688.46
Montana State University						
Engineering: Option in Electrical & Computer Engineering	$2,471,246	$176,518	1,090	77.86	5,506	393.29
University of Arizona						
Electrical and Computer Engineering	$5,518,461	$157,670	6,271	179.17	38,160	1,090.29
University of California-Davis						
Electrical and Computer Engineering			5,691	126.47	31,889	708.64
University of Nebraska-Lincoln						
Electrical Engineering	$1,420,464	$83,557	2,370	139.41	9,408	553.41
University of New Hampshire						
Electrical & Computer Engineering	$4,223,338	$324,872	1,050	80.77	5,895	453.46
University of Wyoming						
Electrical Engineering	$677,338	$45,156	745	49.67	3,402	226.80
Washington State University						
Electrical and Computer Engineering	$2,729,185	$129,961	2,131	101.48	10,236	487.43
Mean	**$3,472,141**	**$134,039**	**2,768**	**99.91**	**15,097**	**517.22**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Electrical and Computer Engineering	*2,351*	*None*	*9 to 12*	*$14,325*	*None*	*None*	*5.4*
Iowa State University							
Electrical Engineering		Partial to Full	12	$24,000	Full	None	5.0
Kansas State University							
Electrical Engineering	3,676	Full	9	$16,000	None	None	4.5
Michigan State University							
Electrical and Computer Engineering	12,899	Full	12	$20,000	Full	Partial	5.0
Montana State University							
Engineering: Option in Electrical & Computer Engineering		Full	9	$13,869	None	None	4.3
University of Arizona							
Electrical and Computer Engineering	27,497	Partial	9	$17,899	Full	None	5.0
University of California-Davis							
Electrical and Computer Engineering		Partial to Full	9	$18,500	None	None	5.0
University of Nebraska-Lincoln							
Electrical Engineering		Full	12	$15,000	Full	None	6.0
University of New Hampshire							
Electrical & Computer Engineering		Full	9	$13,200	None	None	5.5
University of Wyoming							
Electrical Engineering		Partial	9	$17,000	Full	None	4.5
Washington State University							
Electrical and Computer Engineering	8,214	Full	9	$12,371	Full	None	5.3
Mean	**10,927**			**$16,833**			**5.0**

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Materials Science and Engineering	*6.0*	*8.0*	*1.3*	*3.80*	*300*		*360*		*6*	*1.00*
Iowa State University Materials Science and Engineering	25.0	47.0	1.9						18	0.72
Kansas State University										
Michigan State University Materials Science and Engineering	26.0	80.0	3.1						22	0.85
Montana State University										
University of Arizona Materials Science and Engineering	13.0	25.0	1.9	3.50	550	4.0	700		28	2.15
University of California-Davis Materials Science and Engineering	31.0	34.0	1.1	3.50	750	4.3	760		20	0.65
University of Nebraska-Lincoln Chemical and Materials Engineering	12.0	10.0	0.8	3.70	500	4.5	760		9	0.75
University of New Hampshire Engineering (Materials Science Option)	11.0	8.0	0.7	3.40	449	3.7	727		3	0.27
University of Wyoming										
Washington State University Materials Science	28.0	21.0	0.8						14	0.50
Mean	**19.0**	**29.1**	**1.5**	**3.58**	**510**	**4.1**	**661**		**15**	**0.86**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Materials Science and Engineering	*$629,582*	*$104,930*	*[illegible]*	*43.33*	*814*	*135.67*
Iowa State University Materials Science and Engineering	$19,865,045	$794,602	2,257	90.28	18,317	732.68
Kansas State University						
Michigan State University Materials Science and Engineering	$2,763,069	$106,272	1,707	65.65	10,641	409.27
Montana State University						
University of Arizona Materials Science and Engineering	$1,500,578	$115,429	1,808	139.08	9,007	692.85
University of California-Davis Materials Science and Engineering	$4,513,491	$145,596	2,041	65.84	11,530	371.94
University of Nebraska-Lincoln Chemical and Materials Engineering	$6,796,303	$566,359	788	65.67	3,630	302.50
University of New Hampshire Engineering (Materials Science Option)	$1,823,102	$165,737	193	17.55	1,326	120.55
University of Wyoming						
Washington State University Materials Science	$2,236,103	$79,861	673	24.04	2,691	96.11
Mean	**$5,015,909**	**$259,848**	**1,216**	**63.93**	**7,245**	**357.69**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Materials Science and Engineering	*8,344*	*Full*	*9 to 12*	*$18,847*	*Full*	*None*	*5.0*
Iowa State University Materials Science and Engineering	38,611	Partial to Full	12	$24,000	Full	Partial	5.0
Kansas State University							
Michigan State University Materials Science and Engineering	62,159	Full	12	$26,400	Full	Partial	4.0
Montana State University							
University of Arizona Materials Science and Engineering		Partial	9	$17,000	Full	None	4.5
University of California-Davis Materials Science and Engineering		Full	12	$21,400	None	None	4.3
University of Nebraska-Lincoln Chemical and Materials Engineering		Partial to Full	12	$15,000	Full	None	5.0
University of New Hampshire Engineering (Materials Science Option)		Full	9	$13,200	None	None	3.8
University of Wyoming							
Washington State University Materials Science	4,208	Full	9	$13,353	Full	None	5.4
Mean	**28,331**			**$18,650**			**4.6**

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho Mechanical Engineering	*15.0*	*12.0*	*0.8*	*3.90*	*550*		*780*		*12*	*0.80*
Iowa State University Mechanical Engineering	28.0	67.0	2.4						30	1.07
Kansas State University Mechanical Engineering	23.0	20.0	0.9	3.40	400	3.5	650		13	0.57
Michigan State University Mechanical Engineering	32.0	103.3	3.2						52	1.63
Montana State University Engineering: Option in Mechanical Engineering	11.0	1.0	0.1					1710	1	0.09
University of Arizona Mechanical Engineering	27.0	66.0	2.4	3.50	550	4.0	750		20	0.74
University of California-Davis Mechanical and Aeronautical Engineering	33.0	72.0	2.2	3.50	570	5.0	760		27	0.82
University of Nebraska-Lincoln Mechanical Engineering	16.0	20.0	1.3	3.70	570	4.5	780		13	0.81
University of New Hampshire Mechanical Engineering	15.0	13.0	0.9	3.60	497	4.0	737		11	0.73
University of Wyoming Mechanical Engineering	11.0	14.0	1.3	3.50	500	4.5	650		4	0.36
Washington State University Mechanical Engineering	26.0	28.0	1.1						8	0.31
Mean	**21.5**	**37.8**	**1.5**	**3.59**	**520**	**4.3**	**730**		**17**	**0.72**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Mechanical Engineering	*$555,259*	*$37,017*	*163*	*11.20*	*420*	*28.00*
Iowa State University						
Mechanical Engineering	$14,616,813	$522,029	1,015	36.25	3,621	129.32
Kansas State University						
Mechanical Engineering	$2,156,413	$93,757	446	19.39	1,516	65.91
Michigan State University						
Mechanical Engineering	$3,188,283	$99,634	887	27.72	3,776	118.00
Montana State University						
Engineering: Option in Mechanical Engineering	$1,087,195	$98,836	113	10.27	409	37.18
University of Arizona						
Mechanical Engineering	$3,481,232	$128,935	853	31.59	3,106	115.04
University of California-Davis						
Mechanical and Aeronautical Engineering	$5,200,000	$157,576	1,063	32.21	3,293	99.79
University of Nebraska-Lincoln						
Mechanical Engineering	$993,413	$62,088	438	27.38	1,065	66.56
University of New Hampshire						
Mechanical Engineering	$995,331	$66,355	119	7.93	294	19.60
University of Wyoming						
Mechanical Engineering	$668,717	$60,792	123	11.18	326	29.64
Washington State University						
Mechanical Engineering	$2,539,873	$97,687	500	19.23	1,980	76.15
Mean	**$3,225,684**	**$129,519**	**520**	**21.31**	**1,801**	**71.38**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	Tuition Remisson	Usual and Customary Stipend Time (Months)	Average HTE Stipend Amount	Health Insurance for Student	Health Insurance for Student's Dependents	Average Time to Degree 2001-02 through 2005-06 (Years)
University of Idaho							
Mechanical Engineering	*7,842*	*Partial to Full*	*9 to 12*	*$15,655*	*Full*	*None*	*6.0*
Iowa State University							
Mechanical Engineering		Full	12	$24,000	Full	None	5.0
Kansas State University		Partial to					
Mechanical Engineering		Full	9	$14,000	Full	None	5.0
Michigan State University							
Mechanical Engineering	22,793	Full	12	$22,500	Full	Partial	5.2
Montana State University							
Engineering: Option in Mechanical Engineering		Full	9	$15,354	None	None	4.8
University of Arizona							
Mechanical Engineering	27,423	Partial	9	$18,000	Full	None	5.0
University of California-Davis							
Mechanical and Aeronautical Engineering		Partial to Full	9	$21,500	None	None	5.0
University of Nebraska-Lincoln							
Mechanical Engineering		Full	12	$16,200	Partial	None	6.0
University of New Hampshire							
Mechanical Engineering		Full	9	$13,200	None	None	5.7
University of Wyoming							
Mechanical Engineering		Partial	9	$17,000	Full	None	5.0
Washington State University							
Mechanical Engineering	24,028	Full	9	$12,899	Full	None	4.7
Mean	**20,522**			**$17,301**			**5.2**

	Program Size				Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho Bioinformatics	*24.0*	*14.0*	*0.6*	*3.80*	*520*		*770*		*4*	*0.17*
Iowa State University Bioinformatics & Computational Biology	43.0	55.0	1.3		580	5.0	780		4	0.09
Kansas State University										
Michigan State University										
Montana State University										
University of Arizona										
University of California-Davis										
University of Nebraska-Lincoln Interdisciplinary Bioinformatics and Biological Modeling Group										
University of New Hampshire										
University of Wyoming										
Washington State University										
Mean	**33.5**	**34.5**	**0.9**	**3.80**	**550**	**5.0**	**775**		**4**	**0.13**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Bioinformatics			*1,492*	*62.17*	*5,199*	*216.63*
Iowa State University Bioinformatics & Computational Biology			4,095	116.16	31,706	737.35
Kansas State University						
Michigan State University						
Montana State University						
University of Arizona						
University of California-Davis						
University of Nebraska-Lincoln Interdisciplinary Bioinformatics and Biological Modeling Group						
University of New Hampshire						
University of Wyoming						
Washington State University						
Mean			**3,244**	**89.16**	**18,453**	**476.99**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Bioinformatics		*Full*	*9 to 12*	*$16,125*	*Full*	*None*	*6.1*
Iowa State University Bioinformatics & Computational Biology		Full	9	$19,500	Full	None	5.0
Kansas State University							
Michigan State University							
Montana State University							
University of Arizona							
University of California-Davis							
University of Nebraska-Lincoln Interdisciplinary Bioinformatics and Biological Modeling Group							
University of New Hampshire							
University of Wyoming							
Washington State University							
Mean				**$17,833**			**5.6**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho Environmental Science	*80.0*	*17.0*	*0.2*	*3.70*	*665*		*665*		*1*	*0.01*
Iowa State University Environmental Science	52.0	19.0	0.4							
Kansas State University										
Michigan State University Environmental Science and Policy	38.3	9.0	0.2						0	0.00
Montana State University Land Resources and Environmental Sciences	17.0	18.0	1.1		500	3.8	652		14	0.82
University of Arizona Soil, Water and Environmental Sciences	23.0	42.0	1.8	3.50	600	4.5	700		46	2.00
University of California-Davis										
University of Nebraska-Lincoln										
University of New Hampshire										
University of Wyoming										
Washington State University Environmental and Natural Resource Sciences	16.0	25.0	1.6						14	0.88
Mean	**37.7**	**21.7**	**0.9**	**3.60**	**578**	**4.2**	**672**		**15**	**0.93**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Environmental Science	*$166,818*	*$2,085*	*241*	*3.01*	*1,065*	*13.31*
Iowa State University						
Environmental Science			375	7.21	1,504	28.92
Kansas State University						
Michigan State University						
Environmental Science and Policy	$148,293	$3,872	495	12.92	3,446	89.97
Montana State University						
Land Resources and Environmental Sciences	$5,093,521	$299,619	208	12.24	685	40.29
University of Arizona						
Soil, Water and Environmental Sciences	$3,516,213	$152,879	744	32.35	3,069	133.43
University of California-Davis						
University of Nebraska-Lincoln						
University of New Hampshire						
University of Wyoming						
Washington State University						
Environmental and Natural Resource Sciences	$1,733,858	$108,366	288	18.00	1,330	83.13
Mean	**$2,131,741**	**$113,364**	**392**	**14.29**	**1,850**	**64.84**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Environmental Science		*Full*	*10 to 12*	*$20,384*	*Full*	*None*	*2.9*
Iowa State University		Partial to					
Environmental Science		Full	9	$18,500	Full	None	
Kansas State University							
Michigan State University							
Environmental Science and Policy	1,989	Full	12	$18,000	Full	Partial	
Montana State University							
Land Resources and Environmental							
Sciences		Full	9	$13,536	None	None	6.1
University of Arizona							
Soil, Water and Environmental		Partial to					
Sciences		Full	9	$19,000	Full	None	6.0
University of California-Davis							
University of Nebraska-Lincoln							
University of New Hampshire							
University of Wyoming							
Washington State University							
Environmental and Natural Resource							
Sciences	10,739	Full	9	$13,515	Full	None	6.8
Mean	**6,364**			**$17,156**			**5.5**

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Neuroscience	*17.0*	*3.0*	*0.2*	*3.40*	*537*	*4.0*	*727*		*1*	*0.06*
Iowa State University Neuroscience	11.0	26.0	2.4						4	0.36
Kansas State University										
Michigan State University Neuroscience	14.2	27.0	1.9						6	0.42
Montana State University										
University of Arizona Neuroscience	65.0	27.0	0.4	3.60	550	4.5	700		8	0.12
University of California-Davis Neuroscience	52.0	46.0	0.9	3.70	550	4.5	760		20	0.38
University of Nebraska-Lincoln										
University of New Hampshire										
University of Wyoming Neuroscience	11.0	9.0	0.8	3.50	525	4.5	726		2	0.18
Washington State University Neuroscience	26.0	20.0	0.8						13	0.50
Mean	**28.0**	**22.6**	**1.0**	**3.55**	**541**	**4.4**	**728**		**8**	**0.29**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Neuroscience			*1,275*	*75.00*	*4,943*	*290.76*
Iowa State University Neuroscience			4,487	407.91	31,622	2,874.73
Kansas State University						
Michigan State University Neuroscience	$376,352	$26,504	5,211	366.97	35,994	2,534.79
Montana State University						
University of Arizona Neuroscience	$1,502,833	$23,121	7,392	113.72	55,287	850.57
University of California-Davis Neuroscience	$12,982,929	$249,672	9,095	174.90	57,391	1,103.67
University of Nebraska-Lincoln						
University of New Hampshire						
University of Wyoming Neuroscience			994	90.36	4,534	412.18
Washington State University Neuroscience	$5,188,066	$199,541	2,904	111.69	16,619	639.19
Mean	**$5,012,545**	**$124,709**	**4,480**	**191.51**	**29,484**	**1,243.70**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Neuroscience		*Full*	*12*	*$21,055*	*Full*	*None*	*6.9*
Iowa State University		Partial to					
Neuroscience		Full	12	$24,000	Full	None	5.5
Kansas State University							
Michigan State University							
Neuroscience	24,103	Full	12	$24,600	Full	Partial	5.0
Montana State University							
University of Arizona							
Neuroscience		Full	12	$21,700	Full	None	5.0
University of California-Davis							
Neuroscience	1,118	Full	12	$21,996	Full	None	5.0
University of Nebraska-Lincoln							
University of New Hampshire							
University of Wyoming							
Neuroscience		Full	12	$20,000	Full	None	5.5
Washington State University							
Neuroscience	22,536	Full	9	$16,359	Full	None	5.8
Mean	**15,919**			**$21,387**			**5.5**

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)			Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math Total		
University of Idaho History	*8.0*	*6.0*	*0.8*	*3.50*	*547*	*5.0*	*547*	*8*	*1.00*
Iowa State University History	20.0	16.0	0.8					16	0.80
Kansas State University History	18.0	37.0	2.1	3.30	550	4.0	500	9	0.50
Michigan State University History	74.3	60.0	0.8					43	0.58
Montana State University History	19.0	7.0	0.4		643	4.5	570	0	0.00
University of Arizona History	32.0	68.0	2.1	3.30	600	4.5	550	37	1.16
University of California-Davis History	35.0	95.0	2.7	3.20				31	0.89
University of Nebraska-Lincoln History	31.0	38.0	1.2	3.90	580			23	0.74
University of New Hampshire History	26.0	25.0	1.0	3.50	593	5.3	527	21	0.81
University of Wyoming									
Washington State University History	24.0	21.0	0.9					31	1.29
Mean	**28.7**	**37.3**	**1.3**	**3.45**	**586**	**4.7**	**539**	**22**	**0.78**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho History	*$44,500*	*$5,563*	*22*	*2.75*	*6*	*0.75*
Iowa State University History	$26,527	$1,326	41	2.05	17	0.85
Kansas State University History	$116,893	$6,494	38	2.11	36	2.00
Michigan State University History	$80,144	$1,079	164	2.21	228	3.07
Montana State University History	$315,017	$16,580	21	1.11	6	0.32
University of Arizona History	$26,273	$821	169	5.28	217	6.78
University of California-Davis History	$648,350	$18,524	177	5.06	255	7.29
University of Nebraska-Lincoln History	$67,383	$2,174	70	2.26	35	1.13
University of New Hampshire History	$140,259	$5,395	46	1.77	10	0.38
University of Wyoming Washington State University History	$24,458	$1,019	56	2.33	50	2.08
Mean	**$148,980**	**$5,897**	**80**	**2.69**	**86**	**2.46**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho History		*None*	*<9*	*$2,500*	*Partial*	*None*	*8.3*
Iowa State University History	6,282	Full	9	$10,800	Full	None	6.0
Kansas State University History		Partial to Full	9	$8,500	Partial	None	6.5
Michigan State University History		Partial	9	$10,881	Full	Partial	8.0
Montana State University History		Full	9	$14,796	None	None	
University of Arizona History		Partial to Full	9	$12,692	Full	None	7.0
University of California-Davis History		Full	9	$15,000	Full	None	6.3
University of Nebraska-Lincoln History		Full	9	$11,783	Partial	Partial	6.0
University of New Hampshire History		Full	9	$13,200	None	None	7.2
University of Wyoming Washington State University History		Full	9	$12,416	Full	None	7.3
Mean				**$11,257**			**7.0**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho										
Political Science	*7.0*	*4.0*	*0.6*	*3.90*	*520*		*640*		*4*	*0.57*
Iowa State University										
Kansas State University										
Michigan State University										
Political Science	27.0	47.0	1.7						30	1.11
Montana State University										
University of Arizona										
Political Science	19.0	47.0	2.5	3.40	600	5.0	650		16	0.84
University of California-Davis										
Political Science	30.0	60.0	2.0	3.50	620	4.5	680		18	0.60
University of Nebraska-Lincoln										
Political Science	11.0	13.0	1.2	3.30	500	4.5	500		11	1.00
University of New Hampshire										
University of Wyoming										
Washington State University										
Political Science	22.0	65.0	3.0						21	0.95
Mean	**19.3**	**39.3**	**1.8**	**3.53**	**560**	**4.7**	**618**		**17**	**0.85**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Political Science	*$0*	*$0*	*55*	*7.86*	*50*	*7.14*
Iowa State University						
Kansas State University						
Michigan State University						
Political Science	$1,020,359	$37,791	341	12.63	648	24.00
Montana State University						
University of Arizona						
Political Science	$130,618	$6,875	402	21.16	959	50.47
University of California-Davis						
Political Science	$150,000	$5,000	339	11.30	601	20.03
University of Nebraska-Lincoln						
Political Science	$47,350	$4,305	143	13.00	239	21.73
University of New Hampshire						
University of Wyoming						
Washington State University						
Political Science	$849,483	$38,613	151	6.86	205	9.32
Mean	**$366,302**	**$15,431**	**239**	**12.13**	**450**	**22.12**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Political Science		*None*	*9 to 12*	*$12,000*	*None*	*None*	*5.5*
Iowa State University							
Kansas State University							
Michigan State University							
Political Science	9,704	Full	12	$13,460	Full	Partial	5.3
Montana State University							
University of Arizona		Partial to					
Political Science	278	Full	9	$12,000	Full	None	5.0
University of California-Davis		Partial to					
Political Science		Full	9	$15,610	None	None	5.5
University of Nebraska-Lincoln							
Political Science		Full	9	$12,000	Full	None	5.5
University of New Hampshire							
University of Wyoming							
Washington State University							
Political Science		Full	9	$12,364	Full	None	6.2
Mean	**4,991**			**$12,907**			**5.5**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho										
Natural Resources	*48.0*	*75.0*	*1.6*	*3.70*	*474*	*3.0*	*678*		*32*	*0.67*
Iowa State University										
Fisheries Biology	3.0	2.0	0.7						2	0.67
Iowa State University										
Forestry	20.0	12.0	0.6						8	0.40
Iowa State University										
Wildlife Biology	7.0	3.0	0.4						1	0.14
Kansas State University										
Michigan State University										
Fisheries and Wildlife	27.0	55.0	2.0						36	1.33
Michigan State University										
Forestry	15.0	23.7	1.6						16	1.07
Montana State University										
Fish and Wildlife Biology										
University of Arizona										
Natural Resources	33.0	40.0	1.2	3.50	500	4.0	700		37	1.12
University of California-Davis										
Ecology	120.0	180.0	1.5	3.50				1295	118	0.98
University of Nebraska-Lincoln										
Natural Resource Sciences	29.0	22.0	0.8	3.40	500	4.0	620		13	0.45
University of New Hampshire										
Natural Resources and Earth Systems Science	51.0	59.0	1.2	3.40	526	3.7	645		21	0.41
University of Wyoming										
Rangeland Ecology and Watershed Management	10.0	11.0	1.1	3.50	500	4.5	700		2	0.20

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
Washington State University										
Natural Resource Sciences	16.0	25.0	1.6						14	0.88
Mean	**31.6**	**42.3**	**1.2**	**3.50**	**500**	**3.8**	**669**		**25**	**0.69**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Natural Resources	*$210,831*	*$4,392*	*1,367*	*28.48*	*5,259*	*109.56*
Iowa State University Fisheries Biology		$1,214,039		1,293.33		6,063.67
Iowa State University Forestry	$3,642,116	$182,106	3,880	194.00	18,191	909.55
Iowa State University Wildlife Biology		$520,302		554.29		2,598.71
Kansas State University						
Michigan State University Fisheries and Wildlife	$6,424,949	$237,961	4,706	174.30	29,407	1,089.15
Michigan State University Forestry	$2,223,425	$148,228		313.73		1,960.47
Montana State University Fish and Wildlife Biology						
University of Arizona Natural Resources	$4,905,933	$148,665	5,683	172.21	39,836	1,207.15
University of California-Davis Ecology			9,247	77.06	54,646	455.38
University of Nebraska-Lincoln Natural Resource Sciences	$6,502,576	$224,227	2,838	97.86	11,707	403.69
University of New Hampshire Natural Resources and Earth Systems Science	$13,479,904	$264,312	1,330	26.08	6,605	129.51
University of Wyoming Rangeland Ecology and Watershed Management	$1,594,436	$159,444	1,191	119.10	3,994	399.40
Washington State University Natural Resource Sciences	$1,733,858	$108,366	3,356	209.75	18,357	1,147.31

Mean	**$4,524,225**	**$292,004**	**3,733**	**271.68**	**20,889**	**1,372.80**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Natural Resources	*25,312*	*Full*	*9 to 12*	*$18,007*	*Partial*	*None*	*5.2*
Iowa State University Fisheries Biology		Partial to Full	9	$17,500	Full	None	5.0
Iowa State University Forestry		Partial to Full	9	$18,000	Full	None	5.0
Iowa State University Wildlife Biology		Partial to Full	9	$18,000	Full	None	5.0
Kansas State University							
Michigan State University Fisheries and Wildlife	10,053	Full	9	$12,792	Full	Partial	5.0
Michigan State University Forestry	17,131	Full	9	$13,000	Full	Partial	5.4
Montana State University Fish and Wildlife Biology							
University of Arizona Natural Resources		Partial to Full	9	$15,815	Full	None	5.0
University of California-Davis Ecology		Full	12	$21,000	Full	None	5.5
University of Nebraska-Lincoln Natural Resource Sciences		Full	12	$18,000	Partial	Partial	6.0
University of New Hampshire Natural Resources and Earth Systems Science		Full	9	$13,200	None	None	4.7
University of Wyoming Rangeland Ecology and Watershed Management		Full	9	$18,000	Full	None	5.5
Washington State University Natural Resource Sciences	10,739	Full	9	$13,515	Full	None	6.8

Mean	**15,809**	**$16,402**	**5.3**

	Program Size				Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Biological Sciences	*13.0*	*7.0*	*0.5*	*3.60*	*650*	*5.0*	*735*		*1*	*0.08*
Iowa State University Ecology and Evolutionary Biology	10.0								9	0.90
Kansas State University										
Michigan State University Botany	34.4	29.0	0.8						29	0.84
Michigan State University Zoology	40.1	56.0	1.4						36	0.90
Montana State University Biological Sciences	19.0	35.0	1.8		548	4.0	646		21	1.11
University of Arizona Ecology and Evolutionary Biology	25.0	34.0	1.4	3.50	650	4.5	750		40	1.60
University of California-Davis										
University of Nebraska-Lincoln Biological Sciences	39.0	70.0	1.8	3.70	590	4.5	750		32	0.82
University of New Hampshire Zoology	14.0	18.0	1.3	3.40	527	5.1	646		17	1.21
University of Wyoming Zoology & Physiology	25.0	35.0	1.4	3.50	550	4.5	700		20	0.80
Washington State University Biological Sciences	28.0	21.0	0.8						5	0.18
Mean	**24.8**	**33.9**	**1.2**	**3.54**	**586**	**4.6**	**705**		**21**	**0.84**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Biological Sciences	*$3,345,919*	*$257,378*	*973*	*74.85*	*4,464*	*343.38*
Iowa State University Ecology and Evolutionary Biology	$3,642,116	$364,212	2,729	272.90	15,089	1,508.90
Kansas State University						
Michigan State University Botany	$2,456,843	$71,420	3,648	106.05	25,758	748.78
Michigan State University Zoology	$3,656,215	$91,177	3,648	90.97	25,758	642.34
Montana State University Biological Sciences	$2,149,182	$113,115	926	48.74	4,689	246.79
University of Arizona Ecology and Evolutionary Biology	$3,009,471	$120,379	5,025	201.00	35,943	1,437.72
University of California-Davis						
University of Nebraska-Lincoln Biological Sciences	$7,313,226	$187,519	1,871	47.97	9,347	239.67
University of New Hampshire Zoology	$3,441,692	$245,835	1,060	75.71	6,055	432.50
University of Wyoming Zoology & Physiology	$3,887,581	$155,503	975	39.00	3,991	159.64
Washington State University Biological Sciences	$1,860,256	$66,438	2,498	89.21	15,609	557.46
Mean	**$3,476,250**	**$167,298**	**2,335**	**104.64**	**14,670**	**631.72**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Biological Sciences	*13,448*	*Full*	*9 to 12*	*$17,597*	*Full*	*None*	*6.8*
Iowa State University Ecology and Evolutionary Biology		Full	9	$21,000	Full	None	6.0
Kansas State University							
Michigan State University Botany	39,435	Full	12	$26,940	Full	Partial	5.0
Michigan State University Zoology	26,299	Full	12	$21,600	Full	Partial	6.5
Montana State University Biological Sciences		Full	9	$12,843	None	None	6.1
University of Arizona Ecology and Evolutionary Biology	37,655	Partial to Full	9	$15,000	Full	None	5.5
University of California-Davis							
University of Nebraska-Lincoln Biological Sciences	25,129	Full	9	$19,000	Full	None	4.5
University of New Hampshire Zoology		Full	9	$13,200	None	None	5.4
University of Wyoming Zoology & Physiology	22,171	Partial	9	$14,000	Full	None	5.0
Washington State University Biological Sciences	16,545	Full	9	$14,579	Full	None	5.9
Mean	**25,812**			**$17,576**			**5.7**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho Chemistry	*13.0*	*29.0*	*2.2*	*3.30*	*416*		*674*		*28*	*2.15*
Iowa State University Chemistry	29.0	72.0	2.5						110	3.79
Kansas State University Chemistry	18.0	58.0	3.2	3.20	480	4.0	600		27	1.50
Michigan State University Chemistry	16.1	209.0	13.0						115	7.14
Montana State University Chemistry	15.0	30.0	2.0					1412	20	1.33
University of Arizona Chemistry	34.0	202.0	5.9	3.50	550	4.5	700		89	2.62
University of California-Davis Chemistry	41.0	154.0	3.8	3.50				1460	97	2.37
University of Nebraska-Lincoln Chemistry	26.0	46.0	1.8	3.60	500	4.5	750		44	1.69
University of New Hampshire Chemistry	13.0	29.0	2.2	3.20	539	4.0	719		18	1.38
University of Wyoming Chemistry	14.0	35.0	2.5	3.50	500	4.0	700		35	2.50
Washington State University Chemistry	21.0	49.0	2.3						22	1.05
Mean	**21.8**	**83.0**	**3.8**	**3.40**	**498**	**4.2**	**691**	1436	**55**	**2.50**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Chemistry	*$2,168,586*	*$166,814*	*1,123*	*86.38*	*5,012*	*385.54*
Iowa State University Chemistry	$8,728,331	$300,977	5,145	177.41	34,083	1,175.28
Kansas State University Chemistry	$2,685,347	$149,186	1,913	106.28	10,493	582.94
Michigan State University Chemistry	$8,921,435	$554,126	4,317	268.14	30,946	1,922.11
Montana State University Chemistry	$4,407,739	$293,849	1,239	82.60	6,820	454.67
University of Arizona Chemistry	$9,228,105	$271,415	6,860	201.76	45,859	1,348.79
University of California-Davis Chemistry	$6,652,300	$162,251	6,945	169.39	42,900	1,046.34
University of Nebraska-Lincoln Chemistry	$2,461,312	$94,666	2,260	86.92	10,736	412.92
University of New Hampshire Chemistry	$2,820,813	$216,986	1,268	97.54	7,415	570.38
University of Wyoming Chemistry	$2,117,755	$151,268	984	70.29	4,619	329.93
Washington State University Chemistry	$2,928,407	$139,448	2,301	109.57	12,783	608.71
Mean	**$4,829,103**	**$227,362**	**3,123**	**132.39**	**19,242**	**803.42**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Chemistry	*15,935*	*Partial to Full*	*10 to 12*	*$18,080*	*None*	*None*	*5.3*
Iowa State University Chemistry	102,613	Partial to Full	12	$21,555	Full	None	5.2
Kansas State University Chemistry	75,000	Partial	9	$19,000	Partial	None	5.0
Michigan State University Chemistry	113,236	Full	12	$24,900	Full	Partial	5.0
Montana State University Chemistry		Full	9	$14,301	None	None	4.4
University of Arizona Chemistry	130,468	Partial	12	$19,000	Full	None	5.5
University of California-Davis Chemistry		Full	12	$21,500	None	None	5.0
University of Nebraska-Lincoln Chemistry		Full	9	$19,400	Full	Partial	5.0
University of New Hampshire Chemistry		Full	9	$13,200	None	None	5.5
University of Wyoming Chemistry	15,000	Partial	9	$19,500	Full	None	5.0
Washington State University Chemistry	23,740	Full	9	$15,537	Full	None	5.4
Mean	**67,999**			**$18,720**			**5.1**

	Program Size			Student Indicators						
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg)				Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
					Verb	Writing	Math	Total		
University of Idaho Geography	*5.0*	*10.0*	*2.0*	*3.30*	*490*		*515*		*6*	*1.20*
Iowa State University										
Kansas State University Geography	12.0	14.0	1.2	3.20	550	4.0	550		10	0.83
Michigan State University Geography	22.0	24.7	1.1						13	0.59
Montana State University Earth Sciences: Specialization in Geography	14.0	6.0	0.4		545	4.9	628		0	0.00
University of Arizona Geography	29.0	40.0	1.4	3.30				1100	24	0.83
University of California-Davis Geography	74.0	86.0	1.2	3.50				1200	21	0.28
University of Nebraska-Lincoln Geography	20.0	30.0	1.5	3.50	560		600		17	0.85
University of New Hampshire										
University of Wyoming										
Washington State University										
Mean	**25.1**	**30.1**	**1.3**	**3.36**	**536**	**4.5**	**573**	**1150**	**13**	**0.66**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Geography	*$530,896*	*$106,179*	*665*	*133.00*	*2,241*	*448.20*
Iowa State University						
Kansas State University						
Geography	$673,797	$56,150	856	71.33	3,189	265.75
Michigan State University						
Geography	$1,869,646	$84,984	1,570	71.36	8,341	379.14
Montana State University						
Earth Sciences: Specialization in						
Geography	$928,770	$66,341	578	41.29	1,641	117.21
University of Arizona						
Geography	$277,650	$9,574	2,437	84.03	11,563	398.72
University of California-Davis						
Geography			2,978	40.24	13,760	185.95
University of Nebraska-Lincoln						
Geography	$114,531	$5,727	1,028	51.40	3,745	187.25
University of New Hampshire						
University of Wyoming						
Washington State University						
Mean	**$732,548**	**$54,826**	**1,445**	**70.38**	**6,354**	**283.17**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Geography	*2,198*	*Full*	*9*	*$13,237*	*Full*	*None*	*5.4*
Iowa State University							
Kansas State University Geography	3,317	Full	9	$9,000	Partial	None	5.0
Michigan State University Geography	1,180	Full	12	$13,776	Full	Partial	5.6
Montana State University Earth Sciences: Specialization in Geography		Full	9	$9,620	None	None	
University of Arizona Geography	3,112	Partial	9	$12,000	Full	None	6.0
University of California-Davis Geography		Partial to Full	9	$13,000	Full	None	6.0
University of Nebraska-Lincoln Geography	3,600	Full	9	$9,000	Full	None	5.5
University of New Hampshire							
University of Wyoming							
Washington State University							
Mean	**2,681**			**$11,376**			**5.6**

	Program Size				Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Geological Sciences	*11.0*	*10.0*	*0.9*	*3.70*	*560*		*580*		*10*	*0.91*
Iowa State University Geology	10.0	6.0	0.6						3	0.30
Kansas State University Cooperative Ph.D. in Geology with the University of Kansas	13.0	15.0	1.2	3.20	550	4.0	600		15	1.15
Michigan State University Geological Sciences	11.0	9.3	0.8						10	0.91
Montana State University Earth Sciences: Specialization in Geology										
University of Arizona Geosciences	29.0	50.0	1.7	3.70	566	4.5	676		41	1.41
University of California-Davis Geology	24.0	26.0	1.1	3.50	580	4.5	760		7	0.29
University of Nebraska-Lincoln Geosciences	29.0	14.0	0.5	3.50	580	4.5	750		11	0.38
University of New Hampshire										
University of Wyoming Geology	16.0	13.0	0.8	3.50	500	4.0	700		17	1.06
Washington State University Geology	9.0	11.0	1.2						4	0.44
Mean	**16.9**	**17.1**	**1.0**	**3.52**	**554**	**4.3**	**678**		**13**	**0.76**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Geological Sciences	*$895,242*	*$81,386*	*596*	*47.82*	*2,487*	*226.09*
Iowa State University Geology	$2,345,018	$234,502	1,002	100.20	4,813	481.30
Kansas State University Cooperative Ph.D. in Geology with the University of Kansas	$335,847	$25,834	491	37.77	2,715	208.85
Michigan State University Geological Sciences	$1,150,784	$104,617	1,246	113.27	9,654	877.64
Montana State University Earth Sciences: Specialization in Geology						
University of Arizona Geosciences	$4,885,123	$168,453	665	22.93	3,530	121.72
University of California-Davis Geology			3,577	149.04	25,555	1,064.79
University of Nebraska-Lincoln Geosciences	$1,266,813	$43,683	920	31.72	3,929	135.48
University of New Hampshire						
University of Wyoming Geology	$2,279,940	$142,496	620	38.75	3,259	203.69
Washington State University Geology	$588,599	$65,400	851	94.56	4,642	515.78
Mean	**$1,718,421**	**$108,296**	**1,100**	**70.67**	**6,732**	**426.15**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho Geological Sciences	*9,066*	*Partial to Full*	*9*	*$13,868*	*Partial*	*None*	*6.1*
Iowa State University Geology		Full	9	$12,159	Full	None	6.0
Kansas State University Cooperative Ph.D. in Geology with the University of Kansas		Full	9	$12,000	Partial	None	6.5
Michigan State University Geological Sciences	7,200	Full	12	$18,840	Full	Partial	6.2
Montana State University Earth Sciences: Specialization in Geology							
University of Arizona Geosciences	38,898	Partial to Full	10	$17,625	Full	None	4.8
University of California-Davis Geology		Partial to Full	9	$16,500	None	None	5.8
University of Nebraska-Lincoln Geosciences	6,984	Full	9	$16,000	Partial	None	7.0
University of New Hampshire							
University of Wyoming Geology	1,752	Full	9	$16,000	Full	None	5.5
Washington State University Geology	2,938	Full	9	$14,612	Full	None	6.9
Mean	**11,140**			**$15,289**			**6.1**

	Program Size				Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Mathematics	*12.0*	*9.0*	*0.8*	*3.50*	*550*	*5.0*	*770*		*3*	*0.25*
Iowa State University Mathematics	44.0	65.0	1.5						19	0.43
Kansas State University Mathematics	34.0	30.0	0.9	3.40	450	4.0	650		12	0.35
Michigan State University Mathematics	56.0	85.3	1.5						52	0.93
Montana State University Mathematics	28.0	27.0	1.0		511	4.5	749		10	0.36
University of Arizona Mathematics	68.0	39.0	0.6	3.70	564	5.0	782		22	0.32
University of California-Davis Mathematics	39.0	80.0	2.1	3.60	530	5.5	770		34	0.87
University of Nebraska-Lincoln Mathematics	34.0	79.0	2.3	3.70	480	4.5	760		15	0.44
University of New Hampshire Mathematics	23.0	29.0	1.3	3.60	535	4.4	770		17	0.74
University of Wyoming Mathematics	19.0	16.0	0.8	3.50	480	4.5	720		6	0.32
Washington State University Mathematics	26.0	29.0	1.1						13	0.50
Mean	**34.8**	**44.4**	**1.3**	**3.57**	**513**	**4.7**	**746**		**18**	**0.50**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho Mathematics	*$530,675*	*$44,223*	*544*	*45.33*	*2,746*	*228.83*
Iowa State University Mathematics	$2,644,110	$60,093	1,322	30.05	6,183	140.52
Kansas State University Mathematics	$387,714	$11,403	586	17.24	2,982	87.71
Michigan State University Mathematics	$3,559,593	$63,564	1,477	26.38	9,431	168.41
Montana State University Mathematics	$472,442	$16,873	587	20.96	2,937	104.89
University of Arizona Mathematics	$3,162,160	$46,502	2,468	36.29	13,823	203.28
University of California-Davis Mathematics			3,053	78.28	18,368	470.97
University of Nebraska-Lincoln Mathematics	$1,791,350	$52,687	1,069	31.44	4,593	135.09
University of New Hampshire Mathematics	$203,476	$8,847	692	30.09	3,996	173.74
University of Wyoming Mathematics	$97,050	$5,108	587	30.89	2,126	111.89
Washington State University Mathematics	$511,347	$19,667	990	38.08	5,619	216.12
Mean	**$1,335,992**	**$32,897**	**1,216**	**35.00**	**6,619**	**185.59**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	Tuition Remisson	Usual and Customary Stipend Time (Months)	Average HTE Stipend Amount	Health Insurance for Student	Health Insurance for Student's Dependents	Average Time to Degree 2001-02 through 2005-06 (Years)
University of Idaho							
Mathematics		*None*	*9 to 12*	*$15,560*	*None*	*None*	*6.2*
Iowa State University							
Mathematics		Partial to Full	9	$14,000	Partial to Full	None	6.0
Kansas State University							
Mathematics		Partial to Full	9	$14,500	Partial	None	6.5
Michigan State University							
Mathematics	238	Full	12	$14,000	Full	Partial	6.4
Montana State University							
Mathematics		Full	9	$12,096	None	None	5.6
University of Arizona							
Mathematics	5,000	Full	9	$16,257	Full	None	6.0
University of California-Davis							
Mathematics		Partial to Full	9	$17,964	Full	None	6.0
University of Nebraska-Lincoln							
Mathematics		Full	9	$14,500	Partial to Full	None	6.0
University of New Hampshire							
Mathematics		Full	9	$13,200	None	None	5.8
University of Wyoming							
Mathematics	6,000	Partial	9	$15,000	Full	None	6.2
Washington State University							
Mathematics	487	Full	9	$14,318	Full	None	6.7
Mean	**2,931**			**$14,672**			**6.1**

	Program Size			Student Indicators					
	Number Graduate Faculty (2007)	Number Doctoral Students (3-Year Avg)	Doctoral Students to Faculty Ratio (x:1)	Avg GPA	Average GRE Scores for Entering Cohorts (3-Year Avg) Verb	Writing	Math	Total	Doctoral Degree Completions 2001-02 through 2005-06	Doctoral Degree Completions Per Faculty 2001-02 through 2005-06
University of Idaho Physics	*8.0*	*11.0*	*1.4*	*3.10*	*320*	*3.0*	*755*		*7*	*0.88*
Iowa State University Physics	41.0	77.0	1.9						35	0.85
Kansas State University Physics	33.0	56.0	1.7	3.40	550	4.0	600		25	0.76
Michigan State University Physics	38.0	134.0	3.5						62	1.63
Montana State University Physics	17.0	31.0	1.8		525	4.2	720		19	1.12
University of Arizona Physics	34.0	78.0	2.3	3.60	500	4.5	750		30	0.88
University of California-Davis Physics	45.0	125.0	2.8	3.70	500	4.5	760		59	1.31
University of Nebraska-Lincoln Physics & Astronomy	28.0	44.0	1.6	3.60	510	4.1	700		29	1.04
University of New Hampshire Physics	25.0	39.0	1.6	3.30	518	4.0	756		20	0.80
University of Wyoming Physics	8.0	10.0	1.3	3.60	500	4.5	700		6	0.75
Washington State University Physics & Astronomy	17.0	35.0	2.1						17	1.00
Mean	**26.7**	**58.2**	**2.0**	**3.47**	**490**	**4.1**	**718**		**28**	**1.00**

	Faculty and Research Indicators					
	Research Awards Five-Year Average 2001-02 through 2005-06	**Research $ per Faculty Five-Year Average 2001-02 through 2005-06**	**Papers Published 2001-02 through 2005-06**	**Papers Published Per Faculty 2001-02 through 2005-06**	**Citations Received in Periodical Literature 2001-02 through 2005-06**	**Citations Received Per Faculty in Periodical Literature 2001-02 through 2005-06**
University of Idaho						
Physics	*$646,010*	*$80,751*	*250*	*31.25*	*981*	*122.63*
Iowa State University						
Physics	$12,576,066	$306,733	2,194	53.51	17,897	436.51
Kansas State University						
Physics	$7,221,263	$218,826	733	22.21	4,039	122.39
Michigan State University						
Physics	$10,580,502	$278,434	1,757	46.24	11,389	299.71
Montana State University						
Physics	$6,785,816	$399,166	300	17.65	1,290	75.88
University of Arizona						
Physics	$3,569,979	$104,999	1,813	53.32	9,734	286.29
University of California-Davis						
Physics	$4,689,433	$104,210	2,153	47.84	13,146	292.13
University of Nebraska-Lincoln						
Physics & Astronomy	$4,573,277	$163,331	809	28.89	3,768	134.57
University of New Hampshire						
Physics	$10,815,167	$432,607	175	7.00	1,287	51.48
University of Wyoming						
Physics	$1,502,833	$187,854	120	15.00	311	38.88
Washington State University						
Physics & Astronomy	$6,586,182	$387,422	593	34.88	2,107	123.94
Mean	**$6,322,412**	**$242,212**	**991**	**32.53**	**5,995**	**180.40**

	Competitive Indicators						
	Net Assignable Square Footage Research Space (Current)	**Tuition Remisson**	**Usual and Customary Stipend Time (Months)**	**Average HTE Stipend Amount**	**Health Insurance for Student**	**Health Insurance for Student's Dependents**	**Average Time to Degree 2001-02 through 2005-06 (Years)**
University of Idaho							
Physics	*5,174*	*Full*	*9 to 12*	*$18,202*	*None*	*None*	*4.9*
Iowa State University							
Physics	61,295	Partial to Full	12	$17,400	Full	None	6.0
Kansas State University							
Physics	50,000	Partial to Full	9	$16,000	Partial	None	6.0
Michigan State University							
Physics	70,959	Full	12	$24,900	Full	Partial	6.0
Montana State University							
Physics		Full	9	$13,212	None	None	5.9
University of Arizona							
Physics	152,973	Partial	10	$15,669	Full	None	6.5
University of California-Davis							
Physics		Full	9	$18,300	Full	None	7.0
University of Nebraska-Lincoln							
Physics & Astronomy	37,000	Full	10	$15,600	Partial	None	6.0
University of New Hampshire							
Physics		Full	9	$13,200	None	None	7.2
University of Wyoming							
Physics		Full	9	$15,500	Full	None	5.0
Washington State University							
Physics & Astronomy	14,706	Full	9	$14,778	Full	None	6.1
Mean	**56,015**			**$16,615**			**6.1**

Appendix E
Comparative Master's Program Data

We assessed each master's program participating in this study on the basis of factors that, in our judgment, are deciding factors for students considering enrolling in master's programs. Tables containing these comparative data are organized below by College.

Blank cells in the spreadsheets indicate either that a cognate program does not exist at a particular institution or that the data exist but were unavailable for this study. Except as noted, the source of all data is the official graduate catalog of the comparator institution. The source of data on enrollment and degrees granted is the comparator university's office of Institutional Research. The comparative charts contain the following data groups:

- Data on admission requirements
    - Pre-requisites. All graduate programs require for admission the prior completion of an undergraduate degree. We do not note this unless it is indicated in specific language in the graduate catalog. If it is not noted, we indicate "none."
    - GPA. The minimum GPA required for admission. If a program requires one general GPA and a second GPA for the last 60 or 90 credits, both GPAs are noted, one above the other.
    - Test. Standardized tests required for admission. If the program stipulates a minimum score, this is noted below the name of the test.
    - Portfolio. We indicate "Yes" if a program requires a portfolio to be submitted as part of the application. This is typically the case in programs in the Arts.
    - Job Experience. We indicate whether a program requires prior job experience and how long that experience should be.
    - Essay. We indicate if an essay is required as part of the application process.
    - Interview. We indicate if an interview is required prior to admission.
    - Recommendations. We indicate the number of recommendations that must be submitted with the student's application for admission.

- Data on degree requirements
    - Credits. Minimum credits required for the degree. The abbreviation "cr" indicates credits. The abbreviation "QU" indicates quarter units.
    - Time to degree. This refers to the length of time the program publishes in its marketing materials. If it does not publish a length of time, we indicate "NP" or "not posted."
    - Delivery Format. This refers to "traditional" face-to-face instruction or some version of distance education.
    - Required courses. This stipulates the number of credits in core and other requirements.
    - Electives. This stipulates the number of credits in various electives.
    - Practical Experience. We indicate "Yes" if the program requires a practicum or internship.
    - Comps. We indicate "Yes" if the program requires the successful completion of a comprehensive exam.
    - Thesis/Capstone. We indicate the requirement by type.

- Data on competitive indicators
    - Curricular Thrust. This refers to the program's description of its particular focus or emphasis. If the program is generalist in nature, we indicate "None" or "NP."
    - License or Certification. If the program leads to a particular license or certification, we indicate the type.
    - Career Outcomes. This refers to the program's published description of career outcomes for graduates. We indicate this only if the program publishes such a description.
    - Admission Frequency. We indicate the terms in which students are accepted or "rolling."
    - Financial Aid Available. We indicate "Yes" if graduate assistantships or fellowships are available. This category does not refer to loans or other types of financial aid typically available to undergraduates.[308]
    - Tuition and fees.
    - Enrollment. This is a three-year average, unless indicated otherwise.
    - Degrees. The average number of degrees conferred over the previous three years.
    - Faculty Size. "TS" stands for tenure system faculty. "AFF" stands for affiliate faculty. "PT" indicates adjunct or part-time faculty. "INS" indicates lecturers and fixed-term instructors.

[308] Almost all programs offer a *limited* number of assistantships to master's students. We note here, as we have throughout the text of this document, that master's programs at the University of Idaho tend to support master's students to a far greater degree than do most institutions.

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Agricultural & Extension Education	**None**	2.8	TOEFL	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Agricultural Education	None	3.0	[redacted]	No	No	Yes	No	3
Oregon State University Agricultural Education	Depth and breadth in agricultural curriculum including animal sciences, agricultural mechanics, leadership, agricultural resource economics, crop science, soil science, horticulture, computer, and specific courses in natural resources, an ability to work with children.	3.0	GRE CBEST PRAXIS TOEFL	Nbo	No	Yes	No	3
University of Montana								
University of Oregon								
University of Washington								
Washington State University								

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Agricultural & Extension Education	30 cr	1.5-2 years for full-time students; 4-6 years for part-time students	Traditional	Determined by student's work experience and degree objective	Determined by student's work experience and degree objective	No	Yes	Optional
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Agricultural Education	30 cr	NP	Traditional	Individualized curriculum	Individualized curriculum	No	Yes	Optional
Oregon State University Agricultural Education	45 QU	3 terms/9 months	Traditional	18 credits of coursework, 2 credits of special topics	Determined by student's work experience and degree objective	12 credits	Yes	Optional
University of Montana								
University of Oregon								
University of Washington								
Washington State University								

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Agricultural & Extension Education	Pedagogy, service to agricultural community, problem solving through research	No	K-12 teacher, extension educator	Fall Spring Summer	Yes	***Resident*** $4,740/year 8+ credits, $227/credit 1-7 credits; ***Non-resident*** $14,340/year	5.0	3.0	2 TS 3 AFF 1 PT
Boise State University									
Eastern Washington Univ.									
Gonzaga University									
Idaho State University									
Montana State University Agricultural Education	None	No	NP	Fall Spring Summer	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	6.0	4.0	**2 TS**
Oregon State University Agricultural Education	Pedagogy, service to agricultural community, problem solving through action research	Teacher Cert	K-12 teacher, extension educator	Rolling	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	11.0	9.3	2 TS 2 PT
University of Montana									
University of Oregon									
University of Washington									
Washington State University									

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Agricultural Economics	Background in economics and quantitative methods, recommended that applicants take 6 credits of microeconomics, 3 credits of statistics, calculus, and 9 credits of applied economics	2.8	GRE TOEFL	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Agricultural Economics	Strongly recommends that applicants complete courses in intermediate microeconomic theory, intermediate macroeconomic theory, calculus, matrix theory, and statistics, those without this experience will only admitted on a provisional basis	None	GRE TOEFL	No	No	Yes	No	3
Oregon State University Agricultural and Resource Economics	Intermediate microeconomic theory, intermediate macroeconomic theory, beginning statistics, beginning econometrics, differential calculus	3.0	GRE TOEFL	No	No	Yes	No	3
University of Montana								
University of Oregon								
University of Washington								
Washington State University Economic Sciences	Adequate background in calculus, linear algebra, intermediate economic theory, and statistics	3.0	GRE TOEFL	No	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Agricultural Economics	31 cr for thesis option; 28 cr for non-thesis option	NP	Traditional	25 credits	9 credits	No	No	Thesis or Capstone
Boise State University Eastern Washington University Gonzaga University Idaho State University								
Montana State University Agricultural Economics	30 cr	2 years	Traditional	20 credits	***Thesis Option***: 10 research credits ***Non-thesis Option***: 10 credits beyond core	No	Yes	Thesis or Capstone
Oregon State University Agricultural and Resource Economics	45 QU	NP	Traditional	24 credits	12 credits	No	No	Thesis or Capstone
University of Montana University of Oregon University of Washington								
Washington State University Economic Sciences	30 cr	NP	Traditional	21 credits	3 credits for non-thesis option	No	No	Thesis or Capstone

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Agricultural Economics	Economic theory, economic development, analytical skills, public policy	No	Manage-ment, research, policy positions in public and private sectors, doctoral study	Fall Spring	Yes	***Resident*** $4,740/year 8+ credits, $227/credit 1-7 credits; ***Non-resident*** $14,340/year	17.0	7.3	17 TS
Boise State University									
Eastern Washington Univ.									
Gonzaga University									
Idaho State University									
Montana State University Agricultural Economics	Economic theory, econometrics and quantitative methods, foundation for doctoral study	No	Economic analysis, doctoral study	Fall	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	12.0	4.7	20 TS 2 PT
Oregon State University Agricultural and Resource Economics	Economic theory, foundation for doctoral study, quantitative methods	No	Federal and state policy, doctoral study	Fall Spring	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	10.7	3.7	27 TS 8 PT
University of Montana									
University of Oregon									
University of Washington									

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Washington State University Economic Sciences	Agriculture is a specialty within applied economics	No	Doctoral study, economic analysis	Fall	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/year 10-18 credits, $860/credit 1-9 credits	4.3	2.0	33 TS

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Family and Consumer Sciences	None	2.8	None	No	No	Yes	No	3
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University Oregon State University University of Montana University of Oregon University of Washington Washington State University Human Development	None	3.0	GRE >1000	No	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Family and Consumer Sciences	***Thesis Option***: 30 cr; ***Non-Thesis Option***: 34 cr	NP	TraditionalDistance	11 core credits, thesis option completes 5 research credits, non-thesis completes 3 project credits	***Thesis option***: 13 credits in support area; ***Non-thesis option***: 20 credits in support area	No	As a component of thesis/project defense	Thesis or capstone
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University Oregon State University University of Montana University of Oregon University of Washington Washington State University Human Development	36 cr	NP	Traditional	24 credits	6 credits	No	No	Thesis or capstone

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Family and Consumer Sciences	Theory, practice, research of child/family issues	No	Teaching, work in community agencies, doctoral study	Fall Spring Summer	Yes	***Resident*** $4,746/year 9+ credits, $2[illegible]/credit 1-7 credits ***Non-resident*** $14,340/year	18	6.33	16TS 2 PT
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University									
Oregon State University									
University of Montana									
University of Oregon									
University of Washington									
Washington State University Human Development	Integrated training in developmental and family theories, research, and application using prevention science approach	No	Teaching, work in social services, doctoral study	Fall Spring Summer	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	14	4	12 TS

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Architecture	M.Arch students must complete the four undergraduate years in architecture at Idaho, M.S.Arch must possess professional degree in architecture	3.0	TOEFL 550	Yes	N	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Architecture	Undergraduate degree in architecture	3.0	GRE TOEFL 550	Yes	No	Yes	No	3
Oregon State University								
University of Montana								
University of OregonArchitecture	Undergraduate degree in architecture	3.0	GREV 550Q 650	Yes	No	Yes	No	3
University of Washington Architecture	***One-Year Program***: professional degree in architecture; ***Two-Year Program:*** pre-professional degree in architecture or environmental design; ***Three-Year Program***: requires undergraduate grounding in the liberal arts	3.0	GRE TOEFL 580	Yes	No	Yes	No	3
Washington State University Architecture	One-Year Program: B.S. in architecture from Washington State University	3.0	GRE TOEFL	yes	no	yes	no	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Architecture	M.Arch 45 cr; M.S. Arch 30 cr	M.Arch. 2 yrs beyond undergraduate work; M.S. Arch 2-3 yrs	Traditional	***M.Arch:*** 17 credits ***M.S. Arch.***: 6 credits of core, 8 credits of thesis research	***M.Arch***: 6 credits of prescribed electives, 20-21 additional credits ***M.S. Arch:*** 16 credits	No	No	thesis for M.S. Arch.
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University Architecture	30 cr	1-3 years	Traditional	[redacted]		No	Yes	Thesis
Oregon State University University of Montana University of OregonArchitecture	***Option 1*** 45 QU; ***Option 2*** 81 QU; ***Option 3*** 144 QU	***Option I:*** 4 terms ***Option II:*** 2 years ***Option III:*** 3-1/3 years	Traditional	***Option I***: 36 credits of non-thesis directed coursework, 9 credits of thesis research ***Option II***: 40 credits of design studio, 41 credits in subject areas ***OptionIII***: 64 credits of design studio, 80 credits in subject areas		No	No	Thesis for Option I, terminal project for Options II and III

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of Washington Architecture	***1 Yr 45 QU; 2 Yr*** 91 QU; ***3 Yr*** 145 QU	1 -3 years depending on option	Traditional	***One-Year:*** no specific course requirements outside of 9 credits of thesis research ***Two-Year***: 30 credits of design studio, 30 credits in subject areas, 12 credits of thesis research ***Three-Year:***48 credits of design studio, 45 credits in subject areas, 12 credits of thesis research	***One -Year:*** to be determined by advisor and student ***Two-Year:*** 18 credits ***Three-Year:*** 36 credits	No	Yes	Thesis
Washington State University Architecture	***1 Yr*** 40 cr; ***T2 Yr*** 40 cr; ***3 Yr*** 40 cr; ***M.Arch*** 30 cr	1.5-3 years depending on option	Traditional	***One-Year***: 12 credits of design studio, 21 credits in supporting areas, 4 credits of internship, independent study, or travel study ***Two-Year and Three-Year***: same as one-year once faculty determines student has fulfilled undergraduate architecture requirements ***M.S. Arch***: 11 core credits, 4 thesis research credits	***One-Year, Two-Year, Three-Year:*** 3 credits ***M.S. Arch***: 15 credits	Internship option	No	Thesis for M.S.Arch

Program	Competitive Indicators: Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of Idaho Architecture	Design studio is at the center of all programs. Students in the B.S. Arch. Program may apply during senior year and then spend 5th and 6th years completing requirements for M.Arch.. Those already holding professional degree in architecture may enroll in M.S. Arch. Program. The Post Professional M.S. Arch is a research intensive program that allows students to conduct independent study in areas including computing and visualization, urban design, sustainable architecture.	No	Positions in variety of design and constructio n firms, teaching	Fall	TAs Ras M.Arch Only	*Resident* $5,514/year 8+ credits, $238/credit 1-7 credits; *Non-resident* $14,340/year	55.3	37.3	15 TS
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University Architecture	Design studio is at the center of all programs, curriculum stresses aesthetics, creativity, environment, and culture rather than technical orientation.	No	Positions in variety of design and constructio n firms, teaching	Fall	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	75.7	54.67	14 TS
Oregon State Univ.									
University of Montana									

Competitive Indicators

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of OregonArchitecture	Noncompetitive studio design, emphasis on individualized, flexible education, three options: (1) M. Arch Option I, a post-professional degree with options in Architecture and Interior Architecture; (2) M.Arch. Option II for students with preprofessional degree in architecture; (3) M.Arch Option III for students without undergraduate degree in architecture.	No	Positions in variety of design and constructio n firms, teaching	Fall (Options I and II) Fall/ Summer (Option III)	yes	***Resident*** $11,019/year 9-16 credits; $735/credit hour 1-8 credits; ***Non-Resident*** $15,570/year 9-16 credits; $903/credit hour 1-8 credits	75.3		30 TS15 PT
University of Washington Architecture	Strong relationship with Seattle architectural community, offers advanced training in design computing, offers three options: (1) One-year post-professional; (2) Two-year program for students with preprofessional degree in architecture; and (3) Three-year program for students with strong liberal arts background and without undergraduate degree in architecture.	No	Positions in variety of design and constructio n firms, teaching	Fall (Options I and II) Fall Summer (Option III)	yes	***Residentm***$9,318/year 7-18 credits; $888/2 credits 2-6 credits; ***Non-resident*** $21,141/year 7-18 credits; $2,014/2 credits 2-6 credits	163	61	34 TS 12 PT

Competitive Indicators

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
Washington State University Architecture	Issues of development as they relate to energy and resource conservation for the design of buildings and cities, post-professional M.S.Arch and three M.Arch. tracks: (1) One-year program for students with 4-year B.S in architecture from WSU; (2) Second-year for students with a 4-year pre-professional degree in architecture from an accredited U.S. institution; and (3) Three-year program for students with undergraduate degree in field other than architecture.	No	Positions in variety of design and constructio n firms, teaching	Fall	yes	***Residentm*** $7066/year 10-18 credits; $353/credit 1-9 credits; ***Non-resident*** $17,204/per 10-18 credits $860/credit 1-9 credits	10.7	1.33	23 TS

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Art & Design (MAT)	At least 20 credits of undergraduate art course work	2.8 3.0	TOEFL 550	Yes	No	Yes	No	3
University of Idaho MFA Art and Design	Undergraduate degree in a studio area or its equivalent as determined by graduate faculty, at least 60 credits in studio courses and 12 credits in art history	2.8 3.0	TOEFL 550	Yes	No	Yes	No	3
Boise State University MA, Art Education	Baccalaureate or professional degree in relevant program, demonstrated artistic proficiency in at least one studio area, evidence of public or private teaching experience	3.3	None	Yes	No	Yes	No	3
Boise State University MFA Art MFA Visual Arts	BA, BFA, or MA in art from accredited institution	3.0	None	Yes	No	Yes	No	3
Eastern Washington University								
Gonzaga University								

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
Idaho State University MFA Studio Art	12 credits of art history at the undergraduate level	3.0	None	Yes	No	Yes	No	3
Idaho State University Montana State UniversityMFA Studio Art	Baccalaureate or professional degree in Art	3.0	GREV480	Yes	No	Yes	No	3
Oregon State University University of MontanaMA, Art	Baccalaureate degree in art or related field	3.0	GREV450TOEFL	Yes	No	Yes	No	3
University of Montana MFA Art	Baccalaurete degree in art or art related field or an M.A. or M.S. degree in art of art related field, degree must include 30 semester credits in art, 12 credits in art history, 6 credits of art history survey courses, 18 studio credits including drawing fundamentals and two and three dimensonal design	3.0	GREV450TOEFL	Yes	No	Yes	No	3
University of Oregon Art History	None	3.0	GRE TOEFL 575	No	No	Yes	No	3
University of Oregon MFA Art	BFA recommended	3.0	GRE TOEFL 500	Yes	No	Yes	No	3
University of Washington Art History	Bachelor of Arts in art history or equilvalent course work	3.0	GRE TOEFL	No	No	Yes	No	3
University of Washington, MFA Art	BFA or equivalent degree in studio art	3.0	TOEFL	Yes	No	Yes	No	3
Washington State University								

Program	Degree Requirements: Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of Idaho Art & Design (MAT)	30 cr	1 year	Traditional Online	3 credits in internet portfolio development, 3 credits reading in art, 15 credits of studio, 6 credits in education, 3 credits of thesis research		Studio credits	Yes	Yes
University of Idaho MFA Art and Design	60 cr	3 years	Traditional	Students select one or a combination of the following concentrations: painting, drawing, sculpture, ceramics, graphic design, textile design, printmaking, or interface design, 12 seminar credits, 3-6 credits of gallery/practicum, 18 credits of studio, 20 credits of research and thesis exhibition	9 credits in history/criticism/ philosphy, additional 4-7 credits of adivsor approved electives	Practicum, studio and exhibition credits	Yes	Yes
Boise State University MA, Art Education	33 cr	1 year	Traditional	6 credits in curriculum development and assessment in art education, 6 credits of graduate educaiton core, 6 credits of thesis credits	15 credits to be determind by advisor and student	Studio courses, optional practicum	Yes	Yes
Boise State University MFA Art MFA Visual Arts	60 cr	3 years	traditional	Students select from the following concentrations: alternative media, art metals, ceramics, drawing/painting, photography, printmaking, sculpture; 18 studio credits, 6 thesis credits, 3 seminar credits, 6 credits of graduate concourse (for complete description, see page 57 of 2006-2007 Boise State Graduate Catalogue)	18 credits determined by advisor and student	Studio credits	Yes	Yes

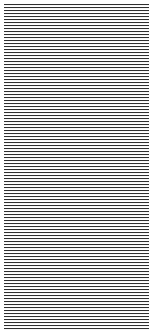
Program	Degree Requirements							
	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
Eastern Washington University Gonzaga University								
Idaho State University MFA Studio Art	60 cr	2 years	Traditional	Students select a primary and a secondary area of emphasis from the following: ceramics, sculpture, fibers, jewelry/metalsmithing, printing, painting, and drawing; 3 credits of graduate seminar, 6 credits of art history, 23 credits of studio major, 6 credits of studio minor, 13 credits of thesis	3 credits of independent study, up to 6 credits of graduate level work outside of department determined by advisor and student	Studio credits	Yes	Yes
Idaho State University Montana State UniversityMFA Studio Art	60 semester credits	2-3 years	Traditional	Students select a primary and a secondary area of emphasis from the following: art history (minor available) ceramics, graphic design, metalsmithing, painting, printmaking, and sculpture; 15 credits of major studio, 15 credits of secondary studio, 9 credits of art history, 15 credits of thesis	6 elective credits determined by advisor and student	Studio credits	Yes	Yes
Oregon State University University of MontanaMA, Art	***Thesis 30*** cr; ***Non-thesis*** 36 cr	1 year	Traditional	6 credits in art history, 3 credits in art criticism, 12 credits in area of concentration, 6 credits of thesis research or additional coursework for non-thesis option	3 credits to be determined by advisor and student	No	Yes	Option

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Montana MFA Art	60 cr	2-3 years	Traditional	Students select from the following concentrations: ceramics, painting/drawing, photography, printmaking, sculpture; 9 credits of art history, 6 credits of art criticism, 30 credits in concentration, 9 thesis credits	6 elective credits determined by advisor and student	Studio credits	Yes	Yes
University of Oregon Art History	57 QU	2-3 years	Traditional	48 credits of coursework to be determined by advisor and student 12 of these must be in graduate seminars and 4 credits must be "Graduate Studies in Art History), 9 credits of thesis, must demonstrate foreign language profiency		No	Yes	Yes
University of Oregon MFA Art	90 QU	2-3 years	Traditional	Students specialize in one of the following areas: cermaics, fiber, metalsmithing, digital arts, painting, photography, printmaking, sculpture; All students take 2 graudate critique courses, 2 art history seminars, 1 theory course, 1 methology course, 18 credits towards Terminal Creative Project, remaining courses depend on area of emphases		Varies by concentration	Yes	Terminal Creative Project

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Washington Art History	***Thesis*** 55 QU; ***Non-thesis*** 65 QU	2-2.5 years	Traditional	Minimum of 5 graded credits in four of the five major areas: (1) African and native American; (2) East Asian; (3) Ancient, Classical, & Medieval; (4) Italian & Northern Renaissance, Baroque, & Rococo; (5) Western, late 19th C. to present; Minimum 15 credits of graduate seminar and 6 credits of research methods; 10 credits of thesis research or research practicum	To be determined by adivsor and student	For non-thesis option	Yes	Option
University of Washington, MFA Art	90 QU	2 years	Traditional	Students take onw studio class and one seminar each quarter, also required to complete 10 credits of art history and 10 credits of thesis	To be determined by adivsor and student	Studio credits and thesis exhibition	Yes	Yes
Washington State University								

Program	Curricular Thrust	Competitive Indicators: License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of Idaho Art & Design (MAT)	Design for students are certified teachers wishing to strengthen their experience in studio art	No	K-12 teaching	Fall	Limited	***Resident*** $[illegible]00 ***Non-resident*** $14,340	4.7	1.7	10 TS 1 PT 4 AFF
University of Idaho MFA Art and Design	Preparation for a career as a professional artist or university level teaching	No	Professional artist or university teaching	Fall	Limited	***Resident*** $4,200 ***Non-resident*** $14,340	13.7	3.7	10 TS 1 PT 4 AFF
Boise State University MA, Art Education	Art education in educational and non-profit settings	No	K-12 teaching	Fall	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year $254/credit 1-7 credits	4.0		17 TS 3 PT
Boise State University MFA Art MFA Visual Arts	Theory and practice of art, drawing, alternative media, photography, printmaking, ceramics, art metals, and sculpture	No	Professional artist or university teaching	Fall	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year $254/credit 1-7 credits	9.3		17 TS 3 PT
Eastern Washington University									
Gonzaga University									

Program	Curricular Thrust	Competitive Indicators: License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
Idaho State University MFA Studio Art	Designed to train students to become "informed studio artists", students develop primary and secondary studio expertise, focus on "historical and contemporary art ideology"	No	Professional artist	Fall Spring	Limited	***Resident*** $4930/year 8+ credits $251/credit 1-7 credits ***Non-residents*** $13,200/year 8+ credits $369/credit 1-7 credits	11.0	2.0	6 TS
Idaho State University Montana State UniversityMFA Studio Art	Broad program with studio emphasis	No	Professional artist	FallSpring	Limited	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	15.0	5.0	14 TS
Oregon State University University of MontanaMA, Art	Significant emphasis on art criticism and art history for both tracks	No	Students on art history track typically pursue doctoral study or work in museum/gallery, Studio art students work as K-12 teachers and professional artists	FallSpring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	5.0	10.0	14 TS

Program	Curricular Thrust	Competitive Indicators: License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of Montana MFA Art	Provides professional training to those interested in university teaching and studio work, program emphasizes "(1) creative research; (2) knowledge of the literature of criticism; and (3) content and methodology of art history"	No	University teacher, professional artist	Fall Spring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	9.0	10.0	14 TS
University of Oregon Art History	Offers Western and Asian emphases	No	Doctoral study or work in museum or non-profit art organization	Fall Spring	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	12.3	7.3	13 TS
University of Oregon MFA Art	Emphasis on studio practice and criticism	No	Professional studio artist, college teaching	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	13.3		18 TS

Program	Curricular Thrust	Competitive Indicators: License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of Washington Art History	Emphasis on the social, historical, ethical, and aesthetic dimsensions of visual art with opportuniy to study in Rome for one quarter	No	Doctoral study, teaching or work in museum or non-profit art organization	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	25.3	5.0	13 TS 1 PT 7 AFF
University of Washington, MFA Art	Studio with strong emphasis in art history, opportunity to study in Rome for one quarter	No	Professional studio artist, college teaching	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	49.0	24.7	17 TS 18 AFF
Washington State University									

	Admission Requirements							
Program	**Pre-Reqs**	**GPA**	**Test**	**Portfolio**	**Job Exp**	**Essay**	**Interview**	**Recs**
University of Idaho Landscape Architecture	None	3.0	GRE TOEFL 550	Yes	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University								
Oregon State University								
University of Montana								
University of Oregon Landscape Architecture	Post Master's requires a professionally accredited degree in landscape architecture	3.0	TOEFL 575	Yes	No	Yes	No	3
University of Washington Landscape Architecture	Degree in landscape architecture is not required, but those without must complete a basic sequence of core requirements before proceeding to standard curriculum	3.0	GRE TOEFL 580	Yes	No	Yes	No	3
Washington State University Landscape Architecture	None	3.0	GRE TOEFL 550	Yes	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Landscape Architecture	30 cr	1-2 years	Traditional	1-Yr MSLA: 21 credits 2-Yr MSlA: 24 credits	1-Yr MSLA: 9 credits 2-Yr MSLA: 16 credits	Yes	No	Thesis
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University Oregon State University University of Montana								
University of Oregon Landscape Architecture	***1st Prof*** 140 QU; ***Post Prof*** 60 QU	2-3 yrs	Traditional	***First Master's***: 50 studio, 52 required core courses, 20 required concentration and 18 project credits; ***Post Professional***: 6 studio, 18 required core courses, 24 required concentration and 12 project credits		Yes	No	Thesis
University of Washington Landscape Architecture	122 QU	3 years	Traditional	70 credits	12 credits	Yes	No	Thesis
Washington State University Landscape Architecture	32 cr	2-3 yrs	Traditional	10-14 credits	18 credits determined by advisor and student	Yes	Yes	Thesis

			Competitive Indicators						
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Landscape Architecture	Bioregion and watershed perspective	LARE	Work as professional landscape architect in wide variety of settings	Fall	Yes	***Resident*** $4,740/year 8+ credits, $225/credit 1-7 credits ***Non-resident*** $14,340/year	9.0	1.3	4 TS 2 AFF
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University									
Oregon State University									
University of Montana									
University of Oregon Landscape Architecture	Integrated approach that combines study of the land and its processes with design	NP	Work as professional landscape architect in wide variety of settings, doctoral study	Summer	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	13.0		12 TS 4 PT
University of Washington Landscape Architecture	Urban ecological design, design leadership, changing nature of natural and cultural environments	NP	Work as professional landscape architect in wide variety of settings, doctoral study	Fall	Yes	***Resident*** $9,318/year 7-18 credits $888/2 credits 2-6 credits ***Non-resident*** $21,141/year 7-18 credits $2,014/2 credits 2-6 credits	47.0	16.0	12TS 20 PT

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Washington State University Landscape Architecture	Emphasizes relationship between landscape architecture, environmental sciences, and natural resources	LARE	Work as professional landscape architect in wide variety of settings	Fall Spring	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	7.7	4.3	7 TS 12 PT

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Accounting	None	3.0	GRE GMAT 450 TOEFL 550	No	No	Yes	No	3
Boise State University Accountancy	Completion of all courses required for undergraduate degree in accounting and 15 credits equivalent to Boise State College of Business undergraduate core	3.0	GMAT 500 TOEFL 587	No	No	Yes	No	3
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Professional Accountancy	Undergraduate degree in accounting strongly preferred	3.0	GMAT	No	No	Yes	No	3
Oregon State University								
University of Montana Accounting	Completion of courses in accounting fundamentals	3.0	GMAT Top 25% Writing 3.5	No	No	Yes	No	3
University of OregonAccounting	Undergraduate degree in accounting or equivalent	3.0	GMAT 550TOEFL	No	No	Yes	No	2
University of Washington Professional Accounting	***Auditing and Assurance Option***: requires undergraduate degree in accounting or completion of core accounting and business courses listed in catalogue; ***Taxation Option***: requires undergraduate degree in accounting or calculus, first full year of MBA courses, and intensive 10-week summer Accounting 505 course.	3.0	GMAT	no	No	yes	No	3
Washington State University Accounting	None	3.0	GMAT 1150 TOEFL 580	no	No	yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Accounting	30 cr	3 semesters	Traditional	15-21 credits	9-15 credits	No	No	Optional
Boise State University Accountancy	30 cr	3 semesters	Traditional	21 credits	9 credits	No	No	No
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Professional Accountancy	30 cr	3 semesters	Traditional	15 credits	13 credits	No	Yes	No
Oregon State University								
University of Montana Accounting	30 cr	3 semesters	Traditional	24 credits	6 credits	No	No	No
University of OregonAccounting	45 QU	3 quarters	Traditional	30 credits	15 credits	No	No	No
University of Washington Professional Accounting	48 QU	.8 year	traditional	***Auditing & Assurance***: 34 credits ***Taxation***: 48 credits	14 credits for Auditing and Assurance	Internship Option	no	No
Washington State University Accounting	32 cr	3 semesters	traditional	9 credit hours	21 credits	No	yes	No

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
					Competitive Indicators				
University of Idaho Accounting	Generalist training and completion of courses in auditing, corporate, non-profit, and international accounting, taxation	Fulfills portion of 150-credit require-ment for CPA exam in Idaho	Professional accounting	Fall Spring	Yes	***Resident*** $4,740/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	22.7	14.0	8 TS
Boise State University Accountancy	Generalist training, option in taxation	NP	Professional accounting	Fall Spring	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year $254/credit 1-7 credits	[redacted]		8 TS
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University Professional Accountancy	Generalist training	NP	Professional accounting	Fall Spring Summer	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	38.7	33.0	7 TS
Oregon State University									
University of Montana Accounting	Generalist training	NP	Professional accounting	Fall Spring Summer	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	83.3	19.0	5 TS

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
						Competitive Indicators			
University of OregonAccounting	Generalist training	NP	Professional accounting	FallSpringSummer	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits, $600 College fee ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits, $600 College fee			15 FT
University of Washington Professional Accounting	Auditing and taxation	NP	Professional accounting	Fall	Yes	***Resident*** $17,826/year incoming students, $15,305/year second-year students; $1,699/2 credits incoming students 7-18 credits, $1,459/2 credits second-year students ***Non-resident*** $27,525/year incoming students 7-18 credits, $25,242/year second-year students; $2,622/2 credits incoming students, $2,404/2 credits second-year students	82.3	85.7	10 TS
Washington State University Accounting	General accounting		Professional accounting	Fall Spring	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits		10.0	17 TS 1 PT

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Adult, Career and Technical Education	Undergraduate degree or work experience in related area	2.8 3.0	GRE TOEFL 525	No	No	No	No	3
Boise State University								
Eastern Washington University Adult Education	None	3.0	GRE TOEFL 580	No	No	Yes	No	3
Gonzaga University								
Idaho State University								
Montana State University Adult Education	None	3.3	GRE 1000 TOEFL 550	No	No	Yes	No	3
Oregon State University Adult Education	None	3.0	TOEFL	no	yes	yes	no	3
University of Montana								
University of Oregon								
University of Washington								
Washington State University								

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of Idaho Adult, Career and Technical Education	36 cr	3 years	Traditional	***Adult and Organizational Learning(ADOL):*** M.S. only, 15 core credits, 3-6 research credits, 6 thesis credits for M.S. ***Professional-Technical and Technology Education(PTTE):*** M.S. and M.Ed. Options, 15 core credits, 3-6 research credits, 6 thesis credits for M.S.	***ADOL:*** 9-12 credits in emphasis area ***PTTE:*** 12-15 electives to be determined by advisor and student	Optional	Yes (non-thesis)	**Optional thesis**
Boise State University Eastern Washington University Adult Education	52 QU	NP	Traditiional	16 core credits, 18 credits in specialization = 34	18 credits of electives determined by advisor and student	Yes	Yes	Thesis
Gonzaga University Idaho State University Montana State University Adult Education	30 cr	NP	Traditional	12 core credits, 6 credits of research methods = 18	12 credits of electives, thesis research, or internship	Optional	Yes	Optional thesis
Oregon State University Adult Education	45 QU	3 years	Weekend class meetings at remote locations throughout the state	45 credits taken in set pattern		Yes	Yes	Capstone project
University of Montana University of Oregon University of Washington Washington State University								

Program	Competitive Indicators: Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of Idaho Adult, Career and Technical Education	***ADOL:*** dynamic, inquiry-based graduate education in the areas of adult and organizational learning and behavior, teaching and training, and ethical and mindful leadership. Students chose an emphasis: (1) adult learning and literacy education; (2) organizational learning and human resource development; (3) professional-technical and technology education. ***PTTE:*** core provides breadth of training, students chose from following concentrations: (1) business and marketing education; (2) professional-technical education; and (3) technology	No	***ADOL:***doctoral study, teaching ***PTTE:*** teaching, training	Fall Summer	Yes	***Resident*** $4,140/year 8+ cre, $22?/cr 1-7 credits ; ***Non-resident*** $14,340/year	***54.0***	***24.3***	14 TS
Boise State University									
Eastern Washington University Adult Education	Broad flexible preparation for work with GED preparation, English as a Second Language, family literacy, and basic skills training	No	Teaching in vocational, literacy, continuing education settings, program management	Rolling	No	***Resident*** $4310/year 10-18 credits, $215.50/credit 1-9 credits ***Non-resident*** $11,412/year 10-18 credits $556.40/credit 1-9 credits	[redacted]		
Gonzaga University									
Idaho State University									

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Montana State University Adult Education	Option within the Adult and Higher Education Program, emphasizes application of theory, skills for working with diverse populations	No	Positions in community, religious, wellness education programs, wide variety of adult programs	Fall Spring	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	0.7	1.0	3 TS 1 PT
Oregon State University Adult Education	Designed for working professionals, classes on held once a month over the weekend. Students select one or both cohort tracks. One prepares individuals as an organization development and training specialist in corporate, government, or community organizations, or in community colleges. The second trains individuals as instructional specialists and master trainer/teachers in basic skills programs (GED, ESL) and work-related and/or content-based instruction for a diverse group of adult learners in business, community, and community college settings.	No	Wide variety of training and teaching positions in adult learning programs in government, business, community settings	Fall	No	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	55.7	19.3	11 TS
University of Montana									
University of Oregon									
University of Washington									
Washington State									

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University									

Competitive Indicators

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Counseling & School Psychology	Successful completion of CASP 407/507 (Orientation to Counseling), ED 301 or PSYC 305 and PSYC 390 (Developmental Psychology), PSYC 311 (Abnormal Psychology), PSYC 310 (Psychology of Personality), and STAT 251 (Statistics)	3.0	None	No	Rec	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University School Counseling	None	3.0	GRE Top 50% MAT TOEFL 550	No	No	Yes	Yes	2
Idaho State University								
Montana State University								
Oregon State University Counselor Education and Supervision	None	3.0	TOEFL 550	No	No	Yes	Yes	3
University of Montana Counselor Education	Successful completion of developmental psychology, basic statistics, abnormal psychology, applied computer science, undergraduate exceptionality course	3.0	GRE TOEFL 580	No	No	Yes	Yes	3
University of Oregon School Psychology	**None**	3.0	GRE	No	Rec	Yes	Yes	3
University of Washington Educational Psychology (School Psychology)	**None**	3.0	GRE 1000	No	Rec	Yes	Yes	3

Washington State University Counseling (School Counseling)	**None**	3.0	GRE	No	Rec	No	Yes	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Counseling & School Psychology	67 cr (M) 79 cr (S)	2.5 yrs (full-time)	Tradtiional	67 credits		Yes	**No**	Optional theis
Boise State University								
Eastern Washington University								
Gonzaga University School Counseling	53 cr	NP	Traditional	53 credits		Yes	Yes	No
Idaho State University								
Montana State University								
Oregon State University Counselor Education and Supervision	75QU	1.5 years	Traditional	69 credits, includes 24 credits of internship/practicum	6 credits	Yes	No	No
University of Montana Counselor Education	51 cr	NP	Traditional	48 credits	3 credits	Yes	Yes	No
University of Oregon School Psychology	91-97 QU	3 years	Traditional	91-97 credits, includes 18 credits of internship or practicum (1200 clock hours of internship)		Yes	Yes	Yes
University of Washington Educational Psychology (School Psychology)	121-126 QU	3 years	Traditional	76 credits, plus 50 credits of internship	1 course outside of College of Education	Yes	Yes	Yes
Washington State University Counseling (School Counseling)	M.Ed. 47 cr; MA 42-47 cr	2 years	Traditional	42-47 credits		Yes	Yes	Optional theis

			Competitive Indicators						
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Counseling & School Psychology	Psychological theory, counseling techniques, practical experience	National Counse-lor Exam	K-12 school counseling	Closed until Summer 2008	Yes	***Resident*** $4,740/year 8+ credits, $527/credit 1-7 credits ***Non-resident*** $14,340/year	70.0	15.67, Ed.S.	5 TS
Boise State University									
Eastern Washington University									
Gonzaga University School Counseling	Psychological theory (particularly developing student's personal theory of counseling), counseling techniques, practical experience	WA State Resi-dency Re-quire-ment for Counse-ling	K-12 school counseling	Every term	Yes	$630/credit	[redacted]		4 TS
Idaho State University									
Montana State University									
Oregon State University Counselor Education and Supervision	Psychological theory, counseling techniques, strong emphasis on experiential learning	Oregon TSPC National Counse-lor Exam	K-12 school counseling	Summer	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	58.0	28.3	9 TS
University of Montana Counselor Education	Psychological and learning theory, counseling techniques, teaching of and commitment to lifelong learning	Montana State Licen-sure	K-12 school counseling	Fall Summer	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	38.0	32.0	5 TS

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Oregon School Psychology	Trains scientists-practitioners, problem-solving at individual and school level, preparation for doctoral study, **Note: This is essentially a doctoral program.**	Oregon State license-sure require-ments	Doctoral study, K-12 school counseling	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	3.0		6TS
University of Washington Educational Psychology (School Psychology)	Assessment, consultation, intervention, scientist-practitioner model	WA State li-censure	Doctoral study, K-12 school counseling	**Fall**	Yes	***Resident*** $9,069/year 7-18 credits $865/2 credits 1-6 credits ***Non-resident*** $20,892/year 7-18 credits $1,991/2 credits 1-6 credits	45.5	14.5	18 TS
Washington State University Counseling (School Counseling)	Trains scholar practitioners and generalists	WA State li-censure	Doctoral study, K-12 school counseling	Fall	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	3.3	17.0	13 TS

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Curriculum & Instruction	Possess an academic background comparable to an undergraduate degree in Education from University of Idaho, completion of 9 credits at the graduate level	3.0 3.25	GRE MAT 40th %ile	No	Rec	Yes	No	3
Boise State University Curriculum & Instruction	None	3.0	None	No	Rec	Yes	No	3
Eastern Washington University Curriculum and Instruction	State teaching certificate	3.0	GRE	No	Yes	Yes	No	3
Gonzaga University								
Idaho State University Curriculum Leadership	None	3.0	GRE MAT 35th %ile	No	Rec	Yes	Yes	3
Montana State UniversityCurriculum and Instruction	None	3.0	GRE	No	No	Yes	No	3
Oregon State University								
University of Montana Curriculum & Instruction	None	3.0	GRE	No	No	yes	No	3
University of Oregon								
University of WashingtonCurriculum & Instruction	None	3.0	GRE	No	Rec	yes	No	3
Washington State University Curriculum and Instruction	None	3.0	GRE	No	Rec	yes	No	3

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of Idaho Curriculum & Instruction	M.Ed.30cr; M.S. 30-34 cr	3 semesters	Traditional	6 credits for all options, M.Ed.: 1 foundations course, 1 research course; M.S.:2 research courses	21 credits	No	At discretion of committee	Yes (M.S.)
Boise State University Curriculum & Instruction	33-34 cr	3 semesters	Traditional	10 credits	18 credits of content electives	No	Yes (non-thesis)	Optional thesis
Eastern Washington University Curriculum and Instruction	48 QU	NP	Traditional	45 credits	3 credits	No	Yes	No
Gonzaga University								
Idaho State University Curriculum Leadership		3 semesters	Traditional					Thesis
Montana State UniversityCurriculum and Instruction	36-39 cr	3 semesters	Traditional	21 credits +3-6 credits for thesis/capstone	15 credits	No	No	Thesis
Oregon State University								
University of Montana Curriculum & Instruction	37 cr	3 semesters	Traditional	19 credits	18 credits	No	Yes	Thesis
University of Oregon								
University of WashingtonCurriculum & Instruction	45 QU	NP	Traditional	9 credits	27 credits, 9 credits of thesis/capstone	No	Yes	Thesis

Washington State University Curriculum and Instruction	M.S. 30 cr; Ed.M. 34 cr	NP	Traditional	M.S.: 12 credits in foundations and research; Ed.M.: 6 credits in foundations and research	M.S.: 3 elective credits in general curriculum, 6 credits in subject matter pedagogy Ed.M.: 6-12 elective credits in general curriculum, 16 credits in subject matter pedagogy	No	Yes	Thesis

Competitive Indicators

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of Idaho Curriculum & Instruction	Curricular design, assessment, research	No	K-12 teachers, further graduate study	Summer	Yes	***Resident*** $4,740/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	115.0	51.5	9 TS
Boise State University Curriculum & Instruction	Research, pedagogy for practicing educators	No	K-12 teachers, further graduate study	Every term	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year $254/credit 1-7 credits	85.0	31.7	12TS 3 PT
Eastern Washington University Curriculum and Instruction	Research, pedagogy for practicing educators	No	K-12 teachers, further graduate study	Rolling	Yes	***Resident*** $4310/year 10-18 credits, $215.50/credit 1-9 credits ***Non-residents*** $11,412/year 10-18 credits $556.40/credit 1-9 credits			
Gonzaga University		No							
Idaho State University Curriculum Leadership	Teaching, educational leadership	No	K-12 teaching leadership	Fall Spring Summer	Yes	***Resident*** $4930/year 8+ credits $251/credit 1-7 credits ***Non-residents*** $13,200/year 8+ credits $369/credit 1-7 credits		1.5	

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Montana State University Curriculum and Instruction	3 "strands": practitioner, national board certification, research skills for doctoral study	No	K-12 teaching, doctoral study	FallSpringSummer	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits		30.0	13 TS
Oregon State University									
University of Montana Curriculum & Instruction	5 options: curriculum studies, elementary, secondary education, library-media services, and literacy education collaborative learning, diversity preparation and presentation of original scholarly work	No	K-12 teaching leadership	Fall Spring Summer	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	61.7	38.7	18 TS 5 PT
University of Oregon									

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of WashingtonCurriculum & Instruction	7 options: educational communication & technology, language, literacy & culture, math education, multicultural education, science education, social studies education, and teaching & curriculum critical questioning, action research	No	K-12 teachingleadership	Fall	Yes	***Resident*** $9,069/year 7-18 credits $865/2 credits 1-6 credits ***Non-resident*** $20,892/year 7-18 credits $1,991/2 credits 1-6 credits	57.0	32.0	19 TS
Washington State University Curriculum and Instruction	4 options: elementary education, secondary education, diverse learners, and literacy emphasizes research training for future doctoral study and planning skills for curricular coordinators and administrators	No	Doctoral study, k-12 teaching leadership	Fall Spring Summer	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	5.7	15.3	8 TS

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Health, Physical Education, Recreation & Dance	None	2.8	TOEFL 550	No	No	Yes	No	3
Boise State University Exercise & Sport Studies	Appropriate prior courses in exercise and sports studies	3.0	None	No	No	Yes	No	3
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University								
Oregon State University								
University of Montana								
University of Oregon								
University of Washington								
Washington State University								

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Health, Physical Education, Recreation & Dance	30 cr	NP	Tradtional	Curriculum varies widely depending program emphasis and M.S./M.Ed. Tracks, M.S. in Sports and Recreation Management requires 51 major credits plus 18-19 of minor credits, while M.S. in Physical Education with an emphasis in sport science requires 30 credits total, including thesis		required for some options	Yes (non-thesis)	Thesis or capstone or practical experience
Boise State University Exercise & Sport Studies	36 cr	NP	Traditional	9 core credits (1 course in each of the three program options), 6 credits inquiry	15 credits in area of emphasis as approved by committee	No	No	Thesis
Eastern Washington University Gonzaga University Idaho State University Montana State University Oregon State University University of Montana University of Oregon University of Washington Washington State University								

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
			Competitive Indicators						
University of Idaho Health, Physical Education, Recreation & Dance	Offers 2 degrees: (1) sport and recreation management; (2) physical education with emphasis in dance pedagogy, sport pedagogy, sport science, wellness and health, recreation, and sport psychology	Phys Ed teaching cert	K-12 teaching, doctoral study, positions in sport and recreation organizations	Fall Spring Summer	Yes	***Resident*** $4,749/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	41.0	26.0	14 TS
Boise State University Exercise & Sport Studies	Research, leadership, health education, program offers three options: (1) behavioral; (2) biophysical (thesis required); and (3) socio-historical	No	NP	Fall Spring Summer	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year $254/credit 1-7 credits	[redacted]		15 TS 5 PT
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University									
Oregon State University									
University of Montana									
University of Oregon									
University of Washington									
Washington State University									

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Environmental Engineering	None	2.8 3.0	GRE TOEFL 550	No	No	Yes	no	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University Engineering (Environmental Engineering)	None	3.0	GRE	No	2 Yrs	Yes	No	3
Montana State University Environmental Engineering	None	3.0	GRE TOEFL 580	No	No	Yes	No	3
Oregon State University								
University of Montana								
University of Oregon								
University of Washington Civil and Environmental Engineering	Undergraduate degree in civil or civil and environmental engineering strongly recommended	3.0	GRE TOEFL 580	No	No	Yes	No	3
Washington State University Environmental Engineering	None	3.0	TOEFL	No	No	Yes	No	3

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of Idaho Environmental Engineering	***MS EnvE*** 30 cr; ***M.Engr*** 33 cr	18 to 21 months	Traditional	***MS EnvE***: completes 21 credits ***M.Engr***: completes 18 credits	MS EnvE completes 9 credit hours in supporting area, M.Engr completes 15 credit hours in supporting area	No	Yes	Thesis or professional paper
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University Engineering (Environmental Engineering)	32 cr	NP	Traditional	10 credits	9 credits of environmental engineering elective, 6 credits of environmental engineering technical electives, 2 credits of seminar	No	Yes	Thesis or project reports
Montana State University Environmental Engineering	31 cr	2 years for thesis option, 1 to 1.5 years non- thesis option	Traditional	***Thesis-option***: 21 credits of course work; ***Non-thesis option***: 31 credits	9 credits	No	Yes	Thesis or professional paper
Oregon State University								
University of Montana								
University of Oregon								

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Washington Civil and Environmental Engineering	42 QU	1 year for non-thesis option, 21-24 for thesis option	Traditional	Flexible curriculum with general guidelines: *Thesis option*: 15 credits of 400 or 500 level CEE, 15 credits of 500 or 600 level courses, 3 credits of CEE seminar, 9 credits of thesis *Non-thesis*: 15 credits of 400 or 500 level CEE courses, 21 credits of 500 or 600 level courses, 3 credits of CEE seminar	3 credits	No	Yes	Thesis or professional paper
Washington State University Environmental Engineering	30 cr	1.5 to 2 years for thesis option, 1 year for non-thesis option	traditional	Flexible curriculum with general guidelines: Thesis option: 21 credits 15 credits of graded courses, 2 credits of graded seminar, 7 credits of thesis Non-thesis project option: 24 credits of graded coursework, 2 credits of graded seminar, 3 credits of project research, 1 credit for comprehensive exam Non-thesis course option: 27 credits of graded coursework, 2 credits of graded seminar, 1 credit for comprehensive exam		No	Yes	Thesis or professional paper

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Environmental Engineering	Builds upon traditional engineering components, typically found in departments of Biological and Agricultural, Chemical, and Civil Engineering. The breadth and multidisciplinary nature of environmental problems require that environmental engineers possess skills beyond those normally associated with a single engineering field. Knowledge in geology, hydrology, soil science, computers, microbiology, water chemistry, atmospheric chemistry, and other disciplines provides breath to enhance technical skills.	No	Doctoral study, engineering positions in government agencies and private industry	Fall Spring	Yes	***Resident*** $4,740/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	1.7	1.0	17 TS
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University Engineering (Environmental Engineering)	Broad training in advanced concepts of environmental control and remediation (hazardous waste treatment and control, air quality, environmental laws and regulations), particular attention paid to synthesis and practical application/problemsolving	No	Doctoral study, engineering positions in government agencies and private industry	Fall Spring	Yes	***Resident*** $4930/year 8+ credits $251/credit 1-7 credits ***Non-residents*** $13,200/year 8+ credits $369/credit 1-7 credits	6.3	4.7	20 TS 3 PT

		Competitive Indicators							
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Montana State University Environmental Engineering	Cooperative effort between chemical and civil engineering, applies chemistry, microbiology and other fields to developing solutions to environmental problems, special emphasis on aqueous systems & microbial processes, environmental engineering students develop expertise in analysis and design of systems for water purification and wastewater treatment, hazardous waste treatment, and solutions to industrial systems problems.	No	Doctoral study, engineering positions in government agencies and private industry	Fall Spring	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	4.7	2.7	4 TS
Oregon State University University of Montana University of Oregon University of Washington Civil and Environmental Engineering	Broad foundation combined with focused study in one of the following: (1) air resources; (2) environmental & air quality; (3) environmental management; (4) environmental sciences; (5) global and environmental chemistry.	No	Doctoral study, engineering positions in government agencies and private industry	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	15.0	14.3	10 TS

Competitive Indicators

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
Washington State University Environmental Engineering	Broad fundamental training combined with concentration in one of the following: (1) general environmental engineering; (2) air quality; and (3) hazardous waste	No	Doctoral study, engineering positions in government agencies and private industry	Fall Spring	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	10.0	6.7	11 TS

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Metallurgy & Metallurgical Engineering	Undergraduate degree in metallurgy or related engineering field	2.8 3.0	TOEFL 550	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University								
Oregon State University								
University of Montana								
University of Oregon								
University of Washington								
Washington State University								

Note: Boise State, the University of Washington, and Washington State University offer thesis and non-thesis Master's programs in Materials

Science and Engineering with research conducted in metals and alloys.

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Metallurgy & Metallurgical Engineering	30 cr	18 months	Traditional	21 course credits, 9 thesis credits		No	No	Thesis

Boise State University
Eastern Washington University
Gonzaga University
Idaho State University
Montana State University
Oregon State University
University of Montana
University of Oregon
University of Washington
Washington State University

Note: Boise State, the University of Washington, and Washington State University offer thesis and non-thesis Master's programs in Materials Science and Engineering with research conducted in metals and alloys.

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Metallurgy & Metallurgical Engineering	Flexible program offering mix of theoretical and practical study	No	Approximately half pursue doctoral study and half obtain jobs in industry	Every term	Yes	***Resident*** $4,740/year 8+ credits $227/credit 1-7 credits ***Non-resident*** $14,340/year	13.7	5.0	4 TS

Boise State University
Eastern Washington University
Gonzaga University
Idaho State University
Montana State University
Oregon State University
University of Montana
University of Oregon
University of Washington
Washington State University

Note: Boise State, the University of Washington, and Washington State University offer thesis and non-thesis Master's programs in Materials Science and Engineering with research conducted in metals and alloys.

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Anthropology	Preparation in statistics and a second language strongly recommended	3.0	TOEFL 525	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University Anthropology	None	3.0	GRE >50th %ile	No	No	Yes	No	3
Montana State University								
Oregon State University Applied Anthropology	None	3.0	GRE TOEFL	No	No	Yes	No	3
University of Montana Anthropology	None	3.0	GRE TOEFL	No	No	Yes	No	3
University of Oregon Anthropology	None	3.0	GRE TOEFL	No	No	Yes	No	3
University of WashingtonAnthropology	None	3.0	GRETOEFL500	No	No	Yes	No	3
Washington State University Anthropology	None	3.0	GRE	No	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Anthropology	30-36 cr	NP	Traditional	12 credits	18 credits in supporting fields and anthropology electives	No	No	Thesis
Boise State University								
Eastern Washington University								
Gonzaga University								.
Idaho State University Anthropology	30 cr	2 years	Traditional	***M.A.***: 21 credits of core plus 4 semesters foreign language or demonstrated competency; ***M.S.:*** 15 credits of core plus 9 credits of advanced methods and techniques	***M.A.***: 9 credits ***M.S.***: 6 credits	No	No	Yes
Montana State University								
Oregon State University Applied Anthropology	45-60QU	NP	Traditional	9 credits core, 3 credits of research	12 credits of concentration, 12 credits of minor	6-12 cr	Yes	Yes
University of Montana Anthropology	***Thesis*** 30 cr; ***Non-thesis*** 36 cr	2 years	Traditional	3 core credits, 6 thesis/project research	12 credits for thesis option, 15 credit hours for non-thesis	9-12 cr	Yes	Yes
University of Oregon Anthropology	45 QU	2 years	Traditional	9 core credits, plus language proficiency for MA	21-23 anthropology courses in subfields, 13 additional credits determined by advisor and student	No	No	Thesis or major paper

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of WashingtonAnthropology	30-36 QU	3 years	Traditional	Each track: (1) archeology; (2) biocultural anthropology; (3) environmental anthropology; and (4) sociocultural anthropology complete a different set of core requirements roughly totaling 30 credits, master's is awarded as part of the Ph.D. degree process		Required for archeology	Yes	Paper
Washington State University Anthropology	34-44 cr	NP	Traditional	***Archeology***: 31 credits of core/required; ***Evolutionary anthropology***: 22 credits of core/required; ***Cultural anthropology***: 21 credits of core	***Archeology***: 3 credits; ***Evolutionary anthropology*** 6 credits; ***Cultural anthropology***:0 credits	No	Yes	Thesis

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Anthropology	Historical archaeology and archaeology and cultural study of the North American Plateau	No	Doctoral study	Fall Spring	Yes	***Resident*** $4,740/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	25.7	6.0	6 TS
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University Anthropology	Broad training in archeology, sociology, linguistic, and cultural anthropology	No	Doctoral study	Fall Spring	Yes	***Resident*** $4930/year 8+ credits $251/credit 1-7 credits ***Non-resident*** $13,200/year 8+ credits $369/credit 1-7 credits	24.0	2.5	7 TS 1 AFF 12 PT
Montana State University									
Oregon State University Applied Anthropology	Theory and application of anthropology, use of anthropology in addressing pressing social, economic, and policy issues	No	Doctoral study, work in vast range of anthropolo-gical positions	Fall Spring	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	26.7	11.3	9 TS 1 PT 2 EXT

		Competitive Indicators							
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Montana Anthropology	Offers four specialities: general anthropology, cultural heritage, linguistic anthropology, forensic anthropology	No	Doctoral study, work with government agency, museum, or private sector cultural research	Fall Spring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	71.0	38.0	19 TS 2 PT 1 AFF
University of Oregon Anthropology	General and focused study of archeology, biological anthropology, and sociocultural anthropology	No	Doctoral study, museum administra-tion, work in government agency, teaching at community college level	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	5.0		18 TS 13 PT
University of WashingtonAnthropology	Research design and execution of inquiry in one of the four tracks: (1) archeology; (2) biocultural anthropology; (3) environmental anthropology; and (4) sociocultural anthropology	No	Doctoral study, students are only admitted to program if they intend to continue in Ph.D. program	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	96.0	14.0	35 TS3 PT

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Washington State University Anthropology	***Archeology*:** prehistory of North American, modeling and simulation, lithic and ceramic analysis, behavioral and ecological archeology ***Cultural:*** cultural and gender studies, psychological and medical anthropology, international development ***Evolutionary*:** theory application, methods of analysis to data from ethnography, archeology, bioanthropology	No	Doctoral study, professional positions in archeology and anthropology	Fall	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	30.3	9.3	13 TS 12 PT

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho English	Bachelor's degree in English or equivalent preparation	2.8 3.0	TOEFL 560	No	No	Yes	No	3
Boise State University English	B.A. in English or must demonstrate disciplinary strength	3.0	GRE >V500	Writing Sample	No	Yes	No	3
Eastern Washington University								
Gonzaga University								
Idaho State University English	21 hours of undergraduate English and American literature	3.0	GRE >50th %ile	No	No	Yes	No	3
Montana State University English	B.A. in English strongly preferred	3.0	GRE	No	No	Yes	No	3
Oregon State University English	None	3.0	None	Original Work Sample	No	Yes	No	3
University of MontanaEnglish (Literature Option)	B.A. in English	3.0	GRE	WritingSample	No	Yes	No	3
University of Oregon English	None	3.5	GRE V500 TOEFL 550	Writing Sample	No	Yes	No	3
University of Washington English	None	3.0	GRE	Writing Sample	No	Yes	Yes	3
Washington State University English	None	3.0	GRE	Writing Sample	No	Yes	Yes	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho English	33cr	NP	Traditional	No area requirements, but must pass Foreign language proficiency exam	27 credits in topics that fulfill chosen major emphasis: literary studies or composition/rhetoric	No	Yes	Thesis
Boise State University English	33-36 cr	NP	Traditional	15 credits	15 credits for thesis option 21 credits for non-thesis	No	No	Thesis
Eastern Washington University								
Gonzaga University								
Idaho State University English	30-33 cr	NP	Traditional	9 credits, teaching assistants must take additional 6 credits in pedagogy, all must demonstrate foreign language proficiency	15 credits for thesis option, 21 credits for non-thesis	No	Yes	Thesis
Montana State University English	30-31 cr	NP	Traditional	12 credits	9 credits +10 credits of research for thesis option 12 credits + 6 credits of research for non-thesis/professional paper option	No	No	Thesis
Oregon State University English	48 QU	2 years	Traditional	18 credits	30 credits in one of three areas: (1) English and American Literature; (2) Literature and Culture; (3) Rhetoric and Writing	No	No	Thesis

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of MontanaEnglish (Literature Option)	36 cr	1 year	Traditional	No core, program determined by advisor and student, but must take 2 courses in pre-1800 literature and two in literary criticism	24 credits	No	Yes(non-thesis)	Thesis
University of Oregon English	36 cr	2 years	Traditional	No core, students take total of 12 courses, must also demonstrate competency in reading a foreign language		No	NO	Optional thesis
University of Washington English	40 QU	4 quarters	Traditional	30 credits determined by students and advisor plus 10 of either additional coursework or Master's Essay research		No	No	Thesis
Washington State University English	30-38 cr	NP	Traditional	***Literature emphasis***: One course in each of following: (1) Medieval literature to 1485; (2) English literature 1485-1600; (3) 17th and 18th English and American literature; (4) 19th century English and American literature; (5) 20th century English, American or postcolonial literature ***Composition/rhetoric***: 18 credits of listed courses All must demonstrate foreign language competency	As determined by advisor and student	No	Yes (Rhet-Comp Major)	Thesis or Portfolio

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of Idaho English	British and American literature, composition,/rhetoric, literary theory	No	Secondary or community college teaching, writing, editing, doctoral study	Fall Spring	Yes	***Resident*** $4,740/year 8+ credits $237/credit 1-7 credits ***Non-resident*** $14,340/year	20.7	7.0	24TS 13 INS 1 PT
Boise State University English	Literature, teaching, composition, offers two options: (1) literature, rhetoric, and composition and (2) education emphasis leading to secondary certification	Secon-dary Teacher Cert	Teaching, doctoral study	Fall Spring	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year $254/credit 1-7 credits	[redacted]		30 TS 5 PT
Eastern Washington University									
Gonzaga University									
Idaho State University English	English and American literature, composition	No	Teaching, writing and editing, doctoral study	Fall Spring	Yes	***Resident*** $4930/year 8+ credits $251/credit 1-7 credits ***Non-resident*** $13,200/year 8+ credits $369/credit 1-7 credits	33.0	5.7	22 TS 26 PT

		Competitive Indicators							
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Montana State University English	Interconnectedness of the theory and practice of writing, teaching writing and literature, literary history - "an integrated curriculum"	No	Teaching, writing and editing, doctoral study	Fall Spring	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	17.3	7.3	19 TS 13 PT
Oregon State University English	English and American literature, composition	No	Teaching, writing and editing, doctoral study	Fall	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	24.3	5.3	19 TS 11 INS
University of MontanaEnglish (Literature Option)	British, American, and comparative literature informed by critical theory	No	Doctoral study	Fall	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	52.0	45.5	28 TS5 PT
University of Oregon English	Major goal is to prepare students for doctoral study, offers a film studies option (features same credits, with more defined requirements)	No	Doctoral study	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	10.3	10.0	48 TS

		Competitive Indicators							
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Washington English	Broad training for doctoral study	No	Doctoral study	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	106.7	44.3	58 TS 1 PT
Washington State University English	History, theory, criticism of American and English literature	No	Community college teaching, doctoral study	Fall Spring	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	14.3	9.7	27 TS 17 INS

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Master of Music (Performance, Composition, Music Education, Piano Pedagogy and Performance, and Accompanying)	***Master of Music (M.M.) and Master of Arts (M.A.):*** baccalaureate degree in music, completion of placement exams in music history and theory, music education majors must also take exam in music education	2.8 3.0	TOEFL 575	Yes	No	Yes for MA	Audition	3
Boise State University Master of Music (Performance, Pedagogy) Eastern Washington University Gonzaga University Idaho State University Montana State University Oregon State University	BM, BA, BS with music major	3.0	Exams in music history and music theory	No	No	Yes	Audition	3
University of Montana Master of Music (Composition Technology, Music Education, Musical Theatre, Performance)	None	3.0	None	No	No	Yes	Audition	3
University of Oregon Master of Arts (Music History, Music Theory) Master of Music (Composition, Conducting, Intermedia Music, Jazz Studies, Music Education, Performance, Piano Pedagogy)	All degrees: Baccalaureate degree in music strongly recommended, once admitted, students must take entrance exams in music theory and music history Additional prerequisites for each degree and concentration	3.0	Exams in music history and music theory TOEFL 575	Yes	No	Yes	Audition	3
University of Washington Master of Music (Choral Conducting, Composition, Instrumental Conducting, Opera Production, Performance)	None	3.0	None	No	No	Yes	Audition	3
Washington State University M.A. (Performance, Composition)	None	3.0	None	No	No	Yes	Audition	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Master of Music (Performance, Composition, Music Education, Piano Pedagogy and Performance, and Accompanying)	30 cr	**2 years**	Traditional	***M.M.***: all concentrations take 8 credits of core, 12-15 credits of major courses (concentrations: vocal performance, orchestral instrumental performance, piano performance, piano pedagogy and performance, accompanying vocal and instrumental, music education, or composition); all except music education must meet recital requirements; music education and composition must take thesis research credits; vocal performance majors must demonstrate profiency ni English, German, French, and Italian diction ***M.A.:*** offered in music history, 8 core credits, 12-15 credits in major, 6 hours of thesis research, must demonstrate proficiency inforeign language	***M.M. and M.A.***: 4-7 as determined by student and advisor	Yes	No	Thesis or recital
Boise State University Master of Music (Performance, Pedagogy) Eastern Washington University Gonzaga University Idaho State University Montana State University Oregon State University	31-36 cr	NP	Traditional	9-12 credits core, depending on major; 12-18 credits in major courses, depending on major	0-9 credits, depending on major	Yes	Yes	Thesis or comprehen-sive review

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Montana Master of Music (Composition Technology, Music Education, Musical Theatre, Performance)	30-36 cr	NP	Traditional	Depending on major, 20-24 credits	9-10 credits, depending on major	Yes	Yes (for some majors)	Thesis or recital
University of Oregon Master of Arts (Music History, Music Theory) Master of Music (Composition, Conducting, Intermedia Music, Jazz Studies, Music Education, Performance, Piano Pedagogy)	48-56 QU	NP	Traditional	***M.A.***: Both Music History and Music Theory students take 6 credits of performance, 9 credits of thesis research, 3-6 credits of ensemble, 3 credits of music research methods, and must demonstrate proficiency in a foreign language (usually German). In addition, Music History students 21 credits of music history, and Music Theory students 27 credits of theory and 6 credits of music history ***M.Mus.***: All students take 3 credits in music research methods, remaining courses consist of performace hours, theory, history, predagogy, and production totaling 48 -55 credits	***M.A.***: Music Historians choose 3 credits in ethnomusicology and 3 credits of other elective course ***M.Mus.***: 3 to 6 credits depending on degree track	Yes	Yes	Thesis or recital or termianl project
University of Washington Master of Music (Choral Conducting, Composition, Instrumental Conducting, Opera Production, Performance)	45 cr	NP	Traditional	Determined in consultation with faculty advisor	Determined in consultation with faculty advisor	Yes	Yes	Thesis
Washington State University M.A. (Performance, Composition)	30 cr	NP	Traditional	14 credits core; 4 credits thesis or approved project	12 credits	Yes	No	Thesis or project

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
						Competitive Indicators			
University of Idaho Master of Music (Performance, Composition, Music Education, Piano Pedagogy and Performance, and Accompanying)	Majority of students are enrolled in M.M. programs these M.M. programs offer wide range of options, courses are balanced mix of performance and theory	No	M.A. prepares students for doctoral study, M.M. students typically work as teachers, composers, and performers	Fall	Yes	***Resident*** $4,740/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	19.0	6.3	22 TS 3 INS 2 PT 2 Other
Boise State University Master of Music (Performance, Pedagogy)	Performance and instruction	No	Performer, instructor, advanced study	Fall Spring	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year $254/credit 1-7 credits	[redacted]		17 TS 3 PT
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University									
Oregon State University									
University of Montana Master of Music (Composition Technology, Music Education, Musical Theatre, Performance)	NP	No	Performer, instructor, advanced study	Fall Spring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	[redacted]		

Competitive Indicators

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
University of Oregon Master of Arts (Music History, Music Theory) Master of Music (Composition, Conducting, Intermedia Music, Jazz Studies, Music Education, Performance, Piano Pedagogy)	Broad array of offerings, all programs feature research, technology, performance, theory, and history depending on primary focus	No	Conducting, composition, teaching, production	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	27.0	18.5	38 TS 12 INS 11 PT 2 Other
University of Washington Master of Music (Choral Conducting, Composition, Instrumental Conducting, Opera Production, Performance)	NP	No	Conducting, composition, teaching, production	Fall Spring	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits			
Washington State University M.A. (Performance, Composition)	NP	No	Composition teaching, production	Fall Spring	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits			

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Philosophy	B.A. in philosophy preferred or university level exposure to disciplinary concepts	2.8 3.0	GRE TOEFL 550	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University Philosophy	None	3.0	None	No	No	Yes	No	3
Idaho State University								
Montana State University								
Oregon State University								
University of Montana Philosophy	None	3.0	GRE	No	No	Yes	No	3
University of OregonPhilosophy	None	3.0	GRETOEFL	No	No	Yes	No	3
University of Washington Philosophy	None	3.0	GRE	Writing Sample	No	Yes	No	3
Washington State University Philosophy	None	3.0	GRE	No	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Philosophy	30 cr	NP	Traditional	12 credits	12 credits	No	No	Thesis
Boise State University Eastern Washington University Gonzaga University Philosophy Idaho State University Montana State University	30 cr	NP	Traditional	15 credits	15 credits	Optional Internship	Yes	Thesis or project
Oregon State University University of Montana Philosophy	30-38 cr	NP	Traditional	17 credits	13 credits for thesis option, 21 credits for non-thesis option	No	Yes	Thesis or project
University of OregonPhilosophy	45-48 QU	2+ years	Traditional	18 credits of distribution requirements for non-thesis option (assumes student is continuing on to the doctorate)	30 credits of coursework determined by advisor and student for non-thesis, 45 credits (9 of which can be thesis) of coursework determined by advisor and student for thesis option	No	Yes	Optional thesis
University of Washington Philosophy	36 QU	2.8 years	Traditional	9 credits	At least 12 credit hours in department	No	Yes	Paper
Washington State University Philosophy	30 cr	NP	Traditional	12 credits	12 credits	No	No	Thesis

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
			Competitive Indicators						
University of Idaho Philosophy	Offers ethics (co-administered by Washington State) and environmental options	No	Community college teaching, doctoral study, liberal arts training for wide range of fields	Fall	Yes	***Resident*** $4,740/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	9.3	1.5	5 TS 5 PT
Boise State University									
Eastern Washington University									
Gonzaga University Philosophy	Fundamental questions of human meaning and value in the Jesuit tradition, students may chose history of western philosophy or social and applied ethics	No	NP	Fall Spring	Yes	$630/credit	[redacted]		19 TS 1 INS
Idaho State University									
Montana State University									
Oregon State University									
University of Montana Philosophy	Broad training, encompasses analytic and continental traditions, historical and contemporary thought	No	Doctoral study at another institution, liberal education for its own sake	Fall Spring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	13.0	4.5	8 TS 5 PT

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of OregonPhilosophy	Broad training, pluralistic orientation	No	Doctoral study	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits		7.6	10 TS4 PT
University of Washington Philosophy	M.A. is a step in Ph.D. process, degree is a milestone, not a terminal degree	No	Doctoral study	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	5.7	4.3	21 TS 3 PT 3 AFF
Washington State University Philosophy	Offers ethics (co-administered by Idaho) and environmental options	No	Community college teaching, doctoral study, liberal arts training for wide range of fields	Fall	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	6.3	2.0	7 TS

	Admission Requirements							
Program	**Pre-Reqs**	**GPA**	**Test**	**Portfolio**	**Job Exp**	**Essay**	**Interview**	**Recs**
University of Idaho Psychology (Human Factors or Industrial and Organizational Psychology)	Undergraduate degree in psychology or related field, completion of courses in introductory statistics, experimental psychology or research methods, and computer programming	2.8 3.0	GRE TOEFL 550	No	No	Yes	No	3
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University Oregon State University University of Montana University of Oregon Individualized Master's Program in Psychology University of Washington Washington State University	None	3.0	None	No	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Psychology (Human Factors or Industrial and Organizational Psychology)	***Human Factors*** 30 cr; ***I/O*** 36 cr	NP	Traditional	***Human Factors*:** 24 credits ***I/O*:** 30 credits	6 credits	Optional	Yes	Optional Thesis
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University								
Oregon State University								
University of Montana								
University of Oregon Individualized Master's Program in Psychology	45 QU	1-2 years	Traditional	24 of 45 credits must be UO graded course, 30 must be Psychology graduate credits, 9 must be 600-level, 2 graduate statistics courses, 9 thesis credits	Flexible program as long as student meets guidelines described in Required Courses	No	Yes	Thesis
University of Washington								
Washington State University								

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Psychology (Human Factors or Industrial and Organizational Psychology)	Offers options in human factors or industrial and organizational psychology, development of skills germane to desired position and preparation for additional graduate study	No	Positions in government and industry, community college teaching, doctoral study	Fall Spring	Yes	***Resident*** $4,74[illegible]/year 8+ credits, $[illegible]/credit 1-7 credits ***Non-resident*** $14,340/year	7.0	33.3	12 TS 6 PT 7 AFF
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University									
Oregon State University									
University of Montana									
University of Oregon Individualized Master's Program in Psychology	Highly individualized course of study, either general or clinical study, with M.A. (foreign language proficiency required) and M.S. options	No	Program does not track these graduates	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	12.7	11.0	30 TS
University of Washington									
Washington State University									

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Conservation Social Sciences	Undergraduate study in natural and human sciences	2.8 3.0	GRE TOEFL 550	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University								
Oregon State University								
University of Montana Resource Conservation	None	3.0	GRE V500 Q600 AW4.0	No	No	Yes	No	3
University of Montana Recreation Management	None	3.0	GRE V500 Q600 AW4.0	No	No	Yes	No	3
University of Oregon								
University of Washington								
Washington State University								

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Conservation Social Sciences	30 cr	2 years	Traditional	Three core courses consisting of methods, literature, and theory, one research methods course which can be quantitative, qualitative, GIS, or policy analysis	Highly individualized program, required and elective courses are determined by student and advisor	No	No	Thesis or project
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University Oregon State University								
University of Montana Resource Conservation	30-36 cr	NP	Traditional	Required and elective courses determined by advisor and student, 18 credits must be at 500-level or above in both biological and social sciences	Required and elective courses determined by advisor and student, 18 credits must be at 500-level or above in both biological and social sciences	No	Yes	Thesis or project
University of Montana Recreation Management	30-36 cr	NP	Traditional	Required and elective courses determined by advisor and student	Required and elective courses determined by advisor and student	No	Yes	Thesis or project
University of Oregon University of Washington Washington State University								

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Conservation Social Sciences	Interdisciplinary curriculum combining natural resource management and social sciences, students may pursue combination of forest resources, wildlife management, anthropology, education, communication, political science, sociology, and psychology	No	Positions in national and state parks, outdoor and community education, tourism bureaus and companies, doctoral study	Fall Spring	Yes	***Resident*** $4,748/year 8+ credits, $237/credit 1-7 credits ***Non-resident*** $14,340/year	21.0	6.7	8 TS 2 PT 27 AFF
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University									
Oregon State University									
University of Montana Resource Conservation	Designed to be a broad based master's degree program concerned with the conservation of wildland resources. The degree program interfaces the sciences and the social sciences with thesis research often emphasizing policy aspects or resource conservation.	No	Conserva-tion careers with private, government, or interna-tional organization doctoral study	Fall Spring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	19.0	13.5	10 TS

		Competitive Indicators							
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Montana Recreation Management	Allows students to become either managers or researchers in the field of recreation management. Although individually developed curricula are designed for each student, the program emphasizes the management of wildland resources for recreational benefits.	No	Positions in government land manage-ment, consulting firms, doctoral study	Fall Spring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	3.0	1.3	10 TS
University of Oregon									
University of Washington									
Washington State University									

	Admission Requirements							
Program	**Pre-Reqs**	**GPA**	**Test**	**Portfolio**	**Job Exp**	**Essay**	**Interview**	**Recs**
University of Idaho Fish & Wildlife Resources	***Fisheries Resources***: broad background in life sciences with specific emphasis on courses in the fishery sciences, background in quantitative data processing and communication, both written and oral. ***Wildlife Resources***: undergraduate degree in wildlife resources or related field.	3.0	GRE TOEFL 550	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Fish and Wildlife Management	At least the equivalent of 3/4 of the science courses required in the Montana State undergraduate curriculum in Fish and Wildlife Management	3.0	GRE 1100 TOEFL 550	No	No	Yes	No	3
Oregon State UniversityWildlife Science	Degree in biological field	3.0	GRE>5oth %ile TOEFL	No	No	Yes	No	3
Oregon State University Fisheries Science	Degree in biological field	3.0	GRE >5oth %ile TOEFL	No	No	Yes	No	3
University of Montana Wildlife Biology		3.0	GRE >5oth %ile TOEFL	No	No	Yes	No	3
University of Oregon								
University of Washington Aquatic and Fishery Sciences	None	3.0	GRE V500 Q500 AW4.0	No	No	Option	No	3
Washington State University Natural Resource Sciences (Wildlife)	Undergraduate degree in forestry is preferred, if not student must complete a sequence of prerequisites	3.0	GRE TOEFL 550	No	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Fish & Wildlife Resources	30 cr	NP	Traditional	Highly individualized curriculum, at least 18 credits must be at 500 level and above	To be determined by advisor and student	No	Yes	Thesis or project
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Fish and Wildlife Management	30 cr	NP	Traditional	20 credits as determined by advisor and student, 10 of these must be taken in major area of study, 10 must be for thesis research	Determined by advisor and student	No	Yes	Thesis
Oregon State UniversityWildlife Science	45 QU	NP	Traditional	30 credits including 6 to 12 thesis credits as determined by advisor and student	15 credits in a declared minor	No	Yes	Thesis
Oregon State University Fisheries Science	45 QU	NP	Traditional	30 credits including 6 to 12 thesis credits as determined by advisor and student	15 credits in a declared minor	No	Yes	Thesis
University of Montana Wildlife Biology	30-36 cr	NP	Traditional	Individualized curriculum determined by student and committee		No	Yes	Thesis/project
University of Oregon								
University of Washington Aquatic and Fishery Sciences	45 QU	3.1 years	Traditional	33 credits, including 18 credits of thesis research	12 credits determined by advisor and student	No	Yes	Thesis

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
Washington State University Natural Resource Sciences (Wildlife)	30 cr	NP	Traditional	9 credits	17 credits in forestry and supporting topics determined by advisor and student	No	Yes	Project

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Fish & Wildlife Resources	Both specialized and general training in areas including wildlife behavior, predator ecology, population dynamics, habitat relationships, conversation biology, students encouraged to work with Idaho Cooperative Fish and Wildlife Research Unit and to pursue research that will benefit the state/national wildlife program	No	Employment with a wide array of state and federal agencies, power companies, consulting firms, commercial fisheries, doctoral study	Fall Spring	Yes	***Resident*** $9,740/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	35.7	15.3	17 TS
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University Fish and Wildlife Management	Ecology and management of diverse mammal, fish, and bird species, special emphasis on applied research	No	Employment with a wide array of state and federal agencies, power companies, consulting firms, commercial fisheries, doctoral study	Fall Spring Summer	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	23.33	7.67	14 TS 3 PT 1 AFF

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Oregon State UniversityWildlife Science	Flexible, individualized program, focuses on quantitative analyses of marine and freshwater fish populations, water quality, fish systematics, fish and invertebrate physiology, stream ecology, modeling of aquatic ecosystems, land use interactions, endangered species, and aquaculture	No	Employment with a wide array of state and federal agencies, power companies, consulting firms, commercial fisheries, doctoral study	FallSpringSummer	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	37	13	46 TS2 PT
Oregon State University Fisheries Science	Flexible individualized program, wildlife research concerning interaction of wildlife with land uses, migratory bird biology, forestry-wildlife relationships, endangered species management, and population dynamics	No	Employment with a wide array of state and federal agencies, power companies, consulting firms, commercial fisheries, doctoral study	Fall Winter Spring	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	22.67	7	19 TS 1 PT
University of Montana Wildlife Biology	Interdisciplinary program between College of Forestry and Conservation, Division of Biological Sciences, and the Montana Cooperative Wildlife Research Unit, provides both basic and applied training	No	NP	Fall	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	30	[redacted]	18 TS 2 AFF
University of Oregon									

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Washington Aquatic and Fishery Sciences	Broad and specialized training in marine and freshwater ecology, habitat restoration, quantitative fishery management, pathology, and genetics, geared towards preparing for doctoral study	No	Preferred track is doctoral study	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	53	15.67	29 TS 7 PT
Washington State University Natural Resource Sciences (Wildlife)	Non-thesis option in the Natural Resource Sciences program, this is an option offered alongside forestry, provides professionals with opportunity to enhance existing skills and for those without a background in natural resource disciplines graduate level exposure	No	Research, leadership positions within public and private wildlife organizations	Fall Spring	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	1.0	1.0	12 TS 13 PT

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Forest Products	Undergraduate degree in forest products or related field is strongly preferred	2.8 3.0	GRE TOEFL 550	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University								
Oregon State University Forest Products	Strong background in mathematics and science recommended	3.0	GRE TOEFL 575	No	No	Yes	No	3
University of Montana								
University of Oregon								
University of Washington								
Washington State University								

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Forest Products	30 cr	NP	Traditional	One research methods course	27 credits to be determined by advisor and student	No	No	Optional thesis
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University								
Oregon State University Forest Products	45 QU	NP	Traditional	11 credits	21 credits selected from forestry, forest products, and wood science & engineering	No	Yes	Research report
University of Montana University of Oregon University of Washington Washington State University								

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
					Competitive Indicators				
University of Idaho Forest Products	Emphasis areas include wood chemistry, wood technology, preservation, systems analysis, manufacturing, design, and construction	No	Research, construction, and manage-ment in industry, doctoral study	Fall Spring	Yes	***Resident*** $4,747/year 8+ credits, $297/credit 1-7 credits ***Non-resident*** $14,340/year	10.0	3.3	8TS 3 PT 3 AFF
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University									
Oregon State University Forest Products	Interdisciplinary, problems-based approach to wood processing, conversion, marketing, and use	No	Research, construction, and manage-ment in industry, doctoral study	Fall Spring Summer	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	1.0	1.0	17 TS 2 PT
University of Montana									
University of Oregon									
University of Washington									
Washington State University									

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Forest Resources	Undergraduate degree in forestry related field or student must complete a sequence of prerequisites once admitted	3.0	GRE TOEFL 550	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University								
Oregon State University Forest Resources	Undergraduate degree in forestry is preferred, if not student must complete a sequence of prerequisites	3.0	GRE TOEFL 550	No	No	Yes	No	3
University of Montana Forestry	None	3.0	GRE V500Q600 AW4.0	No	No	Yes	No	3
University of Oregon								
University of WashingtonForest Resources	None	3.0	GREV550Q600AW5.0TOEFL580	No	No	Yes	No	3
Washington State University Natural Resource Sciences (Forestry)	Undergraduate degree in forestry is preferred, if not student must complete a sequence of prerequisites	3.0	GRE TOEFL 550	No	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Forest Resources	30 cr	2 years	Traditional	1 research methods course, 2 semesters of seminar	18 credits to be determined by advisor and student	No	No	Optional thesis
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University								
Oregon State University Forest Resources	45 QU	NP	Traditional	***Master of Forestry (M.F.)***: 32 credits ***M.S.***: distribution of elective and required courses vary by concentration	***M.F.***: 13 credits ***M.S.***: distribution of elective and required courses vary by concentration	Yes	Yes	Thesis or project
University of Montana Forestry	30-36 xr	NP	Traditional	Individualized curriculum determined by student and committee		Yes	Yes	Thesis or project
University of Oregon								

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of WashingtonForest Resources	45 QU	1 year	Traditional	***MFR***: 7 credit hours of core for MFR ***M.S.***: 4 credits of required courses	***MFR***: 12 credits of general education electives, 24 credits of electives to be completed in four topic areas ***M.S.***: 10 credits of disciplinary knowledge,8 credits of research design, 2 credits of current topics, electives to be determined by advisor and student	Yes	Yes	Thesis or project
Washington State University Natural Resource Sciences (Forestry)	30 cr	1 year	Traditional	9 credits	17 credits in forestry and supporting topics determined by advisor and student	No	Yes	Project

	Competitive Indicators						Competitive Indicators (continued)		
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Idaho Forest Resources	Broad, interdisciplinary training in topics ranging from tree physiology to fire ecology/management	No	Doctoral study, work in government, regulatory, or private sector in policy and analysis	Every term	Yes	***Resident*** $4,540/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	21.3	9.7	17 TS 5 PT
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University									
Oregon State University Forest Resources	Offers two degrees: Master of Forestry (General or Silviculture) and M.S. with a concentration in such areas as forest measurements, forest social science, and forest economics and planning	No	Line or operational managers with public and private forestry organiza-tions; doctoral study	Every term	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	20.3	9.0	26 TS 15 PT
University of Montana Forestry		No	NP	Fall Spring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	22.0	[redacted]	38 TS 9 PT
University of Oregon									

	Competitive Indicators						Competitive Indicators (continued)		
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of WashingtonForest Resources	Interdisciplinary approach to sustainable forest enterprises and sustainable land and ecosystem management in an urbanizing world, students may chose M.S. or Master of Forest Resources (MFR)	No	Research, leadership positions within public and private forestry organiza-tions; doctoral study	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	111.3	41.0	59 TS14 PT
Washington State University Natural Resource Sciences (Forestry)	Non-thesis option in the Natural Resource Sciences program, this is an option offered alongside wildlife, provides professionals with opportunity to enhance existing skills and for those without a background in natural resource disciplines graduate level exposure	No	Research, leadership positions within public and private forestry organiza-tions	Fall Spring	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	1.0	1.0	12 TS 13 PT

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho MNR, Natural Resources	**None**	2.8 3.0	GRE TOEFL 550	No	No	Yes	No	3
Boise State University MPA (Environmental and Natural Resources Policy and Administration)	**None**	3.0	GRE 1000	No	No	Yes	Yes	3
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State UniversityLand Resources and Environmental Sciences	**None**	3.0	None	No	No	Yes	No	3
Oregon State University Interdisciplinary Program in Water Resources Policy and Management	None	3.0	GRE	No	No	Yes	No	3
University of Montana								
University of Oregon Environmental Studies	**None**	3.0	GRE 1550	No	No	Yes	No	3
University of OregonMPA (Environmental Policy)	**None**	3.0	TOEFL233	no	no	yes	no	3
University of Washington Interdisciplinary Program in Quantitative Ecology & Resource Management	Completion of calculus with analytic geometry III and matrix algebra with applications, strongly recommended: probability I and II, introduction to probability and statistical inference or introduction to mathematical statistics	3.0	GRE	no	no	yes	no	3

Washington State University Environmental Science and Regional Planning	Completion of an undergraduate curriculum that includes ecological examination of physical, biological, and social systems, and coursework in sociology or cultural anthropology, environmental science, biological science, chemistry or physics, and calculus or statistics	3.0	GRE TOEFL 580	no	no	yes	no	3

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of Idaho MNR, Natural Resources	30 cr	**NP**	Traditional Online	22 credits	6 credits in concentration electives; 2 credits colloquia	No	Yes	No
Boise State University MPA (Environmental and Natural Resources Policy and Administration)	39 cr	3-4 years	Traditional	33 credits	6 credits	Yes	No	Capstone class
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State UniversityLand Resources and Environmental Sciences	30 cr	NP	Traditional	Indivdualized curriculum			Yes	No
Oregon State University Interdisciplinary Program in Water Resources Policy and Management	50-53 QU	NP	Traditional	6 credits of core, 9 credits of methods and numerical skills, 6 credits of basic water science, 23 credits of policy management courses including internship		Yes	No	Thesis or project
University of Montana								

University of Oregon Environmental Studies	60 QU	2-4 years	Traditional	9 credits of core, 12 credits each in two areas of concentration, 3 credits of internship	8 credits	Yes	No	Thesis
University of OregonMPA (Environmental Policy)	72 QU	2 years	Traditional	29 core credits, 24 credits of environmental policy, 10 credits of internship	9 credits	Yes	No	Thesis or project
University of Washington Interdisciplinary Program in Quantitative Ecology & Resource Management	36 cr	NP	Traditional	22 credit hours of core, 9-10 credit hours of thesis	4-6 credits determined by advisor and student	No	Yes	Thesis
Washington State University Environmental Science and Regional Planning	32 cr	2 years	Traditional	Curriculum is flexible, thesis option must complete 26 credits of courses and non-thesis must complete 28 credits		No	No	Thesis or project

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
					Competitive Indicators				
University of Idaho MNR, Natural Resources	Terminal degree in management and administration of natural resources, topics examined from local to landscape and regional scales, integration of social and biophysical worlds	Cert in fire ecology, restoration ecology, and wilderness management possible	**NP**	Fall Spring Summer	Yes	***Resident*** $8,740/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year ***Online*** $217/credit hour, $25 fee	16.0	1.7	6 TS Others
Boise State University MPA (Environmental and Natural Resources Policy and Administration)	Theory and practice of public policy, administration	No	Public administration	Fall Spring Summer	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year, $254/credit 1-7 credits	34.7	17.0	9 TS 7 PT
Eastern Washington University Gonzaga University Idaho State University Montana State UniversityLand Resources and Environmental Sciences	NP	No	Doctoral study, environmental work in government agency or private industry	Fall Spring Summer	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	16.0	[redacted]	23 TS2 PT4 AFF

	Competitive Indicators								
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Oregon State University Interdisciplinary Program in Water Resources Policy and Management	Training in the development of informed water resource policy and in understanding and resolving conflict	No	Doctoral study, environmental work in government agency or private industry	Fall	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year. 9-16 credits, $815.15/credit 1-8 credits	1.0	1.0	5 TS 70 AFF
University of Montana									
University of Oregon Environmental Studies	Broad, flexible interdisciplinary program, over 80 faculty from a wide range of disciplines teach in the program, emphasizes problem solving, critical thinking, and responsible citizenship	No	Doctoral study, environmental work in government agency or private industry	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	14.0	8.0	14 AFF
University of OregonMPA (Environmental Policy)	Theory, analysis, application, central focus is training evidence based policy makers, analysts, and managers	No	Work as policy analysts, strategic planners, and advisors in all levels of government	Fall	Yes	***Resident*** $11,019/year 9-16 credits $735/credit hour 1-8 credits ***Non-Resident*** $15,570/year 9-16 credits $903/credit hour 1-8 credits	50.0	25.0	10 TS13 PT

		Competitive Indicators							
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
University of Washington Interdisciplinary Program in Quantitative Ecology & Resource Management	Application of statistical/mathematical techniques to solve ecological problems	no	Doctoral study, environmental and resource management consulting, employment with government and regulatory agencies	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	3.0	1.7	28 TS
Washington State University Environmental Science and Regional Planning	Flexible interdisciplinary program, students can choose the following concentrations: (1) agricultural ecology; (2) biological science; (3) environmental education; (4) environmental quality control; (5) hazardous waste management; (6) natural resource management; or (7) systems	No	Doctoral study, environmental and resource management consulting, employment with government and regulatory agencies	Fall Spring Summer	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	63.0	19.7	10 TS Others

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Rangeland Ecology & Management	**None**	2.8 3.0	GRE TOEFL 550	No	No	Yes	No	3
Boise State University								
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Animal and Range Scienes (Range Science Emphasis)	None	3.0	GRE TOEFL	No	No	Yes	No	3
Oregon State University Rangeland Resources	Undergraduate degree in range or related field recommended	3.0	None	No	No	Yes	No	3
University of Montana Ecosystem Management	None	3.0	GRE V500 Q600 AW4.0	No	No	Yes	No	3
University of Oregon								
University of Washington								
Washington State University Natural Resource Sciences (Range Management)	PROGRAM SUSPENDED							

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Rangeland Ecology & Management	30 cr	NP	Traditional	Curriculum is tailor-made to student's individual needs and availability of courses,18 credits must be at 500 level or above, thesis option completes 10 credits of research hours, non-thesis completes 5 credits	Determined by advisor and student	No	Yes	Thesis or project
Boise State University Eastern Washington University Gonzaga University Idaho State University Montana State University Animal and Range Scienes (Range Science Emphasis)	30 cr	NP	Traditional	1 course in statistics, 2 courses in research methods, 3 courses in range science emphasis = 18 credits plus 12 credits of subject proficiency requirements		No	Yes	Thesis or project
Oregon State University Rangeland Resources	45 QU	2 years	Traditional	9 credits of core, 3 credits in research design = 12 credits	33 credits of concentration as determined by advisor and student	No	Yes	Thesis

Degree Requirements

Program	Credits	Time to Degree	Delivery Format	Required Courses	Electives	Practical Experience	Comps	Thesis/ Capstone
University of Montana Ecosystem Management	36 cr	NP	Traditional	Required and elective courses determined by advisor and student, 18 credits must be at 500-level or above in both biological and social sciences	required and elective courses determined by advisor and student, 18 credits must be at 500-level or above in both biological and social sciences	No	No	No
University of Oregon University of Washington Washington State University Natural Resource Sciences (Range Management)	PROGRAM SUSPENDED							

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
	Competitive Indicators						Competitive Indicators (continued)		
University of Idaho Rangeland Ecology & Management	Flexible, diverse program, emphasizes interdisciplinary approach, includes field study and evaluation skills	No	Careers in private and government wildlife manage-ment agencies, doctoral study	Every term	Yes	***Resident*** $4,540/year 8+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	8.3	3.3	7 TS 4 PT 4 AFF
Boise State University									
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University Animal and Range Scienes (Range Science Emphasis)	Broad, flexible curriculum encompassing range ecology, habitat, watershed & grazing management, monitoring, riparian ecosystems, measurements, and plant-animal interactions	No	Careers in private and government wildlife manage-ment agencies, doctoral study	Every term	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	10.7	2.7	9 TS

	Competitive Indicators						Competitive Indicators (continued)		
Program	**Curricular Thrust**	**License or Cert**	**Career Outcomes**	**Adm Frq**	**Financial Aid Available**	**Tuition and Fees**	**Enrl (3 Yr Avg)**	**Degrees (3 Yr Avg)**	**Faculty Size**
Oregon State University Rangeland Resources	Flexible program designed for highly individualized study, research intensive program with concentrations in agroforestry, ecology, range improvement and nutrition, riparian zone management, and watershed management	No	Leadership and research positions with government agencies, private industry, non-profit conversation organiza-tions, doctoral study	Every term	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	6.3	4.0	14 TS
University of Montana Ecosystem Management	Flexible program housed in College of Forestry and Conservation, non-thesis program designed for practitioners	No	Land manage-ment positions in government agencies and private industry	Fall Spring	Yes	***Resident*** $5,136/year ***Non-resident*** $14,342/year	1.0	**0.0**	38 TS 9 PT
University of Oregon University of Washington Washington State University Natural Resource Sciences (Range Management)	PROGRAM SUSPENDED								

Admission Requirements

Program	Pre-Reqs	GPA	Test	Portfolio	Job Exp	Essay	Interview	Recs
University of Idaho Statistics	3 semesters of calculus, 6 hours of statistics, formal computer training in one or more standard language(s)	3.0	TOEFL 525	No	No	Yes	No	3
Boise State University Mathematics (Option: Statistics)	Bachelor's in mathematics or related area	3.0	GRE GRE-S in Math	No	No	Yes	No	3
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Statistics	Multivariate calculus, linear algebra, probability, mathematical statistics	3.0	GRE	No	No	Yes	No	3
Oregon State University Statistics	Single and multivariate calculus, linear algebra, one-year undergraduate course in mathematical statistics, recommended that applicant complete course in applied statistics	3.0	GRE TOEFL 600	No	No	Yes	No	3
University of Montana								
University of Oregon								
University of Washington Statistics	30 or more credits in mathematics and statistics including courses in advanced calculus, linear algebra, probability theory	3.0	GRE GRE-S in Math TOEFL	No	No	Yes	No	3
Washington State University Statistics	One or more course(s) in statistical methods, mathematics through multivariate calculus, linear algebra, and have experience with Fortran or C programming	3.0	GRE TOEFL	No	No	Yes	No	3

	Degree Requirements							
Program	**Credits**	**Time to Degree**	**Delivery Format**	**Required Courses**	**Electives**	**Practical Experience**	**Comps**	**Thesis/ Capstone**
University of Idaho Statistics	30 cr	NP	Traditional	12 credits of core and completion of internship, research course, or thesis	18 credits determined by advisor and student	Optional	No	Thesis or project or practial experience
Boise State University Mathematics (Option: Statistics)	30-31 cr	NP	Traditional	6 credits or core math	24 credits in statistics	No	No	Thesis or project
Eastern Washington University								
Gonzaga University								
Idaho State University								
Montana State University Statistics	20-30 cr	NP	Traditional	14 credits	6 credits for thesis option, 16 credits for non-thesis	No	Yes	Thesis or writing project
Oregon State University Statistics	52 QU	NP	Traditional	37 credits	15 credits	Yes	Yes	No
University of Montana								
University of Oregon								
University of Washington Statistics	36-39 QU	2 years	Traditional	27 credits for thesis option, 30 credits for non-thesis option, both options must participate in statistical consulting program	determined by advisor and student, depends on goals and competencies	Yes	Optional	Thesis option
Washington State University Statistics	30-31 cr	NP	Traditional	15 credits or core, minimum of 2 credits statistical consulting, 1 course in statistical computing	9-10 credits determined by advisor and student	Yes	Yes	Thesis or project

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
		Competitive Indicators					Competitive Indicators (continued)		
University of Idaho Statistics	Generalist training in advanced fundamentals of statistics	No	Doctoral study, work as statistician in variety of fields	Every term	Yes	***Resident*** $4,740/year 9+ credits, $227/credit 1-7 credits ***Non-resident*** $14,340/year	11.3	9.7	15 TS
Boise State University Mathematics (Option: Statistics)	General mathematics program with statistics option	No	Doctoral study, work as statistician in variety of fields	Fall	Yes	***Resident*** $4,154/year 8-19 credits $254/credit 1-7 credits ***Non-resident*** $11,932/year $254/credit 1-7 credits			22 TS
Eastern Washington University									
Gonzaga University									
Idaho State University									
Montana State University Statistics	Application and theory of statistics	No	Doctoral study, work as statistician in variety of fields	Fall Spring	Yes	***Resident*** $7,988.60/year 12+ credits, $320.40/credit 1-11 credits ***Non-resident*** $17,838.20/year 12+ credits, $730.80/credit 1-11 credits	13.0	4.3	6 TS
Oregon State University Statistics	Students serve as statistical consultants and can those to focus on ecology, engineering, forestry, mathematics, or oceanography	No	Doctoral study, work as statistician in variety of fields	Fall	Yes	***Resident*** $6786.30/year 9-16 credits, $611.15/credit 1-8 credits ***Non-resident*** $10,466.30/year 9-16 credits, $815.15/credit 1-8 credits	22.7	12.0	18 TS 2 PT

Program	Curricular Thrust	License or Cert	Career Outcomes	Adm Frq	Financial Aid Available	Tuition and Fees	Enrl (3 Yr Avg)	Degrees (3 Yr Avg)	Faculty Size
			Competitive Indicators				Competitive Indicators (continued)		
University of Montana University of Oregon University of Washington Statistics	Problems based, students serve as statistical consultants	No	Doctoral study, work as statistician in variety of fields	Fall	Yes	***Resident*** $8,820/year 7-18 credits $840/2 credits 2-6 credits ***Non-resident*** $20,641/year 7-18 credits $1,965/2 credits 2-6 credits	10.0	7.0	28 TS
Washington State University Statistics	Students may pursue applied or theoretical options	No	Doctoral study, work as statistician in variety of fields	Fall Spring	Yes	***Resident*** $7066/year 10-18 credits, $353/credit 1-9 credits ***Non-resident*** $17,204/per 10-18 credits, $860/credit 1-9 credits	32.7	6.7	17 TS