1. Report of the Microbiology Graduate Program Review

Logen Logendran (Industrial & Manufacturing Engineering) presented the report of the Microbiology Graduate Council Program Review to the Graduate Council in lieu of Dr. John Selker (Review Panel Chair) who was not available. The review, which was held in conjunction with an Undergraduate Academic Program Review, took place June, 2, 2005.

Logendran gave a brief overview of the review panel’s findings including a summary of the department’s strengths which include, a strong graduate program with satisfied students, excellent gender diversity in the student body, very good to excellent alumni support with generous gift giving, successful graduates with 90% of undergraduates and graduates receiving job placements in industry or in graduate programs and postdoctoral fellowships upon program completion, an established faculty with a highly successful academic research program enjoying a favorable reputation on campus and nationally.

Logendran then presented Council with the Review Panel’s recommendations:

- It is **recommended** that the Department invest further effort toward the fleshing out of their strategic plan. Microbiology is a dynamic field with a rapidly evolving ensemble of key research questions, funding opportunities, and equally quickly changing market place for new employment. A strategic plan is essential in crafting the directions for the department and to insure full faculty buy-in for program adjustments that are inevitable given the economic climate and changing technologies and science. Strategic plans must address considerations regarding maintaining the strength in the undergraduate and graduate programs and service courses in the department and how faculty and funding allocations may need to address the current environment.
➢ It is **recommended** that the Department work to create a more cohesive graduate program through greater investment in communication and inclusion/integration of graduate students in the departmental operations. This could meet the graduate student concerns relative to course offerings, communication of requirements and equitable treatment. It could also lead to improved ability to recruit graduate students, necessary to support research in the Department.

➢ It is **recommended** that the faculty reexamine the graduate curriculum. A core curriculum of stand alone graduate courses for graduate students that meets diverse interests could be accomplished, with a one-year sequence of common courses including history, genomics, microbial genetics and physiology, bioinformatics, ethics, seminar, research methods, and grant writing, and a synthetic perspective on the interconnections between the diverse branches. Offering courses which appeal to other graduate students in biologically related programs could create a critical mass of students to fill courses and to provide a community of peers that will nurture mutual support and sharing of ideas.

➢ It is **recommended** that the Department continue its requests to the College of Science to replace the Graduate Teaching Assistant positions that have been lost but are needed for teaching labs in the undergraduate service courses. This is a critical and relatively low cost investment in assuring that the program can achieve the mission of excellence in education as the University continues on a path of increasing undergraduate enrollments. Recognition of the need to support many complex laboratory courses is needed at the college level if this program is to retain its outstanding reputation for undergraduate education.

➢ It is **recommended** that the Department and College Administration determine a means to provide durable commitment to the Instructor faculty within the Department. These important faculty members deserve to have some reassurance of commitment to continued support by the Department. They are critical to the success of the Department in providing strong advising, teaching and mentoring of undergraduate students.

➢ It is **recommended** the department begin efforts at directed fund-raising with the help of the OSU foundation. The University is starting a huge fund-raising campaign (to include bioinformatics) and the microbiology department can offer other ideas (new BL-3 lab, renovated labs, research positions). The interaction with the Foundation might also identify some opportunities for department-specific fund-raising efforts (scholarships, undergrad research funds).

Logendran called for questions.

Michael Unsworth (Oceanic & Atmospheric Sciences) asked Logendran to clarify his statements regarding the difficulty of establishing Microbiology core courses. Logendran and Theo Dreher (Microbiology) contributed that the research areas of the Microbiology faculty and their students are so diverse that it would be difficult to select
“a best set of courses” that would make programmatic or academic sense to all. Logendran suggested that Microbiology work with the Colleges of Science and Agricultural Sciences to design a course or courses that would be useful to a large cross-section of graduate students in those units, thus achieving the needed critical mass (enrollment). Dreher agreed that the problem with Microbiology graduate student cohesion could be alleviated with the establishment of one or more core courses.

Dreher was then given the opportunity to respond to the Review Panel’s findings and recommendations.

Dreher told the Council that the Department of Microbiology participated in a one and one-half day retreat in September to discuss all the issues brought forward by the program review. Work was done to formalize the department’s Strategic Plan to maintain a diverse research program and to continue its strong support of undergraduate instruction. Discussion also focused on a new venture to seize fundraising opportunities by taking advantage of the Provost’s initiatives related to water and soil diseases. The Department generally agreed to the idea of building-up its water-borne infectious disease research program.

In regard to graduate student disenfranchisement, Dreher admitted that the Department was guilty of letting the graduate program slide in the recent past, due in part to frequent changes in leadership. Now, however, the Department is committed to re-building the feeling of community among the graduate students. Dreher described the recently instituted student/faculty “Fireside Chats,” the establishment of a student lounge and wireless network, the assignment of a graduate student representative to the Department’s Graduate Affairs Committee, and the move toward designing a core course or series of core courses. Dreher also mentioned the need to ensure that all instructors of slash 400/500 courses standardize the graduate component of the courses (primary literature presentations).

Dreher also informed the Council of the Department’s two faculty searches (one successful), and described the recent cosmetic renovations made to Nash Hall.

The College Deans were then given the opportunity to comment.

Frank Moore, Associate Dean of the College of Science, agreed with the Review Panel’s assessment that the Microbiology Department’s practice of using almost all of its resources to support its laboratory-intensive teaching program and of using its returned overhead to make up for budget shortages was unsustainable. He admitted that the use of research dollars to support teaching is a College of Science problem, originating from the budget reductions of the past several years.

Stella Coakley, Associate Dean of the College of Agriculture stated that the program review was fair, balanced, and productive. Then, in response to a comment made by Dreher, asked Sally Francis (Graduate School) if graduate students were permitted on graduate admissions committees. Francis replied that they are allowed and that many
programs do include them. Coakley stated that graduate student representation on all committees (including search committees) is often very helpful.

When asked for questions/comments, the Council asked for and received clarification on the following topics:

- The drop in applicant GRE quantitative scores and the panel’s suggestion to recruit from non-traditional backgrounds.
- Decrease in Ph.D. enrollment and students leaving their graduate degree programs for lucrative jobs after earning an MS degree.
- Expectations of graduate students (desired learning experiences) and the production of research papers in various laboratories (different rates of production).
- Current relationship between Microbiology and Veterinary Science, and the difficulties with joint faculty appointments.

Francis then thanked Logendran for his work on the review and for presenting the Review Panel’s report to the Council. The visitors were excused after thanking them.

A motion to accept the report was made by Tom McLain (Forestry) and was seconded by Teresa Filtz (Pharmacy). All voted in favor. The report will be forwarded to the Provost.

2. Minutes from the Meeting on October 6

The minutes from the Graduate Council on October 6, 2005 were approved as distributed.

3. Category I Proposal to change the name of the Department of Bioengineering and its Graduate Degree

John Bolte (Bioengineering) presented the reasons for the proposed name change. In so doing he alerted the Council of a modification to the previously submitted CAT I proposal.

The Council asked for clarification on the following issues:

- Liaison efforts.
- Comparison to College of Engineering’s current undergraduate and graduate degrees in Environmental Engineering.
- Opportunities for professional licensure.
- Effects of the name change (and/or interim name change) on current students.
- Future changes in curriculum.
- Impact on students in other OSU programs.

When asked for comments, Chris Bell (College of Engineering) informed the Council that there exists strong collaboration between the Departments of Bioresource Engineering, Chemical Engineering, which offers the undergraduate degree in bioengineering, and Civil, Construction and Environmental Engineering, which offers degrees in environmental engineering. The College of Engineering and the College of Agricultural Sciences also collaborate well (Bioresource Engineering reports to the College of Engineering for its educational programs and to the College of Agricultural Sciences for its research and extension programs).

After the guests departed, the Council discussed the appropriateness of acting on the proposal given the modification that Bolte presented but which had not been incorporated into the proposal. Bruce Rettig (Graduate School) briefed the Council on the usual interface between the Curriculum Council and the Graduate Council in regard to CAT I proposals.

It was decided that a revised proposal would be requested of the Bioengineering Department before the Council would consider the issues. It was also decided that Departmental representation would not be required at the Council meeting when the proposal will be taken up again.

The meeting was adjourned at 5:33 PM.
Microbiology Department

PROGRAM REVIEW 2005
Graduate Council/Curriculum Council
Oregon State University

Executive Summary and Recommendations

The Microbiology Department is a highly successful academic research program that enjoys a favorable reputation within the Colleges supporting it (Science and Agricultural Sciences), the University as a whole, and its national peers. The Department actively participates in several interdepartmental programs, including the Linus Pauling Institute, the Environmental Health Science Center, the Center for Gene Research and Biotechnology, and the Molecular and Cellular Biology Program. The interdisciplinary collaborations expand the strengths and research breadth of the Department, providing intellectual stimulation for faculty and students alike as well as providing additional recruitment and research funding opportunities. The Department has a history of diversity within the field, including basic science as well as health and agricultural applications. Such diversity should be nurtured in the future for the research collaborations and teaching opportunities it provides.

Several members of its faculty have been recognized at various levels for their research accomplishments. The Department has both a solid undergraduate and graduate program offering B.S., M.S. and Ph.D. degrees. The faculty and staff and the programs make a substantial contribution to research and teaching at OSU; the prospect for future contribution is great.

The Department maintains a significant service to the undergraduate education mission of the University. It demonstrates a commitment to excellence in their offering and instruction of three non-major service courses. They have creatively incorporated the use of department undergraduate majors in assisting in teaching the laboratories for their service courses, serving to enhance the learning among the students majoring in Microbiology. They have clearly identified learning outcomes for all courses, routinely gather learning outcome assessment data, and utilize such to make improvements in courses and teaching.

Alumni satisfaction is generally high, as evident from exit surveys and generous gift giving to the department allowing for annual funding of academic scholarships. Graduating students appear to have a solid academic preparation including laboratory and/or research opportunities either in faculty labs or in field experience placements. Thus, they are finding suitable positions, with upwards of 90% of undergraduates and graduates receiving job placements in industry or in graduate programs and postdoctoral fellowships upon program completion.
The Department has a long history of successful graduate education as well. They currently enroll 25-35 MS and PhD students, with an equal male/female gender distribution but smaller racial ethnic diversity profile. While the outcomes of the graduate program generally mirror those of the undergraduate program, there are areas for improvement including course offerings, communication of program requirements, mentoring, and equitable treatment.

For many years, a strong series of focused leaders chaired the department (Paul Elliker, John Fryer, and Jo-Ann Leong). Since that time, the chair position has changed three times, occurring simultaneously with times of serious university economic downturn. It appears that the timing of these circumstances resulted in loss of effectiveness in crafting and executing a strategic and commonly held mission for the department, and attrition that has affected most departments at OSU. The current professorial and instructor faculty full time equivalents (FTE) are 13.6 compared to 16.5 in Fall 1999. In addition, the loss of Microbiology faculty to the department of Veterinary Medicine, perhaps in part due to opportunities for higher salary, has caused faculty frustration and disenchantment injuring Microbiology-Veterinary Medicine relationships. To fulfill the promise of an expanding Veterinary Medicine department, a strong basic Microbiology department is essential: a clear statement by the university administration defining this interdepartmental relationship is crucial.

Financially the Department has been forced to budget almost all available dollars on supporting its laboratory-intensive teaching program, including using returned overhead to make up the budget shortages. This is not a robust mechanism to depend on: Firstly, the research dollars garnered by the faculty is likely to change from year to year; and further, the long term success of the research effort depends upon reinvestment in high-cost equipment and bridging funds that should in principle come from returned overhead dollars. The entire tuition generated from summer course offerings is returned to the department, which, along with laboratory fees, has also been used to offset budget shortages. The budget reductions in the past several years have slowed the growth of the department, particularly in their ability to hire new faculty that can teach and perform research in emerging new areas in microbiology.

Under the current leadership of Theo Dreher, now less than a year in this position, the Microbiology department appears to be moving forward with remarkable new energy and unity. He is considered to be a good listener and open to shared governance; the faculty is supportive of the new chair and moderately optimistic about the future. The following recommendations are offered from the perspective of ensuring that the Microbiology Department’s programs maintain its present high quality level and regain stability and cohesiveness among faculty and graduates.

**Recommendations:**

It is recommended that the Department invest further effort toward the fleshing out of their strategic plan. Several faculty members indicated that strategic plans were not useful without the opportunity to garner new monies, and that the current budget situation
deaths the need for strategic planning. We do not concur with this perspective. Microbiology is a dynamic field with a rapidly evolving ensemble of key research questions, funding opportunities, and equally quickly changing market place for new employment. A strategic plan is essential in crafting the directions for the department and to insure full faculty buy-in for program adjustments that are inevitable given the economic climate and changing technologies and science. Strategic plans must address considerations regarding maintaining the strength in the undergraduate and graduate programs and service courses in the department and how faculty and funding allocations may need to address the current environment.

It is **recommended** that the Department work to create a more cohesive graduate program through greater investment in communication and inclusion/integration of graduate students in the departmental operations. This could meet the graduate student concerns relative to course offerings, communication of requirements and equitable treatment. It could also lead to improved ability to recruit graduate students, necessary to support research in the Department.

It is **recommended** that the faculty reexamine the graduate curriculum. A core curriculum of stand alone courses for graduates that meets the needs of diverse interests could be accomplished, with a one-year sequence of common courses including history, genomics, microbial genetics and physiology, bioinformatics, ethics, seminar, research methods, and grant writing, and a synthetic perspective on the interconnections between the diverse branches. Offering courses which appeal to other biologically related graduate students could create a critical mass of students to fill courses and to provide a community of peers that will nurture mutual support and sharing of ideas.

It is **recommended** that the Department continue its requests to the College of Science to replace the diminishing number of Graduate Teaching Assistants needed for teaching labs in the undergraduate service courses. This is a critical and relatively low cost investment in assuring that the program can achieve the mission of excellence in education as the University continues on a path of increasing undergraduate enrollments. Recognition of the need to support many complex laboratory courses is needed at the college level if this program is to retain its outstanding reputation for undergraduate education.

It is **recommended** that the Department and College Administration determine a means to provide durable commitment to the Instructor faculty within the Department. These important faculty members deserve to have some reassurance of commitment to continued support by the Department. They are critical to the success of the Department in providing strong advising, teaching and mentoring of undergraduate students.

It is **recommended** the department begin efforts at directed fund-raising with the help of the OSU foundation. The University is starting a huge fund-raising campaign (to include bioinformatics) and the microbiology department can offer other ideas (new BL-3 lab, renovated labs, research positions). The interaction with the Foundation might also identify some opportunities for department-specific fund-raising efforts (scholarships, undergrad research funds).
Committee Process

On June 2, 2005, a Graduate Council/Curriculum Council team visited the Department of Microbiology to conduct a full program review of the Undergraduate and Graduate Program in Microbiology. Team members were:

- John Selker, Chair of the Graduate Review Team. OSU Bioengineering, Colleges of Agricultural Science and Engineering
- Lani Roberts, Graduate Team Member, Dept of Philosophy, College of Liberal Arts and Sciences
- Logen Logendran, Graduate Team Member, Dept of Industrial and Manufacturing Engineering, College of Engineering
- Mary Cluskey, Chair of the Undergraduate Review Team, Dept. of Nutrition and Food Management, College of Health and Human Sciences
- Rorie Solberg, Undergraduate Review Team, Dept. of Political Science, College of Liberal Arts and Science
- Eric Barklis, External Reviewer, Oregon Health Sciences University
- Jim Winton, External Reviewer, Western Fisheries Research Center

All members of the review team participated in a pre-review meeting held June 1, 2005, with the Dean of the Graduate School, Sally Francis. The Microbiology self-study report was provided to the review committee prior to that meeting. The site visit provided the review committee an opportunity to meet with Theo Dreher, Department Chair; Rich Holdren, Research Office; Sherm Bloomer, Dean, College of Science; Stella Coakley, Associate Dean, College of Agriculture, faculty; students; Department Graduate and Undergraduate Affairs committees. The team was given a tour of the facilities. All review committee members have participated in the preparation of this report and concur with its contents.

Summary and Findings

Undergraduate Program

The Department of Microbiology at Oregon State University has an undergraduate enrollment of 120-140 majors. The class is made up of approximately 50% female students and about 30% minorities, a higher percentage of minorities than other departments in the College of Science. The students are often transfers coming to the major as sophomores and juniors. The advising is provided by one of two Instructors who both have been involved in the Department for several years. Their advising and mentorship is both academic and professional, including directing students toward experiences in faculty laboratories in the department, on the OSU campus and in outside agencies and industries.

The Department carries a heavy load of service courses at the University, including Microbiology (MB) 230, an introductory lab course for non majors, MB 302/303, a
higher level introductory course taken by a bulk of non-majors as well as majors, and two popular baccalaureate core courses including MB 390, The World According to Microbes and MB 330, Disease and Society. The courses are frequently offered and well received. The World According to Microbes has received awards for the curriculum. The Department generates many student credit hours through undergraduate instruction and is efficient in utilizing their own undergraduate and graduate microbiology majors for teaching labs in the undergraduate science courses.

The Microbiology department has a strong undergraduate program. The curriculum follows guidelines from the American Society for Microbiology, although this is not an accrediting body. The curriculum includes a core, elective, and support courses for majors and then a laboratory skills component which currently are dependent on support from returned overhead and lab fees. The program attracts strong students and has grown modestly over the past few years.

The department is also ahead of its College in terms of learning outcomes and assessment. The Microbiology department has developed learning outcomes for all of its undergraduate courses as well as outcomes for the program itself. Assessment seems to be continual, particularly in the large service-based courses. An active student group participates in the collection of outcome data, providing students a very anonymous process to give input. Assessment takes place while students are in the major, in their classes, and after they leave the program.

Most undergraduates participate in laboratory research outside the classroom. These opportunities seem abundant and reasonably accessible to the interested student. The two main advisors do yeoman’s work in notifying students of research opportunities on and off campus. When asked, the undergraduates did not know of any major that did not work in a lab on campus sometime during the completion of the degree. The committee finds this facet of the program commendable. The review committee finds the current funding model for key components of the undergraduate program, which relies heavily on returned overhead to support lab assistants, to be unsustainable and inappropriate. The College of Science should add-back the funding required to provide this educational program immediately.

Graduate Program

The graduate program in the Microbiology Department is also successful, but has some challenges. They enroll about 25 – 35 graduate students a year, with approximately 50% female enrollees and few minority students. The demographics however, show a significant preponderance of European American and Asian students with few or no Latino, African American and Native American graduate students. Though the department has made dedicated efforts, they have been unsuccessful in recruitment of many international students, and do not support as much ethnic diversity in their graduate program as they would like. The Graduate Affairs Committee actively participates in the recruitment of students from ethnic minorities, especially through programs fostered by the Graduate School, including the Western Name Exchange. Microbiology also takes advantage of the Minority Graduate Student Support Pipeline fellowships, which is
designed for Ph.D. students. They also recruit minority students at the annual conference of the Society for Advancement of Chicanos and Native Americans in Science and through the McNair Scholars Program.

The data indicate that the number of graduate student enrollment has decreased in recent years, with particular impact at the Ph.D. level. The faculty members attribute this to the ability to get well paying jobs with Masters degrees (job offers up to $65,000/year recently) that makes doctoral level education not seem worth the investment. In addition, modest stipends (2004-05, approximately $20,000) make competition for graduate students challenging. Loss of faculty and curriculum issues likely makes recruitment of graduate students even more difficult.

The incoming students over the last few years have shown a marked drop in their quantitative GRE scores. Although some of these problems may coincide with national trends (for instance, reduced numbers of highly motivated foreign students), some appear localized. One solution might be to make a greater effort to recruit graduate student applicants from traditional and non-traditional (physical sciences) undergraduate backgrounds.

The graduate students sense a new level of responsiveness to their needs, and appreciate the new graduate student lounge, complete with wireless internet access. At the same time they have commonly held and significant concerns regarding graduate advising and curriculum.

Concerns with graduate curriculum were identified by almost all of the graduate students interviewed, with dual effects of impairing close student contacts, and imparting a well-defined body of knowledge to the students. The committee was told that lack of a well-defined curriculum reflected the diversity of graduate interests that prevents a unified instructional content or approach. Despite this impediment, it appears to this committee that definition of a core curriculum required of all departmental grad students is feasible, has the support of the students, and will have a very positive unifying effect. The graduate students enthusiastically supported adoption of a required core course for all grad students that could include a historical review of the field, with an introduction to each faculty member and her/his research. There was also an enthusiastic response to the idea of including an ethics component (research ethics, bioethics) in the curriculum. If this core course could be developed for one or two credits, the graduate students believe they would develop a sense of community, which they do not perceive currently. While the students have their own ideas as to the optimal graduate curriculum, the faculty is in the best position to choose coursework that is most critical to the profession. Presumably this should include aspects of biochemistry, biophysics, and genetics. The department should strongly consider teaching some of this material in a joint program that includes graduate students of other biological sciences.

The Microbiology Graduate Affairs Committee notes that the requirements for the graduate students in slash courses are inconsistent with policy. The department offers a total of 14 slash (400/500-level) courses that can be taken by graduate students. Although a few additional course requirements (objective critique of an article, a presentation, etc.)
can be imposed on graduate students taking these slash courses, the learning graduate
students receive may not be as effective as that received from taking strictly graduate
courses.

It appears that the department perhaps has not taken full advantage of being housed in
two colleges to help alleviate some of the issues concerning the graduate program. In the
last three years, only one full-fledged strictly graduate (600-level) course has been taught
in the department, with a couple of other 2 credit hour, 600-level courses are taught as
special topics. The faculty in the microbiology department should work with faculty in
other departments in the College of Science and the College of Agricultural Sciences to
identify a set of common graduate-only courses (at the 500 and 600 levels) that will meet
the requirements of two or more departments including microbiology. This would enable
them to teach classes that are guaranteed to have a good enrollment. The shared faculty
responsibility among departments might alleviate the teaching demand on microbiology
faculty.

The expectations of graduates with an MS degree or, more fittingly, a PhD degree upon
graduation are that: they should be able to write proposals, they should be able to manage
a lab, and they should be able to speak in front of an audience. The experience they gain
from holding a minimum of one-term, graduate teaching assistantship that consist largely
of logistical support in teaching laboratory sections, is not adequate to meet these
expectations.

The department assesses the quality of the research produced by PhD students by the
number of journal papers either published or accepted for publication, prior to their final
defense. Often papers are published with graduate student as the first author, and jointly
with the student’s major professor and others who have made a contribution to the
research. In the past six and one-half years (1999- June 2005), a total 52 papers have been
published, averaging 8 journal papers per year. The students and the faculty should be
commended for this noteworthy accomplishment. While the number of journal
publications produced by a PhD student is a rigorous yet objective measure to assess the
quality of research, the consistency in using this measure across the different PhD
committees is somewhat debatable. It appears that some committees have required as
many as 5 to 6 journal papers, while others one or none. While it is hard to decide on a
unique number of journal publications that would meet the rigor and expectations of the
diverse areas of research in microbiology, it is strongly recommended that the department
develop a consistent policy that can be used by all PhD committees. Inconsistent policies
contribute to the student sense of inequitable treatment.

The committee was told by a broad group of students that the individual advising was
quite good, but that the overall graduate advising was not meeting their needs or
expectations. There was considerable confusion among the students as to the credit and
distribution requirements to obtain a degree in microbiology, and a general dissatisfaction
with access to timely, accurate, and accessible information related to the requirements
and resources available relevant to their graduate programs. These issues require
concerted attention to both understand their scope and remedy the causes.
Overall, the graduate program would benefit from more cohesion. The current program is somewhat disorganized, and in need of structural reform. The mechanism for tracking graduate student progress is not well defined. The graduate students speak of uncertainty in departmental and university degree and course requirements. The students perceive that there are funding inequities among graduate students. Although a graduate student is supposed to sit on the Graduate Affairs Committee, after the review and reading of the self-study, it appears that the position was vacant. Filling this position with a graduate student elected by peers may be an effective beginning.

Faculty

The faculty is currently made up of 12.6 tenured and 1.0 fixed term FTE positions, the majority of which are primarily research faculty, with only two dedicated to program instruction. This creates a potential for producing a wealth of opportunities for students who specialize with interest in a host of diverse specialties. In addition, although not a large faculty size, both the undergraduate and graduate programs are productive and successful.

The service teaching, in general, is met by the female faculty (2 instructors and 2 research faculty). Thus, the women in the department are teaching the larger courses and generating the largest student credit hours. The review team understands that in the past the instructors for the service courses included men. The team also understands that the department seeks to continue to improve the ethnic and gender balance of the faculty, which are worthwhile goals.

The decrease in faculty and graduate teaching assistant (GTA) lines combined with increasing university enrollments has burdened the laboratory courses as well as placed greater demands upon the instructional faculty. Without an increase in GTAs, the access to these courses will have to be restricted. The department has done well to adjust to the reduction in GTAs by providing an opportunity to undergraduates to serve as lab instructors. This is an interim solution. Replacement of at least two GTA lines would allow the department to continue its strong commitment to the providing for the educational mission of the university.

A few problems concerning faculty relations were uncovered during the site visit, echoed by students and some of the Administrators participating in the review. Graduate students noted a lack of collegiality between certain department faculty members. In a department as diverse as the Microbiology department is expected to be, a certain level of disharmony is to be anticipated. Nevertheless, things become destructive when faculty disagreements become apparent to students as we found here. Another faculty relation issue is the relative lack of women and minority faculty members: the department should make all practical efforts to recruit and hire women and minorities for diversification purposes. Finally, department relations have suffered as a consequence of having had four different department chairs in about five years. Hopefully the strong support for the current chair by the faculty and the administration will facilitate department rebuilding.
The Deans of the College of Science and Agriculture have already approved two new faculty searches for the Microbiology department. As the searches progress, the faculty should look to fill the open positions with the highest quality candidates—candidates who will have the greatest chance of attracting grant funding. In this way, the new hires will be a double boon to the department as they increase the number of research faculty and the number of graduate students that can be funded. We note that the research office, and the Colleges of Science and Agriculture seem ready to improve start-up packages to attract nationally competitive candidates and the department should push these offices to ensure such candidates join their ranks.

At one point, Dean Coakley suggested it would be desirable for the Deans of Science and Agriculture to reallocate the FTEs allocated for teaching and research to better reflect the current realities. This may be better done after a strategic planning effort, but could give a better (or more equitable) balance. Also, the faculty may wish to revisit the opportunities for additional research FTEs in new areas of agricultural microbiology (e.g. agricultural biotechnology, microbial remediation, agricultural bioterrorism) or other applied aspects relevant to the needs of the Oregon agricultural community that are not covered by existing faculty.

Currently, the Department has fairly established classical virologists on the faculty. While there is a need for the department to grow in areas of research that are perceived to be ‘cutting edge’ in microbiology for the 21st century, the efforts pursued by the Department seem to be directed in expanding the areas of research that are considered to be more traditional and are already in place at OSU. To gain national visibility, the Department should make every attempt to grow in areas of research that are considered new and somewhat revolutionary. Computational biology and bioinformatics are two new emerging research areas that have great potential of producing a wealth of opportunities for students who specialize in them.

Facilities

The Department of Microbiology is housed in Nash Hall on the Oregon State University campus in Corvallis. The building is four floors and contains the department office, lecture rooms, teaching and research laboratories, faculty offices as well as the faculty and graduate student lounges. Research equipment is perceived to be adequate, if not exceptional, with well-supported common facilities.

During the review, neither undergraduate nor graduate students expressed serious concerns about inadequacies of physical resources that interfered with their ability to be successful in their studies and research though opportunities to enhance the facilities were expressed by students and faculty. In several places in the self-study report, the Department has indicated a need for the renovation of Nash hall laboratory space. A tour of Nash hall showed walls with peeling paint, an aging infrastructure, and laboratory space that are decidedly not ergonomic, supporting this perspective. The department is making many investments to remedy these problems to the degree that resources can be devoted to these needs.
While it is understood that university funds are limited, resources should be invested with the specific goal of renovating laboratory space for incoming faculty as soon as possible. The ability to attract better faculty candidates is likely to recompense the university investment many-fold. A second research-related facility issue is the need for at least one readily available bio-safety level 3 (BSL3) facility. In the current national biomedical research funding environment, one of the best bets for achievable grant support is for research on emerging infectious diseases and bioterrorist threats. An optimal solution would be the construction of a BSL3 tissue culture/microbiology lab in Nash hall. A less satisfactory solution would be to ensure unfettered access to the Veterinary Medicine BSL3 facility. It would be best if access arrangements were adjudicated on a university-wide basis, rather than by the Veterinary College. Finally, it is remarkable how little shared equipment is available in the department. This may be due to the diverse nature of research in the department, and the number of chairs the department has had in recent years. Nevertheless, from the perspective of potential faculty candidates, the lack of a plan to procure and maintain departmental shared equipment must suggest a fragmented rather than cohesive unit.

Summary of Program Strengths and Limitations

Overall the Department of Microbiology Review resulted in the following strengths and areas to build and maintain:

1. Strong, productive and accountable academic programs
2. Satisfied students and alumni who support the Department
3. Successful program graduates at both the undergraduate and graduate level
4. Established faculty with solid funding and research track records
5. Campus recognition and collaborations around campus and within agencies and industry
6. Excellence in university service in providing non-major undergraduate teaching
7. Outstanding opportunities for undergraduate research and laboratory experiences
8. Diversity in gender at undergraduate and graduate level
9. Potential to replace two faculty positions

The following areas are of concern and are current limitations which should be addressed:

1. A lack of a strategic plan that looks to the future in terms of department direction given the economic, technological climate and the best fit with the College and University directions and missions.
2. There is need to stabilize the Department that has suffered through leadership changes, faculty loss and economic downturns. This should include strategies to support the new chair and unite faculty who may be factiously aligned undermining the cohesiveness of the Department as a whole. While the faculty was seemingly unaware of their fractious
nature, it has been perceived by graduate students and was communicated to the review team.
3. A need to examine the graduate program curriculum, structure and communication strategies with students
4. Fostering the minority diversification of faculty and graduate students
5. A need to manage growing undergraduate enrollments and decreases support for instructors/graduate teaching assistants and plan for future of the Instructors within the Department
6. A way to increase graduate student recruitment, particularly PhD students, perhaps by attracting cutting edge faculty and increasing stipends for students.
7. Aging facilities and laboratories that interfere with the ability to attract new faculty

Summary

The department of Microbiology has a committed faculty, enthusiastic students at all levels, and leadership that has vision and strong support. An important area of strength for the Department in the past has been the diversity of the areas of microbiology in which research and teaching are conducted. These include health-related areas (e.g. virology, immunology), agricultural topics (food, soil, dairy) and basic features of the microbial world (ecology, physiology, evolution and genetics). This breadth, relatively uncommon (especially for a small department), needs to be nurtured for the future as it provides an exceptional teaching environment and enhances opportunities for integrated and collaborative research. However, the last decade has been one of deep challenges and opportunities for the department. The transition from a culture of long-standing tight control to a period of staccato changes in departmental leadership has been difficult. At precisely the same time the department faced the most severe budget cutbacks in recent memory and significant growth in its student population. Finally, faculty members were lost to retirement and sister programs in the university that strained work-hours and collegial relationships. Despite these inopportune concurrent events, the faculty has maintained an outstanding undergraduate program, and a very strong graduate program. There is a palpable sense of joint commitment to the success of the program from the entire department community, and a belief that they are heading in the right direction. This summer the faculty plan a retreat in which they will lay out the direction to be taken on a number of key issues. The timing of this event fits well with the turn around in faculty numbers, the establishment of a new chair, and with the completion of this review process. The review committee is both pleased with the state of the department, and encouraged greatly by the prospects for the future. While there are clear areas that can benefit from greater attention, we are convinced that the department is engaged and committed to addressing our concerns and those that they perceive in a serious and effective manner. They will need financial and administrative support, most notably from the College of Science, to achieve the success they strive for; but these investments will be well placed given the setting the department provides.
Abbreviated Category I Proposal for Name Changes

Departmental:
BIOENGINEERING Changes to BIOLOGICAL AND ECOLOGICAL ENGINEERING

M.S. and Ph.D. Graduate Degrees:
BIORESOURCE ENGINEERING changes to BIOLOGICAL AND ECOLOGICAL ENGINEERING

Oregon State University
College of Agricultural Sciences
Department of Bioengineering
CIP* Number 14-0501
April 25, 2005
Effective Date: As Soon As Approved

1. Title of the proposed instructional, research, or public service unit. For name changes, give both the current and proposed names. Describe the reason(s) for the proposed change.

The “Department of Bioengineering” will change to the “Department of Biological and Ecological Engineering”, and the M.S. and Ph.D. in Bioresource Engineering will correspondingly change to "Biological and Ecological Engineering". Reasons for the proposed change are outlined below.

Overview:

“Biological and Ecological Engineering” more accurately represents the current and planned future foci of the department, and thus, is a more suitable department name. In 1999 the departmental name was changed from “Bioresource Engineering” (the name of our only current graduate degree program) to “Bioengineering” to match the undergraduate degree name. The undergraduate program was shortly thereafter removed from the department (against the majority opinion of the departmental faculty) by the provost, leaving the department with the name while the undergraduate program of the same name was housed in the current department of Chemical Engineering. This creates considerable and unnecessary confusion. Further, though adopted to represent the breadth of activities within the department, the name Bioengineering has evolved recently to focus increasingly on biomedical issues, which misrepresents the remaining faculty and graduate courses in the department entirely. Finally, working with the department’s external advisory board, and following a survey of undergraduates, we have identified a new undergraduate program which should be established under the title of “Ecological Engineering.” We have also identified the area of Ecological Engineering as an opportunity to promote the department to national leadership in research, and graduate education. This emphasis is consistent with the College of Agriculture’s strategic plan and the OSU Plan for Distinction, and reflects the unique national strengths of OSU in natural sciences and engineering.
a) Since renaming the department from “Bioresource Engineering” to “Bioengineering” several years ago, much has changed at OSU and on the national landscape. At OSU, an undergraduate program in “Bioengineering” has been developed. While it was initially developed and housed in the Bioengineering department, it is currently (and for the foreseeable future) housed in the Chemical Engineering department. Having a department and a separate academic program with a same name is at the least confusing and at worse damaging to the missions of both units. At a national level, only in the past few years has consensus emerged on the use of the term “Bioengineering” to reflect primarily biomedically-oriented engineering, and “Biological Engineering” to reflect a broader, more natural and human-managed systems perspective. We took a risk, with extensive and insightful advice, when we adopted the name Bioengineering on the hope that it would grow to encompass both realms, but this has not occurred. The current Bioengineering department is minimally engaged in biomedical engineering, and significantly (essentially exclusively) engaged in biological engineering associated with natural and human-managed system. At the national level, there has been a strong trend of former agricultural engineering programs to adopt names that include “Biological Engineering” (see Appendix 1), and our national professional society recently rename itself to the “American Society of Agricultural and Biological Engineering”. This trend has now become the national standard for programs like ours, and the alignment of OSU with national standards in this regard will improve recruiting of students, staff and faculty, reduce confusion associated with the current name, and provide consistency with the common usage of term Biological Engineering nationally and within the Land Grant system.

b) The label “Bioengineering” has been counterproductive in recruiting students. We have seen a precipitous drop in graduate student applications since adopting the “Bioengineering” name several years ago. Our conversations with those students we have been able to discuss this with frequently points out the connotation of “Bioengineering” to refer to biomedical applications in applicants minds. The response to the terms “Biological and Ecological Engineering” has been very positive from our student’s perspectives.

c) Based on a recent analysis of opportunity areas in undergraduate program development and corresponding polls of student interest, we anticipate the development of an “Ecological Engineering” undergraduate program in the near future. Incorporating “Ecological Engineering” into our department name and graduate program name will begin “branding” this term and facilitate recruitment into the undergraduate program when it is offered.

d) Our students have graduate program needs in three areas – water resource engineering, ecological engineering, and biological engineering, with some overlap between these three areas. OSU’s recent Water Resource Engineering degree program serves the first need. Our current Bioresource Engineering degree encompasses both ecological and biological engineering; however, the “Bioresource” label has not served our students well and it’s inconsistency with the proposed department name will add confusion and will reduce our ability to attract students into the program. Thus we propose renaming the graduate
program to explicitly align with the departmental name and provide a clear opportunity to promote both the Biological and Ecological aspects of the program. No curriculum change is anticipated at this time. The College of Engineering is in the initial phases of planning a multidisciplinary, college-level graduate program in “Biological Engineering”, of which we are strong supporters. If and when that program becomes available, we will simultaneously rename our graduate program to “Ecological Engineering”, providing the three needed degree pathways for our students: 1) Biological Engineering, through the college-level COE program, 2) Ecological Engineering, through our department, and 3) Water Resource Engineering, through the WRGP offered through the Graduate School. However, until that new program is approved and in place, we need a program label to serve the needs of our biological engineering students, and the use of “Biological and Ecological Engineering” as an intermediary solution is needed. We have discussed this with the College of Engineering and they are supportive of this pathway.

e) We have had extensive discussions with our advisory board and stakeholders; the name change has been unanimously supported by our board and well-received by students and other stakeholders.

f) The establishment of the cross-campus Water Resources Graduate Program in October of 2004 has provided a venue for many of the department’s faculty to attract students interested in Water Resources Engineering. An immediate increase in graduate applications has coincided with this change. This both illustrates the problematic nature of the current name, and provides a context for the renaming. Though Water Resource Engineering has long been a major thrust of the department, we committed almost 20 years ago as a department to the notion of providing a nexus for the application of engineering methods to natural systems.

g) Nationally, departments such as ours that historically fell under the name of “Agricultural Engineering” at land grant universities have almost universally changed names to include “Biological Engineering.” Thus it has evolved that “Bioengineering” has been most closely associated with biomedical issues and the otherwise similar “Biological Engineering” with engineering of non-human natural systems. Thus renaming the department “Biological and Ecological Engineering” would be consistent with the national trend and would both better reflect the scope of departmental activities, and distinguish the two important and parallel academic thrusts that will be growing on campus in the coming decades.

2. Location within the institution's organizational structure. Include "before" and "after" organizational charts (show reporting lines all the way up to the Provost).

The department's location within the current organizational chart will remain unchanged.
3. Objectives, functions (e.g., instruction, research, public service), and activities of the proposed unit.
   a. Explain how the program or unit’s current objectives, functions, and/or activities will be changed. Where applicable, address issues such as course offerings, program requirements, admission requirements, student learning outcomes and experiences, and advising structure and availability. How will the reorganized program be stronger than the existing program?
   b. Explain how outcomes in the newly organized program or unit will be assessed.

The new name reflects the department’s current objectives and activities. There is no current reorganization accompanying this change.

4. Resources needed, if any: personnel, FTE academic, FTE classified, facilities and equipment.

There are no additional resources associated specifically with this change. All existing faculty and support personnel within the department fully support this change.

5. Funding sources: state sources (institutional funds - state general fund, tuition and fees, indirect cost recoveries), federal funds, other funds as specified.

Funding sources will remain the same.

6. Relationship of the proposed unit to the institutional mission.
   a. How will the proposed program or unit support OSU’s mission and goals?

OSU has made its goals clear with the February 2004 publication of the campus strategic plan. Of the five strategic themes, two identify that OSU has a central leadership role in the management of Oregon’s natural resources, consistent with the central mission of our department. Our current name does not reflect this core departmental mission. We believe that the new name will better reflect the coincidence of our mission with that of the university’s.

   b. Describe potential positive and negative impact of the proposed change on the program(s) or unit(s) involved. Identify other OSU programs or units which may be affected, and describe the potential positive and negative impact on their mission and activities.

We see two very positive outcomes of this change. First, our department name will be consistent with its mission and recognizable to prospective students and clients of the department’s research and extension products. Secondly, the new name will
greatly diminish the confusion that currently exists, both on and off campus, between our past undergraduate program and our current and future programs.

7. Long-range goals and plans for the unit (including a statement as to anticipated funding sources for any projected growth in funding needs).

The goals and plans of the department remain as stated in the strategic plan published for the department over 2 years ago. With greater coincidence between name and mission the department will improve in its ability to fulfill this set of goals. The department will continue to grow the Water Resources Graduate Program with its cross campus colleagues; will advance the engineering mission of the Sun Grant program; will advance biological engineering methods and applications for the enhancement of the Oregon economy.

8. Relationship of the proposed unit to programs at other institutions in the state.

a. What is the current relationship of the proposed program or unit to OUS and other higher education institutions in the state? Describe how this relationship might be altered based on the proposed change.

The proposed name change does not change the goals of the department or its relationship to the state, industry, nation, or world.

b. Describe how the proposed change will affect other constituencies outside of OUS.

This change will enhance the departmental effectiveness and allow clearer identification of our program to external stakeholders. This will enhance the ability of the department to serve the state in all the aspects of the activities carried out.

9. If the program is professionally accredited, identify the accrediting body and discuss how the proposed change may affect accreditation.

Programs falling under the department’s domain are accredited by ABET, the Accreditation Board for Engineering and Technology. This board primarily accredits undergraduate programs, and we are currently a graduate-only program. However, we anticipate developing an undergraduate program in the near future. ABET accredits programs under several name identifiers, two of which are relevant here. The first is “Agricultural and Similarly Named Engineering Programs”, which specifically list “Biological Engineering” as coming under this review category, and our professional society (American Society of Agricultural and Biological Engineers) is the lead society in this certification category. A second program area in ABET is for “Bioengineering and Biomedical Engineering Programs”, for which the lead society is the Biomedical Engineering Society. This second category, although sharing our current departmental name, is clearly inappropriate for reviewing programs such as ours, and the name
change to focus primarily on “Biological Engineering” is consistent with ABET’s standards.

Appendices:

- 1. Summary of Names of Similar Programs
- 2. History of Name Changes within the Bioengineering Department
- 3. Transmittal Sheet
- Budget Table N/A
- Library Evaluation N/A
- 4. Liaison (attach all liaison correspondence, both internal to the college/school and with all affected, or potentially affected, academic units and institutions within or outside of OSU)
Appendix 1. Summary of Names of Similar Programs

Below is a summary of the major comparator or better institutions, mostly Land Grants, for similar programs across the US and the names of their programs: Land Grant Institutions are emphasized because OSU serves this role for the state and that historically Biological Engineering programs have been located within the Land Grant system. The first column lists the institution. The second column lists the current program name for those programs derived from and Agricultural Engineering department. The third column list any additional programs, typically derived from a Chemical Engineering focus, which may exist at the institution, and is included to emphasize the clear association of “Biological Engineering” with those programs derived from historically Agricultural Engineering programs within the Land Grant system.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Ag-derived department name</th>
<th>Non Ag-derived department name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purdue</td>
<td>Agricultural and <strong>Biological</strong> Engineering</td>
<td>Biomedical Engineering; Chemical and Biomolecular Engineering</td>
</tr>
<tr>
<td>Cornell</td>
<td><strong>Biological</strong> and Environmental Engineering</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>U. Florida</td>
<td>Agricultural and <strong>Biological</strong> Engineering</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>UC Davis</td>
<td><strong>Biological</strong> and Agricultural Engineering</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>Michigan State</td>
<td>Biosystems and Agricultural Engineering</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>U. Arizona</td>
<td>Agricultural and Biosystems Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>U. Maryland</td>
<td><strong>Biological</strong> Resources Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>Texas A&amp;M</td>
<td><strong>Biological</strong> and Agricultural Engineering</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>Washington State</td>
<td><strong>Biological</strong> Systems Engineering</td>
<td>Chemical Engineering and Bioengineering</td>
</tr>
<tr>
<td>Utah State</td>
<td><strong>Biological</strong> and Irrigation Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>Ohio State</td>
<td>Food, Agricultural and <strong>Biological</strong> Engineering</td>
<td>Chemical and Biomolecular Engineering</td>
</tr>
<tr>
<td>Clemson</td>
<td>Biosystems Engineering</td>
<td>Bioengineering (Biomedical focus)</td>
</tr>
<tr>
<td>Penn State</td>
<td>Agricultural and <strong>Biological</strong> Engineering</td>
<td>Bioengineering (Biomedical focus)</td>
</tr>
<tr>
<td>U. Illinois</td>
<td>Agricultural and <strong>Biological</strong> Engineering</td>
<td>Bioengineering (Biomedical focus)</td>
</tr>
<tr>
<td>U. Georgia</td>
<td><strong>Biological</strong> and Agricultural Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>North Carolina State U.</td>
<td><strong>Biological</strong> and Agricultural Engineering</td>
<td>Biomedical; Chemical and Biomolecular</td>
</tr>
<tr>
<td>Kansas State U.</td>
<td><strong>Biological</strong> and Agricultural Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>U. Kentucky</td>
<td>Biosystems and Agricultural Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>Louisiana State U.</td>
<td><strong>Biological</strong> and Agricultural Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>U. Arkansas</td>
<td><strong>Biological</strong> and Agricultural Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>Virginia Tech</td>
<td><strong>Biological</strong> Systems Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>U. Idaho</td>
<td><strong>Biological</strong> and Agricultural Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>Iowa State U.</td>
<td>Agricultural and Biosystems Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>U. Missouri</td>
<td><strong>Biological</strong> Engineering</td>
<td>n/a</td>
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<tr>
<td>Mississippi State U.</td>
<td>Agricultural and <strong>Biological</strong> Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>U. Nebraska</td>
<td><strong>Biological</strong> Systems Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>North Dakota State U.</td>
<td>Agricultural and Biosystems Engineering</td>
<td>n/a</td>
</tr>
<tr>
<td>U. Wisconsin</td>
<td><strong>Biological</strong> Systems Engineering</td>
<td>Biomedical Engineering; Chemical and Biological Engineering</td>
</tr>
<tr>
<td>U. Maryland</td>
<td><strong>Biological</strong> Resources Engineering</td>
<td>Bioengineering Program</td>
</tr>
</tbody>
</table>
Appendix 2. History of Name Changes within the Bioengineering Department

To provide some background and context for this request, we are including here a brief summary of the recent trajectory of the Bioengineering Department. The department and our profession have experienced considerable change over the last two decades, both internally and externally driven. The table below lists a chronology of events related to the changes associated with the Bioengineering department.

<table>
<thead>
<tr>
<th>Action</th>
<th>Date</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established Agricultural Engineering Department</td>
<td>1910</td>
<td>Provide technical education supporting the agricultural sector</td>
</tr>
<tr>
<td>Department name changed to Bioresource Engineering</td>
<td>1991</td>
<td>Reflect broadening of the department mission into natural resources, environmental management, and water resources</td>
</tr>
<tr>
<td>Development of undergraduate program Biological Engineering</td>
<td>1996</td>
<td>Demonstrated need for undergraduate program in the broad area of biological engineering – name consistent with national trends</td>
</tr>
<tr>
<td>Department name changed to Bioengineering</td>
<td>2001</td>
<td>Reflected a decision by some faculty members that the “Bioresource Engineering” department name was not consistent with the undergraduate program direction; this was not a consensus decision and caused considerable debate within the department</td>
</tr>
<tr>
<td>Undergraduate Program name changed to Bioengineering</td>
<td>2001</td>
<td>Consistent with the department name change, the undergraduate program was renamed; reflecting a strong tendency within the students enrolled in the program towards biomedical engineering. This also reflected a naming convention supported by the Whittaker Foundation (a foundation funding programs in biomedical engineering, include OSU’s program)</td>
</tr>
<tr>
<td>Bioengineering undergraduate program transferred to Chemical Engineering</td>
<td>2002</td>
<td>This change came about largely because of dissention by two faculty members about the commitment of the department to supporting the biomedical focus of many of the undergraduate students, and an assumption that the biomedical aspects of the program would be better served if the program was housed in the Chemical Engineering department</td>
</tr>
<tr>
<td>Rename department/program to Biological and Ecological Engineering</td>
<td>2005</td>
<td>Many reasons outlines in this proposal: Remove confusion on campus, align with nation naming conventions, provide consistency, identify emerging opportunity area (Ecological Engineering), others.</td>
</tr>
</tbody>
</table>
## Category I Proposal Budget Outline

Estimated Costs and Sources of Funds for the Proposed Program

Total new resources required to handle the increased workload, if any. If no new resources are required, the budgetary impact should be reported as zero.

See "Budget Outline Instructions" on the OUS Forms and Guidelines Web site: www.ous.edu/aca/aca-forms.html

**Institution:** Oregon State University - Dept. of Bioengineering

**Category I Proposal Name:** Proposal for Name Change

**Academic Year:** 2005 - Permanent Change  
**Operating Year:** 2005  
**Completed by:** Susan Dobbie

### Personnel

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>Column D</th>
<th>Column E</th>
<th>Column F</th>
<th>Column G</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTE</td>
<td>Dept</td>
<td>College</td>
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</tbody>
</table>

- Faculty (Include FTE) $0
- Support Staff (Include FTE) $0
- Graduate Assistants (Include FTE) $0
- Fellowships/Scholarships $0
- *OPE: Faculty $0
- Staff $0
- GTA/GRA $0
- Nonrecurring $0

**Personnel Subtotal:** 0 0 0 0 0 0 0 $0

### Other Resources

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<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>Column D</th>
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</tbody>
</table>

- Library/Printed $0
- Library/Electronic $0
- Supplies and Services $0
- Equipment $0
- Travel $0
- Other Expenses 500 $500

**Other Resources Subtotal:** 500 0 0 0 0 0 0 $500

### Physical Facilities

<table>
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<tr>
<th>Column A</th>
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<th>Column D</th>
<th>Column E</th>
<th>Column F</th>
<th>Column G</th>
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</tr>
</tbody>
</table>

- Construction $0
- Major Renovation $0
- Other Expenses $0

**Physical Facilities Subtotal:** 0 0 0 0 0 0 0 $0

**GRAND TOTALS:** 500 0 0 0 0 0 0 $500

**Percentage of Total:** 100.00% 0.00% 0.00% 0.00% 0.00% 0.00% 0.00%

*See current OPE tables at http://oregonstate.edu/dept/budgets/budghand/tables.htm*
John: Thanks for making time to come over and visit with the FE faculty on the BRE321 and BRE Department name change proposals. I think this was a very helpful discussion. I am pleased to say that the FE Department will provide support for both of these proposals. I think we are slowly building some bridges between the two departments. Let's continue to look for opportunities to keep the conversations flowing.

Steve

**************************************************
Steven D. Tesch
Professor and Department Head Forest Engineering Department Oregon State University
Corvallis, OR 97331-5706
Phone: 541-737-4952
Fax: 541-737-4316
E-mail: Steve.Tesch@oregonstate.edu
Bill, I think the distinction has to do more with the "Engineering" side of things. We don't try to produce rangeland scientists, just as you don't try to produce engineers capable of being professionally licensed as such, if they so desire. We focus on quantitative analysis and design, in the engineering sense. An example would be a constructed wetland for wastewater treatment – we look at not only the biological processes that control this system, but also go through mathematical descriptions of the processes that describe governing equations, process rates, and kinetic parameters that model the rates of various reactions, and the mass, momentum and energy conservation equations that govern hydraulics of the system, all with the goal of being able to design a system that meets specific treatment requirements and could be permitted. Your comments would be equally relevant to the current "Bioengineering" or it many variants (Biological Engineering, Bioresource Engineering, Biosystem Engineering) that are used to designate programs like our's around the country.

I hope that helps. Let me know if you still have concerns.

- John

---

I read the Cat I proposal to change your Department's name. I looked up Ecological Engineering as defined by the International Ecological Engineering Society. It follows:

**What is Ecological Engineering?**

**Definition according to the International Ecological Engineering Society.**

Ecological Engineering has been defined as "the design of the human society with its natural environment for the benefit of both" (Mitsch & Jorgensen, 1989). Ecological engineering integrates various existing environmental fields such as classical ecology, agro-ecology, and restoration ecology. The skills of these fields are used to design low-impact systems for waste treatment, food and energy production, habitat restoration and other benefits.
Ideally, ecologically engineered systems should provide useful services for human society while at the same time retaining their function as an ecosystem. Ecological engineering also tries to introduce ideas which have grown out of ecology into engineering, such as "systems thinking", "whole systems design", "recycling strategies" and so on.

Ecologically engineered systems are not a priori sustainable but heading that way.

In many ways it defines Rangeland Resources, Fisheries and Wildlife, Forestry, etc.

Have you dealt with this idea and do you have a definition that is not inclusive of all the ecological disciplines on campus?

William C. Krueger, Head
Department of Rangeland Resources
Oregon State University, Corvallis, Oregon 97331 http://www.orst.edu/dept/range/
Russ, thanks for your comment. We've talked about the water issue, and concluded that we didn't want to include "Water" in our name since that has become pretty clearly a cross-departmental domain, with the new water-related grad programs, etc. I like the model that seems to be emerging of some cross-cutting themes being managed across multiple departments/institutes - sort of a fabric with departments running one way and themes running the other way. Our faculty associate with departments at one level, and with themes at another. That's how I see the water connection working.

- John

John,

Sorry I missed your deadline. Had just one concern about whether this name reflects the extensive amount of water work that some of your faculty do. This is not readily intuited from the name.

Russ
The attached Category I proposal describes the renaming of an academic unit.

In accordance with the liaison criteria in the Curricular Procedures Handbook, this memo serves as notification to your Department of our intent to make this curricular change.

Please review the attached materials and send your comments, concerns, or support to me by March 2, 2005. Your timely response is appreciated.

Please note - the attached budget for $500.00 in expenses is to cover the name change for the Dept. Identity, Letterhead, and Business Cards.

Please note that a lack of response will be interpreted as support.

Thank you for your time and input.

--------------------------------------------------------------
John P. Bolte
Department Head
Dept. of Bioengineering
116 Gilmore Hall
Corvallis, OR 97331-3906
T-541-737-6303
F-541-737-2082
John.bolte@oregonstate.edu
Agreement between the College of Agricultural Sciences and the College of Engineering on Names of Biological-Based Units and Degree Programs

September 2, 2005

The Bioengineering Department in the College of Agricultural Sciences:

- The Bioengineering Department will be renamed "Biological and Ecological Engineering" with the full support of COE.
- An undergraduate degree program in "Ecological Engineering" will be developed with the full support of COE.

The Bioengineering program within the Department of Chemical Engineering, College of Engineering:

- The Chemical Engineering Department or School will be renamed to include "Chemical, Biological, and Environmental Engineering," with the full support of CAS.
- Any specific unit housed in a future School or Department of Chemical, Biological and Environmental Engineering or similarly named school or department will not use the name "Biological Engineering".

COE and CAS agree to cooperate on the development of a joint, multi-departmental graduate program in "Biological Engineering".

Both COE and CAS agree to not use the term "Biological Engineering" as the name of any academic program, other than the multi-departmental graduate program described above.

John Bolte, Head of Bioengineering

Kenneth Williamson, Head of Chemical Engineering

Thayne Dutson, Dean of Agricultural Sciences

Ron Adams, Dean of Engineering