



OREGON STATE UNIVERSITY

Category I Proposal Transmittal Sheet

Submit proposals to: Office of Academic Programs
110 Kerr Admin -- Oregon State University

For instructions, see <http://oregonstate.edu/dept/academic/cph1998/>. Please attach Proposal, Library Evaluation (performed by the library), Liaison Correspondence, Faculty Curriculum Vitae, and Budget Sheets, as appropriate.

Check one:

Full Proposal

- New degree program
- New certificate program or administrative unit
- Major change in existing program
- Establishment of a new College or Department

Abbreviated Proposal

- Rename of an academic program or unit
- Reorganization – moving responsibility for an academic program from one unit to another
- Merging or splitting an academic unit
- Termination of an academic program or unit
- Suspension or reactivation an academic program or unit

For proposals to establish a new center or institute, contact the Research Office (737-3437).

For requests to offer existing certificate and degree programs at new locations, use the New Location Request Form available on the Web: <http://www.ous.edu/aca/aca-forms.html>

Title of Proposal:

Effective Date:

Bioengineering changes to Biological and Ecological Engineering

upon approval

Department/Program:

College:

Bioengineering


College of Agricultural Sciences

I certify that the above proposal has been reviewed and approved by the appropriate Department and College committees:



Sign (Dept Chair/Head; Director)

8/3/05
Date



Sign (Dean of College)

8/5/05
Date

John Bolte
Print (Department Chair/Head; Director)

Thayne Dutson
Print (Dean of College)

Abbreviated Category I Proposal for Name Changes

Departmental:

BIOENGINEERING Changes to BIOLOGICAL AND ECOLOGICAL ENGINEERING

M.S. and Ph.D. Graduate Degrees and Graduate Minor:

BIORESOURCE ENGINEERING changes to BIOLOGICAL AND ECOLOGICAL ENGINEERING

Oregon State University

College of Agricultural Sciences

Department of Bioengineering

CIP* Number 14-0301

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., Ph.D., and Graduate Minor 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

programs 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 multidepartmental, 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.

10. IMPACT ON CURRENT STUDENTS

There will be no negative impact to students; current students will be reasonably accommodated. Specifically, students who are enrolled in these programs at the time the name change is approved will be able to choose either the current name or the new name for their degree.

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.

Institution	Ag-derived department name	Non Ag-derived department name
Purdue	Agricultural and Biological Engineering	Biomedical Engineering; Chemical and Biomolecular Engineering
Cornell	Biological and Environmental Engineering	Biomedical Engineering
U. Florida	Agricultural and Biological Engineering	Biomedical Engineering
UC Davis	Biological and Agricultural Engineering	Biomedical Engineering
Michigan State	Biosystems and Agricultural Engineering	Biomedical Engineering
U. Arizona	Agricultural and Biosystems Engineering	n/a
U. Maryland	Biological Resources Engineering	n/a
Texas A&M	Biological and Agricultural Engineering	Biomedical Engineering
Washington State	Biological Systems Engineering	Chemical Engineering and Bioengineering
Utah State	Biological and Irrigation Engineering	n/a
Ohio State	Food, Agricultural and Biological Engineering	Chemical and Biomolecular Engineering
Clemson	Biosystems Engineering	Bioengineering (Biomedical focus)
Penn State	Agricultural and Biological Engineering	Bioengineering (Biomedical focus)
U. Illinois	Agricultural and Biological Engineering	Bioengineering (Biomedical focus)
U. Georgia	Biological and Agricultural Engineering	n/a
North Carolina State U.	Biological and Agricultural Engineering	Biomedical; Chemical and Biomolecular
Kansas State U.	Biological and Agricultural Engineering	n/a
U. Kentucky	Biosystems and Agricultural Engineering	n/a
Louisiana State U.	Biological and Agricultural Engineering	n/a
U. Arkansas	Biological and Agricultural Engineering	n/a
Virginia Tech	Biological Systems Engineering	n/a
U. Idaho	Biological and Agricultural Engineering	n/a
Iowa State U.	Agricultural and Biosystems Engineering	n/a
U. Missouri	Biological Engineering	n/a
Mississippi State U.	Agricultural and Biological Engineering	n/a
U. Nebraska	Biological Systems Engineering	n/a
North Dakota State U.	Agricultural and Biosystems Engineering	
U. Wisconsin	Biological Systems Engineering	Biomedical Engineering; Chemical and Biological Engineering
U. Maryland	Biological Resources Engineering	Bioengineering Program

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.

Action	Date	Reason
Established Agricultural Engineering Department	1910	Provide technical education supporting the agricultural sector
Department name changed to Bioresource Engineering	1991	Reflect broadening of the department mission into natural resources, environmental management, and water resources
Development of undergraduate program Biological Engineering	1996	Demonstrated need for undergraduate program in the broad area of biological engineering – name consistent with national trends
Department name changed to Bioengineering	2001	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
Undergraduate Program name changed to Bioengineering	2001	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)
Bioengineering undergraduate program transferred to Chemical Engineering	2002	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
Rename department/program to Biological and Ecological Engineering	2005	Many reasons outlines in this proposal: Remove confusion on campus, align with nation naming conventions, provide consistency, identify emerging opportunity area (Ecological Engineering), others.

Liason Comments

John Bolte

From: Tesch, Steve [steve.tesch@oregonstate.edu]
Sent: Monday, March 07, 2005 10:58 AM
To: Bolte, John
Subject: Liaison

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 that FE Department will provide support for both of these proposals. I think we are slowly building some bridges between the two departments. Lets 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

John Bolte

From: John Bolte [boltej@engr.orst.edu]
Sent: Monday, February 28, 2005 9:40 AM
To: 'Krueger, Bill'
Subject: RE: Department Name Change

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 its 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

From: Krueger, Bill [mailto:william.c.krueger@oregonstate.edu]
Sent: Friday, February 25, 2005 2:56 PM
To: Bolte, John P - ONID
Subject: Department Name Change

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/>

John Bolte

From: Karow, Russell [russell.s.karow@oregonstate.edu]
Sent: Wednesday, March 09, 2005 8:50 AM
To: Bolte, John
Subject: RE: Bioengr name change

agreed

-----Original Message-----

From: John Bolte [mailto:boltej@engr.orst.edu]
Sent: Wednesday, March 09, 2005 8:40 AM
To: Karow, Russell
Subject: RE: Bioengr name change

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

From: Karow, Russell [mailto:russell.s.karow@oregonstate.edu]
Sent: Wednesday, March 09, 2005 6:49 AM
To: Bolte, John
Subject: RE: Bioengr name change

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

-----Original Message-----

From: Karow, Russell
Sent: Thursday, February 17, 2005 7:01 AM
To: CSS2 Project Leaders
Subject: Bioengr name change
Importance: High

FYI - please send any comments to me - Russ

-----Original Message-----

From: Dobbie, Susan
Sent: Wednesday, February 16, 2005 3:23 PM
To: CAS Dept Heads

(OUS and OSU)

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

Category I Proposal Name: Change "Bioengineering" to "Biological and Ecological Engineering"

Academic Year: 2005 Operating Year: 2005

Completed by: 2005 (indicate 1st, 2nd, 3rd, or 4th year--prepare one page for each)

	Column A	Column B	Column C	Column D	Column E	Column F	Column G	
	From Current Budgetary Unit		Institutional	From Special State	From Federal Funds &	From Fees, Sales, &	Endowment	LINE ITEM TOTAL
	FTE	Dept	College	Reallocation from Other Budgetary Unit	Appropriation Request	Other Grants/Contracts	Other Income	
Personnel								
Faculty (Include FTE)	0.0							\$0
Support Staff (Include FTE)	0.0							\$0
Graduate Assistants (Include FTE)	0.0							\$0
Fellowships/Scholarships	0.0							\$0
*OPE: Faculty	0							\$0
Staff	0							\$0
GTA/GRA	0							\$0
Nonrecurring	0							\$0
Personnel Subtotal:		0	0	0	0	0	0	\$0
Other Resources								
Library/Printed		0						\$0
Library/Electronic		0						\$0
Supplies and Services		500						\$500
Equipment								\$0
Travel								\$0
Other Expenses								\$0
Other Resources Subtotal:		500	0	0	0	0	0	\$500
Physical Facilities								
Construction								\$0
Major Renovation								\$0
Other Expenses								\$0
Physical Facilities Subtotal:		0	0	0	0	0	0	\$0
GRAND TOTALS:		500	0	0	0	0	0	\$500
Percentage of Total		100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	

* See current OPE tables at <http://oregonstate.edu/dept/budgets/budghand/tables.htm>