Faculty Senate

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1996 Agendas

Agendas for Faculty Senate meetings can be accessed by clicking on the desired date. Contact the Faculty Senate Office via e-mail for more information.

- January 11
- February 1
- March 7
- April 4
- May 2
- June 6
- October 3
- November 7
- December 5

Faculty Senate, Oregon State University, Corvallis, OR 97331-6203 · 541.737.4344
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REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

503-737-4344

FACULTY SENATE OFFICE
Social Science 107

Thursday, January 11, 1996; 3:00 pm - 5:00 pm
MU 105

AGENDA

The agenda for the January Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the December Senate meeting, as published and distributed to Senators.

A. SPECIAL REPORTS

1. OSU President Paul Risser

   Dr. Risser will converse with the Senate.

B. ACTION ITEMS

1. Install Elected Officials

   Installation of Senate President, Ken Krane; President-Elect, Anthony Wilcox; new Executive Committee members: Cheryl Jordan, Donald Reed, and Ken Williamson; Interinstitutional Faculty Senate Representative, Leslie Davis Burns; and newly-elected Senators.

C. INFORMATION ITEMS

1. Faculty Senate Handbook Update

   If continuing Senators would like an update for their handbook, please contact the Faculty Senate Office. Since experience has shown us that the majority of Senators do not use the update, they are being sent only on request.

D. REPORTS FROM THE PROVOST

Roy Arnold, Provost & Executive Vice President for Academic Affairs

E. REPORTS FROM THE FACULTY SENATE PRESIDENT

President Ken Krane

F. NEW BUSINESS

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR UNIT AFFILIATION WHEN RISING TO SPEAK.

Please recycle this agenda

REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

503-737-4344

FACULTY SENATE OFFICE
Social Science 107

Thursday, February 1, 1996, 3:00 pm - 5:00 pm
Construction & Engineering Hall
LaSells Stewart Center

AGENDA

The agenda for the February Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the January Senate meeting, as published and distributed to Senators.

A. SPECIAL REPORTS

1. Honors College

   Jon Hendricks, Honors College Director, will report on the current status of the University Honors College.

2. Intercollegiate Athletics

   Dutch Baughman, Athletic Director, and Bob Frank, NCAA Institutional Faculty Representative, will report on intercollegiate athletic issues.

B. ACTION ITEMS

1. Approval of Parliamentarian

   Approve Trischa Knapp, Department of Speech Communication, as Parliamentarian.

C. INFORMATION ITEMS

1. Faculty Awards Deadline

   February 15 is the deadline for nominations for the following awards: OSU Distinguished Service, OSU Alumni Distinguished Professor, Elizabeth P. Ritchie Distinguished Professor, Dar Reese Excellence in Advising, OSU Faculty Teaching Excellence, Richard M. Bressler Senior Faculty Teaching, Extended Education Faculty Achievement, D. Curtis Mumford Faculty Service Award, and OSU Outstanding Faculty Research Assistant. Criteria for these awards may be obtained from Patricia Lindsey at 737-1416, the Faculty Senate Office, or via Gopher by accessing "OSU Information and Services" then "Faculty and Staff Awards." Nominations should be submitted to the Faculty Recognition and Awards Committee, in care of Patricia Lindsey, Agricultural & Resource Economics.

2. Faculty/Sabbatical Housing List

The listings for Faculty/Sabbatical Housing kept in the Faculty Senate Office are on GOPHER. If a faculty member is coming to OSU, GOPHER can be accessed to determine if there is housing which meets their needs; faculty members who are going on sabbatical can also list their homes as rentals. After accessing GOPHER, select "OSU Information & Services," then select "Faculty/Sabbatical Housing List." The following menus will appear from which to choose: Rentals Available, Roommates, House Sitting, Housing Needed, and Sale. The rental listing is organized by number of bedrooms.

D. REPORTS FROM THE PROVOST

Roy Arnold, Provost & Executive Vice President for Academic Affairs

E. REPORTS FROM THE FACULTY SENATE PRESIDENT

President Ken Krane

F. NEW BUSINESS

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR UNIT AFFILIATION WHEN RISING TO SPEAK.

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REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

503-737-4344

FACULTY SENATE OFFICE
Social Science 107

Thursday, March 7, 1996; 3:00 pm - 5:00 pm
Construction & Engineering Hall
LaSells Stewart Center

AGENDA

The agenda for the March Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the February Senate meeting, as published and distributed to Senators.

A. SPECIAL REPORTS

1. Student Affairs Update

   Dr. Larry Roper, Vice Provost for Student Affairs, will report on Student Affairs.

2. Copyright Law

   W. Lee Schroeder, Chief Business Officer, Caroline Kerl, OSU Legal Advisor, and Mark McCambridge, Director, Business Services, will report on the current status of the copyright laws.

B. ACTION ITEMS

1. Faculty Forum Paper Guidelines (pp. 1–4)

   The attached guidelines are before the Senate for approval.

C. INFORMATION ITEMS

1. Committee Interest Forms

   Committee interest forms will be distributed after Spring break and will be due back in the Faculty Senate Office on April 15. Please consider volunteering for these committees.

2. Interinsitutional Faculty Senate Recap (pp. 5–6)

   Attached is a recap of the February IFS meeting.

D. REPORTS FROM THE PROVOST

Roy Arnold

E. REPORTS FROM THE FACULTY SENATE PRESIDENT

Ken Krane

F. NEW BUSINESS

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR UNIT AFFILIATION WHEN RISING TO SPEAK.

Please recycle this agenda

Guidelines for Faculty Forum Papers

1. Name of publication and publisher: "OSU Faculty Forum Papers" published by the Oregon State University Faculty Senate.

2. Preparation of manuscripts: Each manuscript submitted for publication:

   a. Must be submitted by a faculty member who is part of the Faculty Senate apportionment group.

   b. Should not exceed a reasonable length. A six page limit is suggested.

3. Submission of manuscripts:

   a. Manuscripts should be submitted to the Faculty Senate Office.

   b. Manuscripts should be submitted in electronic form, either by e-mail or on a computer disk in a format compatible with the Faculty Senate Office's word processing system.

   c. All submissions must be accompanied by a printed copy signed by each author and including each author's campus address and electronic mail address.

4. Review of manuscripts: Editorial review shall be done to assess the appropriateness of the submission and any potential legal problems associated with its publication. By publishing the paper, the institution may be required to share legal responsibility with the author for the published material. Manuscripts shall be reviewed as follows:

   a. Each manuscript will be read by the Faculty Forum editor, who shall be designated each year by the Faculty Senate Executive Committee.

   b. The editor, at his or her discretion, may select at least one additional faculty member, preferably with expertise in the area in question, to read the manuscript. The editor may also submit the paper directly to the Executive Committee for its advisement if the content is in question.

   c. If reviewers suspect possible legal problems, the editor may suggest revisions to the author and/or may seek additional legal advice.

   d. If disagreements between the author and the editor cannot be resolved, the paper will be referred to the Faculty Senate Executive Committee for further action. If the Executive Committee decides against publication, the author will be so advised.

e. The Executive Committee, or a representative thereof, shall review the final version of the Faculty Forum Paper prior to publication.

5. Publication and distribution:

a. Publication will be distributed by electronic mail to all Faculty Senate members and to Deans, Directors and Department Heads with a request to route to all faculty.

b. Printed copies will not be distributed but will be available for review in the Faculty Senate Office and in the Kerr Library Reserve Book Room.

c. The following disclaimer will be included on every Faculty Forum Paper: *Opinions expressed by authors of Faculty Forum articles are not necessarily those of the OSU Faculty or Faculty Senate.*

Rev:

The existing Faculty Forum Paper Guidelines were approved by the Faculty Senate on March 7, 1968:

1. Name of publication: "OSU Faculty Forum Papers"

2. Preparation of manuscripts: Each manuscript to be submitted for publication:

   a. Must be authored by a faculty member eligible for election to the Senate according to the provisions of Section 2 of Article IV of the Bylaws.

   b. Should be typed in a form which can be reproduced directly without the need of retyping or rearranging. Short papers of one or two pages may be typed with either single or double spacing to make best use of full pages. Longer pages must be single spaced. Other requirements:

      (1) Use 8-1/2" x 11" white bond paper
      (2) Type on one side of page only
      (3) Do not number or fold sheets
      (4) Leave at least a 1-1/2 inch margin at the top of all pages.

   c. Should not exceed a reasonable length. A six page limit is suggested, including displays such as tables or graphs. If this limit is exceeded, publications will require approval of the faculty advisory committee.

   d. Should be signed (use black ink) and dated by the author at the end. The author's name and a subject, if appropriate, may be typed at the heading of the first page of the paper.

3. Submission of manuscripts:

   a. Manuscripts are to be submitted to the office of the Dean of Faculty. Receipt of each manuscript will be acknowledged.

   b. For each monthly publication, the deadline for the receipt of manuscripts shall be noon of the last full working day (Monday thru Friday) of the preceding month.

4. Review of manuscripts:

   The possible need of editorial review of manuscripts is suggested only to avoid potential legal problems. The papers will be published with state funds and the institution may be required to share with the author legal responsibility for material that is published. The following review shall be followed:

   a. Each manuscript will be read by at least two members of the faculty advisory committee. Whenever possible, one of the reviewers shall have professional

experience in the field of journalism, including its legal aspects. If in the judgment of either reviewer a potential legal problem may exist, the manuscript will be read by other members of the advisory committee.

b. If in the judgment of the advisory committee, a potential legal problem may exist, publication will be deferred until the problem is resolved to the satisfaction of all members of the advisory committee. In such cases where a potential legal problem may exist, the advisory committee:

(1) Shall first consult the author to consider and encourage possible revisions
(2) May seek additional legal counsel.

c. If the potential legal problem is not resolved to the committee's satisfaction, the paper will be referred to the Executive Committee of the Faculty Senate for further or final action. If the decision is to deny the publication of a paper, the author will be so advised.

5. Publication and distribution:

a. The publication date will be about the middle of each month of the academic year.

b. The publication will be distributed by campus mail to each member of the faculty who is eligible for election to the Faculty Senate as prescribed in Section 2 of Article IV of the Senate Bylaws.

c. Although extra copies will be printed and made available on request at the office of the Dean of Faculty, no copies will be distributed on a regular basis to persons outside the faculty.

6. Cost of publication:

a. The estimated cost of publication and mailing 8 sheets (printed on two sides) is about $150 per month.

Costs will be charged to the office of the Dean of Faculty. If funds are not available to cover the costs of a given issue, the Executive Committee of the Senate will be consulted at the earliest opportunity and the Senate will be advised at the next regular meeting.

Interinstitutional Faculty Senate Meeting
February 2 & 3, WOSC

IFS Senators present: Leslie Burns, Steven Esbensen, Mary Alice Seville
Report submitted by Seville

-- FRIDAY SESSION --

The session began with a welcome from WOSC President Betty Youngblood. President Youngblood briefed us on the issues faced by WOSC, primarily reaccreditation in 1997 and clarifying WOSC's mission in OSSHE. WOSC Provost Gary Hart reported that WOSC will attempt to meet self-funded faculty salary increases through early retirements and budget cuts that tend to be across the board meeting the Chancellor's office guideline to preserve programs whenever possible.

Grattan Kerans called to report on the special legislative session in process at the time. He reported that the session was going very smoothly, the lottery shortfall in education dollars was being made up by general fund dollars, and there is an anticipated shortfall of $550 million in the 1997-1999 biennium.

OSBHE President Les Swanson talked with us about the Governor's expectations of and commitment to higher ed, the development of the Capitol Center in Beaverton, and the strategic planning process.

* The Governor's "menu items" are: no reduction in funding and seamless education from kindergarten through university. The Governor wants to have a range of ideas to mull over as he puts together his budget for the next biennium.

* President Swanson sees the Capitol Center serving as the center of programs for engineering, technology and computer science in the Portland area for all levels of education - K-12, Community College and higher ed.

* The strategic planning is taking place in three phases:
1. Information gathering on current situation/environment to be completed by March.
2. Looking into the future - what should OSSHE be.
3. How to get from current to future.

Four task forces are working on the first phase. It is not clear if the task forces will continue to work on phase two. The whole process is to be completed with plan in hand in June. Implementing some parts of the plan will depend on the legislature/governor and some on Board decision.

Vice Chancellor Shirley Clark talked with IFS about strategic planning and the need to systematically examine the virtual university concept as part of the planning process. For example, should four-year degrees be given at two-year sites through distance learning. She also mentioned that it is time for the next round of productivity

grants. Although there will be an RFP open to faculty, most of the funds will support areas of high demand in which prior agreements had been made.

-- SATURDAY SESSION --

OSBHE REPORTS. Sargent reported on the December and January Board Meetings. December's meeting dealt with the structure of the strategic planning process. At the January meeting, the Board approved campus physical plans, discussed the early retirement options and decided that employees can keep frequent flyer miles.

ACADEMIC COUNCIL REPORTS. Oshika reported on the Academic Council meeting in January. Primarily the Council dealt with program preproposals. Preproposals coming in very different stages of maturity have caused problems. The Council sees its role as feedback, not rejection or screening. Some of the 12 or so preproposals will be packaged to present the Board in February; others will come back later.

OSSHE TASK FORCE DISCUSSION. Most of the morning was spent getting reports from the IFS members that serve on each of the task forces: (Zimmerman, Graduate Education and Research; Sargent, Community and Economic Development; Enneking, Lifelong Education and Professional Development; and Oshika, Undergraduate Education). All reported that a lot of data had been gathered but most questioned how it could be used effectively since some of the task forces have not clearly defined the problems to be addressed. Concern was expressed about how to deal with the overlap among the undergraduate, graduate, and lifelong education task forces. The IFS attempted to construct a concrete set of recommendations regarding the focus groups that are being convened as part of the planning process. We finally decided that none of us yet had enough information to intelligently discuss the appropriateness/inappropriateness of the focus groups or to recommend members of the focus groups. The task force representatives and President Sargent will continue to press for clarification of the phase 1 process and appropriate faculty representation in the final phases.

The Chancellor has formed a Planning Advisory Group for "rumor control" and information flow during the strategic planning process. The members include Chancellor Cox, IFS President Sargent, Ron Anderson (Assistant Vice Chancellor for Human Resources), and Ed Dennis (Oregon Student Lobby).

GENERAL DISCUSSIONS. Early retirement - what is the purpose, how will it help fund the 1997 raises; recently initiated Board review of presidential search process; and OSU report on the faculty senate bylaw amendment requiring apportionment units to comply with OAR's.

The next meeting will be held at OSU on April 12 and 13.

Proposed Resolution Regarding Teach-in for Diversity Day

(To be considered during New Business)

WHEREAS the Faculty of Oregon State University share the concern of the students that acts of racism are abhorrent anywhere in society but especially on a University campus, and

WHEREAS the Faculty should take the leadership in creating a climate that encourages and celebrates human diversity,

BE IT RESOLVED that Wednesday, April 10, 1996 shall be designated as Teach-in for Diversity Day, and

BE IT FURTHER RESOLVED that on April 10 at least 15 minutes of every class period be devoted to discussions of issues of human diversity and how all members of the University community can work together to create a safe and welcoming environment.

FACULTY SENATE BALLOT

1996 OSU DISTINGUISHED SERVICE AWARD

The Faculty Senate Executive Committee, upon a review and recommendation from the Faculty Recognition and Awards Committee, is recommending that the following individuals receive the 1996 OSU Distinguished Service Award.

Please indicate your vote on these nominations.

Dr. John V. Byrne

____ I support this nomination

____ I oppose this nomination

Mr. Jack Ward Thomas

____ I support this nomination

____ I oppose this nomination

FACULTY SENATE BALLOT

D. CURTIS MUMFORD FACULTY SERVICE AWARD

The Faculty Senate Executive Committee, upon a review and recommendation from the Faculty Recognition and Awards Committee, is recommending the following individuals for this important award.

Please indicate your vote on these nominations.

Kenneth S. Krane

____ I support this nomination

____ I oppose this nomination

William Winkler, Jr.

____ I support this nomination

____ I oppose this nomination

DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS

OREGON STATE UNIVERSITY
213 Ballard Extension Hall · Corvallis, Oregon 97331-3601
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email: AREC@ccmail.orst.edu

CONFIDENTIAL

March 21, 1996

TO: OSU Faculty Senate Executive Committee

FROM: Patricia J. Lindsey, Chair
Faculty Recognition and Awards Committee

SUBJECT: Nominations of Drs. John V. Byrne and Jack Ward Thomas for OSU Distinguished Service Awards

The Faculty Recognition and Awards Committee has selected Dr. John V. Byrne and Dr. Jack Ward Thomas as the 1996 recipients of the OSU Distinguished Service Award. This selection has been approved by President Risser and now must be considered for approval by the OSU Faculty Senate.

The recommendation of Dr. Byrne as a recipient of this prestigious award is based, fittingly, on his exceptional contributions to OSU, to the state, the nation, and the world. John Byrne's contributions to OSU are perhaps best known to us as faculty members and span more than 35 years. His "integrity, compassion, honesty...impressive dedication...and the quality of forward thinking leadership" were cited by those writing in support. To take just one example, by turning the obstacle of significant reductions in public support of higher education into an opportunity for constructive change, and by allowing such challenges to focus his efforts to help guide OSU into the next century rather than impeding them, Dr. Byrne has made an exceptional contribution to this university.

His contributions to the State of Oregon include his role within the State System of Higher Education, as attested to by former Chancellor Bartlett who states: "What would best serve the academic interests of Oregonians was always his underlying concern." His selflessness, modesty, decisiveness, wisdom and perspective were also cited. The respect with which he is held among his peers is evident in his selection as the Executive Director of the Kellogg Commission on the future of state and land-grant universities. Dr. Byrne has been, and continues to be, a leader in higher education at the national as well as the state level.

John Byrne's contributions to society have not been limited to OSU or to public higher education. His *curriculum vitae* documents an impressive record of public service spanning more than 25 years on U.S. Government and other federal advisory committees such as the

National Science Foundation, the U.S. Department of Agriculture, the Department of the Interior, the Office of Science and Technology Policy, the State Department, the U.S. Navy, the National Oceanic and Atmospheric Administration, and the National Academy of Sciences - National Research Council. His service on science advisory councils and committees in the state, region and nation is equally impressive. The scope of many of the issues addressed by these advisory bodies extends to the world, such as his service in an advisory capacity to the U.S. delegation to the U.N. Conference on the Law of the Sea.

President Emeritus Byrne's remarkable record of service to society has rippled out from his acknowledged center at OSU. Yet the extent and importance of this service we believe meets the "unusual circumstances" exception to the general principle that this award not be given to current or former OSU employees. In his record of service, John V. Byrne ranks with those for whom the exception has been previously invoked.

Dr. Jack Ward Thomas' nomination and selection for the OSU Distinguished Service Award are based on his service to OSU, the state, the nation and the world. Dr. Thomas has served the public and public interest through his leadership in the area of management of public resources. He is described "as an excellent scientist who understands and appreciates the social, political, and economic dimensions of environmental decision-making." His leadership has helped to change "the fundamental premises of public forest management...[and] has led the institutionalization of "ecosystem management" as an operating principle." Over the course of the past 30 years, Jack Ward Thomas has been an outstanding public servant through the exercise of his scientific expertise.

Dr. Thomas has contributed to Oregon State University for more than 20 years, through close cooperation with faculty members from several departments. Maintaining a Courtesy Professor appointment, he has served on several graduate committees in the Department of Fisheries and Wildlife. Twice he has delivered the prestigious Starker Lecture in OSU's College of Forestry. Dr. Thomas's service to the state spans the nearly 20 years that he was stationed in eastern Oregon, where his contributions are described as "profound." He has had the courage and strength of character to take on "extremely difficult and contentious topics" and then bring together experts *with diverse views*, and forge something both innovative and workable which serves a broad public interest rather than the more narrowly defined special interests of any of the component groups.

This rather striking ability, strength of character, and dedication led to his assignment to chair the Interagency Scientific Committee to address the Conservation of the Northern Spotted Owl and his later participation on President Clinton's Forest Conference in Portland (1993) and subsequent leadership of the Forest Ecosystem Management Assessment Team which developed the well known "options" for federal forest management in the Pacific Northwest. Governor Kitzhaber, "on behalf of a broad spectrum of Oregonians," stated succinctly that "The Award appropriately recognizes Dr. Thomas' significant and continuing contribution to forest and wildlife resources and sustainable, science based management in Oregon, the nation, and beyond."

Jack Ward Thomas has received many awards for his contributions, including the highest awards given by The Wildlife Society and the U.S. Department of Agriculture, and has been named a fellow of the Society of American Foresters. Importantly, his colleagues in the Forest Service describe the conservation strategy for the Northern Spotted Owl developed under his leadership as "the most significant endangered species plan ever devised" and the Pacific Northwest forest resource management work as "the most significant single contribution made by scientists to resource sustainability in history."

Enthusiastically and without reservation, the Faculty Recognition and Awards Committee recommends both Dr. John V. Byrne and Dr. Jack Ward Thomas to you as deserving recipients of the OSU Distinguished Service Award for 1996.

March 11, 1996

CONFIDENTIAL

TO: Faculty Senate Executive Committee

FROM: Patricia Lindsey, Chair PL
Faculty Recognition and Awards Committee
Members: Miriam Lowrie, Gary Merrill, Kathleen Moore
Jon Olson, Clint Spencer (student representative), Deone Terrio

SUBJECT: Nominations for the 1996 D. Curtis Mumford Faculty Service Award

In keeping with our instructions to forward "the name of at least one recipient from among the nominees," the Committee recommends that the Senate confirm Kenneth S. Krane, Department of Physics, and William Winkler, Jr., Department of Exercise and Sport Science as 1996 co-recipients of the D. Curtis Mumford Faculty Service Award.

Kenneth Krane received his Ph.D. from Purdue University and came to OSU in 1974 as an Assistant Professor of Physics, following postdoctoral fellow positions at the Lawrence Berkeley and Los Alamos Scientific Laboratories. Since that time his scholarly achievements have been recognized with a series of awards which span his career to date and include being named Fellow of the American Physical Society and receipt of the OSU Alumni Association Distinguished Professor Award. He has served as Professor and Chair of the Physics Department and Director of the Engineering Physics Program since 1984.

Dr. Krane's exceptional, ongoing and dedicated service to the Faculty and to OSU encompasses contributions at the Departmental, College and University levels. This service is epitomized by his longstanding, comprehensive efforts to redress the pervasive underrepresentation of women in physics and in other traditionally male scientific disciplines. Dr. Krane's approach is characterized by both its comprehensiveness and its long range vision. While successfully recruiting and retaining women faculty members, he has also devoted considerable effort towards increasing the number of qualified women scientists in the pipeline through such activities as obtaining funding for and directing the SMILE program summer camp, instituting the biannual OSU symposium for women science undergradutes from around the US, and initiating the Women in Physics group within his Department. One woman pointed out that he shoulders the administrative and organizational burdens for these activities because he recognizes that service burdens typically fall disproportionately on women and ethnic minority faculty members and is unwilling to contribute to this inequitable situation. It should come as no surprise that Ken Krane has achieved national renown for his leadership in ecouraging women in science. Dr. Krane's dedication to his faculty members and to his department as a whole are in keeping with his treatment of women: he consistently conceives of and successfully executes measures which materially improve conditions and outcomes for research and education. "He has a very good vision..., the ability to convert his ideas to reality, and he has the maturity to look back and critically assess his achievements." The quality of this service to his faculty and department is considered to be exceptional.

Dr. Krane's contributions fan out from his Department to encompass his own College and the University as a whole. His Dean attests to the importance of his roles regarding promotion and tenure recommendations within the College, the SMILE program, the set of activities which encourage women in science, his contributions towards improving the teaching of math and science to undergraduates and, ultimately, to K-12 teachers. The list of College and University committees upon which he has served is lengthy and encompasses a rather daunting array of time consuming, difficult and sometimes thankless tasks. Yet it is the quality of his service that is most impressive. Described as "creative, fair, thoughtful and hardworking," he is observed to "always put the best interests of the faculty foremost in any discussions."

The Faculty Recognition and Awards Committee recommends Dr. Krane without reservation for the 1996 D. Curtis Mumford Faculty Service Award. His pattern of service to the faculty and to OSU demonstrates exceptional dedication, upholding the tradition of D. Curtis Mumford.

D. Curtis Mumford's tradition of service to faculty and to OSU is upheld in a very different way by William Winkler, Jr., Associate Professor of Exercise and Sport Science. In 1984 Professor Winkler took on the challenge to create, virtually out of thin air (*ie*, without budget), a program to assist University employees to achieve their personal fitness goals and to generate the funds to support the program. The tremendously successful and effective Faculty Staff Fitness program, which has resulted from his dedication and tireless efforts, is considered by many to be "an integral part of the human side of our university's staff and faculty benefit package." As one faculty member wrote, "...Bill and the FSF program have probably done more to retain faculty at OSU than other administrators and programs have." Another faculty member stated that "Bill has managed almost single-handedly to build a program that is a force for good —for sanity and healthfulness..." Several faculty members who have spent time on other campuses have returned with a new-found appreciation for the quality and uniqueness of the contribution. Going well beyond the requirements of his duties, Professor Winkler is variously described as "a lifesaver, a hero, a motivator, a healer, a consultant, and a friend...who is willing to contribute to the OSU community without considering what's in it for him."

The benefits stemming from Professor Winkler's dedicated service include, but are not limited to: increased faculty and staff retention, productivity enhancement, reduction in work days lost due to illness, improved health and longevity, improved faculty and staff morale, and creation of a rare opportunity for egalitarian interactions among OSU employees, contributing to a sense of community and belonging. At any given time, approximately one eighth of OSU's employees participate in this valuable program, and the potential for spillover effects from quality of life improvements for such a sizeable minority of faculty and staff members is substantial. Testimonials to William Winkler's exceptional dedication and service to others and the qualitative difference he has made in their lives were plentiful, touching, and ultimately convincing. William Winkler, Jr.'s service to the faculty and to OSU epitomizes

the qualities the D. Curtis Mumford Award is intended to recognize and the Committee recommends him to you with our strong endorsement.

Service is a component of all our job descriptions. What these two individuals, Kenneth Krane and William Winkler, Jr., share is a demonstrated willingness to sacrifice a nontrivial portion of their personal and/or professional lives in order to make exceptional contributions to the collective welfare of the faculty and OSU. Each of these outstanding citizens engenders great respect, admiration and gratitude from many who have benefitted from their dedicated service. The Committee's consensus is that each is equally outstanding in his own form of service. Furthermore, to implicitly value service in one sphere as more or less significant or deserving of recognition than service in another is fundamentally in error and does a disservice to the spirit of the D. Curtis Mumford Award. Thus we recommend that Professors Krane and Winkler each be honored at University Day.

REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

541-737-4344

FACULTY SENATE OFFICE
Social Science 107

Thursday, April 4, 1996; 3:00 pm - 5:00 pm
Construction & Engineering Hall
LaSells Stewart Center

AGENDA

The agenda for the April Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the March Senate meeting, as published and distributed to Senators.

A. SPECIAL REPORT

1. Faculty Responsibilities Regarding Students with Disabilities

   Stephanie Sanford, Affirmative Action Director, and Tracy Bentley, Services for Students with Disabilities Director, will provide an overview of faculty responsibilities to students with disabilities, including the types of accommodations necessary, and services available to students and faculty.

B. ACTION ITEMS

1. Category I Proposal — Manufacturing Engineering (pp. 1-22)

   Walt Loveland, Curriculum Council chair, will present the attached Category I proposal to extend the Master of Engineering degree program in Manufacturing Engineering to three new off-campus sites in the State of Washington at the Boeing Company.

2. Category I Proposal — Biological Engineering (pp. 23-70)

   Walt Loveland, Curriculum Council chair, will present the attached Category I proposal to establish a B.S. degree in Biological Engineering.

C. INFORMATION ITEMS

1. Annual Reports of Committees/Councils Due

   The Faculty Senate Office is preparing to send a notice to Faculty Senate Committee/Council chairs reminding them that Annual Reports are due for the Senate's information. The May and June Senate agendas will include written reports both with and without recommendations for Senate actions.

2. Committee Interest Forms

Committee interest forms will be distributed after Spring break and will be due back in the Faculty Senate Office on April 14. Please consider volunteering for these committees.

D. REPORTS FROM THE PROVOST

Roy Arnold, Provost & Executive Vice President for Academic Affairs

E. REPORTS FROM THE FACULTY SENATE PRESIDENT

President Kenneth Krane

F. EXECUTIVE SESSION

The purpose of the Executive Session is to consider nominees for the Distinguished Service Award, which will be conferred at the June 16 Commencement, and for the D. Curtis Mumford Faculty Service Award, which will be awarded at University Day on September 16.

In accordance with the Senate's Bylaws (Article IX, Section 3), the Senate President may call an Executive Session, which excludes all but elected and ex-officio members or their designated substitutes (proxies) and Senate Office staff. Before going into Executive Session, the Senate President must also announce the statutory authority for such action (Attorney General's Opinion #6996, I., D.).

Balloting will be limited to Senators, or their official representatives, and will occur after the Executive Session ends and the open meeting is again in session (in accordance with the above Article). Distinguished Service Award and D. Curtis Mumford Faculty Service Award materials distributed to Senators during the Executive Session marked 'CONFIDENTIAL' should be returned to the Faculty Senate Administrative Assistant prior to leaving the meeting.

G. NEW BUSINESS

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR UNIT AFFILIATION WHEN RISING TO SPEAK.

Please recycle this agenda

DEPARTMENT OF
CHEMISTRY

OREGON
STATE
UNIVERSITY

Gilbert Hall 153
Corvallis, Oregon
97331-4003

Telephone
503-737-2081

Fax
503-737-2062

5 February, 1996

Professor Ken Krane
Faculty Senate Office
Oregon State University

Dear Professor Krane,

I am pleased to report to you that the Curriculum Council approved the Category 1 proposal to extend the Master of Engineering degree program in Manufacturing Engineering to three new off campus sites in the State of Washington at the Boeing Company. This action was taken at the Council's regular meeting on 9 January, 1996.

This proposal has been approved by the Budgets and Fiscal Planning Committee and specifically included a review of the participation of OCATE in the proposed degree program. The Graduate Council approved this proposal with two qualifications. These qualifications involved the specification that the program adhere to the Graduate Council's policies on electronic delivery of courses and the caveat that OCATE be excluded from the program. The Curriculum Council disagrees with both qualifications. We believe that the issue of OCATE participation is a financial question and that the recommendations of Budgets and Fiscal Planning should take precedence. Concerning the Graduate Council policy on electronic delivery of courses, we prefer the alternative wording suggested by Dr. Jon Root of Information Services that "the interactive nature of the instruction be emphasized without specifying the details of how interactivity be accomplished." We are transmitting this proposal to you in hopes that the Faculty Senate can act in a timely manner on this proposal.

Thank you.

Sincerely,

Walter Loveland

Walter Loveland
Professor of Chemistry
Chair, Curriculum Council

WDL/clp

2.

Category I Abbreviated Format
Transmittal Sheet

Masters of Engineering in Manufacturing Engineering
(Title of Proposal)

Submitted By: Industrial & Manufacturing Engineering/Mechanical Engineering
(Department)

College of Engineering
(College)

ATTACH: Library Evaluation and Liaison Documentation

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

Sabah Randhawa 2-8-96
Department Chair/Head Date

Dean, College 8 - February 1996
Date



Oregon State University Portland State University

Name of Institution

PROPOSAL FOR THE DELIVERY OF

Masters of Engineering in Manufacturing Engineering

Name of Degree or Certificate in Academic Specialty Area

IN THE FOLLOWING LOCATION(S):

Site for Instruction	Check if Using Ed-Net	City	State
Boeing - Everett	X	Everett	Washington
Boeing - Renton	X	Renton	Washington
Boeing - Seattle	X	Seattle	Washington

4.

New Location Request Form

Directions: This summary form must be submitted to the OSSHE Academic Affairs for any new location, either within or outside the state, at which academic programs will be provided. Sites at which a limited number of courses are to be provided do not need approval. Approval must be sought when certificate or degree program(s), or significant portion of, will be provided.

1. Name of location: Boeing Facilities - Everett, WA
   Boeing Facilities - Renton, WA
   Boeing Facilities - Seattle, WA

2. Brief description: Offered Masters of Engineering in Manufacturing Engineering via Ed-Net to Boeing employees at the locations cited above.

3. Institution that would provide program(s) at this location: Oregon State University
   Portland State University

4. List the type of program(s) expected to be offered at this location, projected number of students, and dates anticipated for providing program(s):

Programs	Projected Student Enrollment		Date Program Would Be Available
Masters of Engineering in Manufacturing Engineering	96-97	40	Fall 1996
	97-98	80	
	98-99	120	
	99-00	150	

5. List other institutions in the state or region that offer programs in this location:

   Stanford
   University of Washington
   Washington State University

6. Will this location use Ed-Net? Yes

7. Will this location be included for accreditation purposes as part of your geographical service area? Yes

8. If this location is outside the State of Oregon, describe the funding mechanism and the effects delivery of programming to this location will have on the on-campus program:
   The Program will be self funding. The additional funds from these locations will allow the academic units to support a greater variety of courses. Thus, campus-based students will have a greater variety of educational opportunities because of these locations.

Proposal to Offer the
Masters of Engineering in Manufacturing Engineering Degree Program at
Boeing Facilities in the Puget Sound Area, Washington.

1. **Indicate date of the Board's approval of this program and assigned CIP number.**

The Oregon State Board of Higher Education (OSBHE) initially approved the Masters of Engineering in Manufacturing Engineering program at the July 22, 1994 meeting. The program became officially approved in the September OSBHE meeting. The CIP code number is 141701.

2. **Department and school/college that would offer the program.**

The proposed addition to the program will be jointly offered by the Departments of Industrial & Manufacturing Engineering and Mechanical Engineering of Oregon State University, and the Department of Mechanical Engineering and the Engineering Management Program at Portland State University. The program will continue to be jointly administered by the College of Engineering (COE) of Oregon State University and the School of Engineering and Applied Science (SEAS) of Portland State University. Dr. Edward D. McDowell (503-737-2875) of Oregon State University is the current Academic Program Director for this program.

3. **Briefly describe the academic program.**

The course of study for this program was originally developed as the result of several meetings involving representatives from OSU, PSU, and members of an industry-based technical advisory board (TAB). Over a period of approximately six months, various program options were developed and evaluated by TAB members and academic program personnel. The following program, which is designed to meet the academic requirements of both institutions, represents an unanimously approved result of that effort:

6.

Masters of Engineering in Manufacturing Engineering

TOTAL REQUIRED CREDITS: 45

TOPIC (and Number of Credits)	Credit Hours	OSU Number	PSU Number
ANALYSIS (6 cr)			
Engineering Statistics	3	ST 514	ME 510ES
Analytic or Numerical Methods	3	ME 575	ME 551
APPLIED STATISTICS (6 cr)			
Statistical Process Control	3	IE 551	ME 587
Design of Industrial Experiments	3	IE 552	ME 588
MANUFACTURING MANAGEMENT (12 cr)			
Manufacturing Operations Analysis	3	IE 561	EMGT 510MOA
Production Systems Design	3	IE 562	EMGT 510PSD
Project Management	3	IE 563	EMGT 545
Communication and Team Building	3	BA 552	EMGT 510CT
CONCURRENT ENGINEERING (3 cr)	3	ME 518	ME 510CE
MANAGEMENT (3-9 credits from the following:)			
Strategic Planning	3	BA 559	EMGT 520
Human Resources	3	BA 553	EMGT 552
Corporate and Cost Accounting	3	BA 521	ACTG 511
TECHNICAL SPECIALTY (9-15 cr)			
Nine to fifteen credits of graduate technical courses in Mechanical Engineering, Industrial and Manufacturing Engineering, Electrical and Computer Engineering, Engineering Management, or Computer Science. Three to six of these credits may be project work.			

4. Indicate in what ways the proposed program at the new locations will differ from the on-campus program.

The above program, as approved by OSBHE, is currently being delivered via distance learning (TV). There is no difference between the curriculum provided to students at Boeing and the current curriculum being delivered to Oregon sites. The OSU College of Engineering will insure that appropriate inter-activity between the students and faculty is provided through regular visits by OSU faculty to Boeing sites and the use of on-site adjunct faculty who meet graduate school requirements commensurate with their level of appointment.

5. **List any special requirements or prerequisites for admission to the program at the new locations.**

Boeing will provide adequate classroom, library, and computer resources for the students attending classes in the Puget Sound area. The company has extensive experience with long-distance educational providers such as Stanford, Carnegie Mellon, and Columbia University.

In addition to the regular admission requirements, all students admitted at the Boeing sites will be required to be affiliated with Boeing.

6. **Is there any accrediting agency?**

The Accreditation Board for Engineering and Technology (ABET) accredits both undergraduate and graduate manufacturing engineering programs. However, ABET's policy is not to accredit both masters and bachelors programs in the same department. The OSU's undergraduate manufacturing engineering program has been accredited since 1985.

7. **Evidence of need for the program at the new locations.**

The Boeing Company has requested that multiple receive sites at selected Boeing facilities in the Puget Sound Area be approved so that employees throughout the organization may participate in this program. The operational plan calls for admitting 40 students prior to the first year of operation. It is anticipated that 150 Boeing employees will be admitted by the beginning of the fourth year of operation. Over fifty employees at the Everett facility applied for the 20 available positions in the pilot program offered last academic year.

8. **Estimated enrollment and number of graduates at the new locations over the next five years.**

YEAR	96-97	97-98	98-99	99-00
ENROLLMENT	40	80	120	150
GRADUATES	0	0	30	30

9. **List any similar programs offered at the proposed or nearby locations.**

This is a unique program in the Northwest. Boeing has specifically requested this program be presented by OSU/PSU.

8.

10. **List the names of faculty who will be involved in delivering the program.**

The following faculty would be directly involved in offering the proposed program:

Name	Rank
OREGON STATE UNIVERSITY	
Department of Industrial and Manufacturing Engineering	
Terrence Beaumariage	Assistant Professor
Kimberly Douglas	Assistant Professor
Eugene Fichter	Associate Professor
Kenneth Funk	Assistant Professor
Logen Logendran	Associate Professor
Edward McDowell	Associate Professor
Brian Paul	Assistant Professor
Sabah Randhawa	Professor
Tom West	Professor
Department of Mechanical Engineering	
Timothy Kennedy	Professor
Robert Paasch	Assistant Professor
Richard Peterson	Associate Professor
Gordon Reistad	Professor
William Reiter	Professor
Davis Ullman	Professor
PORTLAND STATE UNIVERSITY	
Department of Mechanical Engineering	
Faryar Etesami	Associate Professor
Graig Spolek	Professor
David Turcic	Associate Professor
Hormoz Zareh	Associate Professor
Engineering Management Program	
Dundar Kocaoglu	Professor

11. **Estimate the number and type of support staff required.**

Please see section 21 below.

12. **Describe any special facilities in terms of buildings, laboratories, and equipment necessary to offer the program at each of the proposed locations.**

All remote(receive) sites are required to have facilities for a minimum of two-way audio and one-way video, adequate computer facilities including capability for e-mail, word processing, and spreadsheets, and adequate library facilities. Boeing has agreed to provide these facilities. Prior to the initiation of the program, a committee of faculty will survey Boeing's facilities to ensure they are, at a minimum, comparable to Oregon State University's.

13. **Indicate how library needs will be met at the proposed new location(s).**

Current library facilities are adequate to support the program.

14. **Indicate how students at the new location(s) will receive student services such as academic advising, financial aid assistance, registration for courses, access to book/text purchases.**

In considering the delivery of student services, it is important to remember that this program is designed to meet the needs of practicing professionals, many of whom are place bound. Thus, services such as financial aid, health care, and counseling are not as important to these students as is the delivery of instruction to a convenient location.

The majority of the enrolled students will have health care provided by their employers. Financial aid is not relevant as the employer will be directly paying the tuition and other direct expenses.

Full-time students admitted to the program will enroll through the institution. Any part-time students in this program will register through Oregon Center for Advanced Technology Education (OCATE). The University retains enrollment funding for part-time students. OCATE will assure registration forms are distributed and collected at each remote site, and will either collect registration fees directly from students or bill the student's corporate sponsor.

In accordance with Oregon State System of Higher Education policy as stated in the Academic Year Fee Book, 1993-94, students enrolling through OCATE are not assessed "...for Building Fee, Health Service Fee, or Incidental Fee. Neither are any of the associated services of these fees provided." Consequently, the questions regarding the delivery of these services are not relevant.

OCATE will arrange, through appropriate book stores, for all required texts to be shipped directly to the Boeing sites. Boeing will be billed separately for this service.

10.

One service that must be provided is academic advising. Advising responsibilities will rest primarily with the Program's Director who receives 35 percent release time to handle these duties. Additional resources (release time, support staff, etc) will be provided if enrollments increase at a rate higher than anticipated at present.

15. **Describe the schedule of delivery of the program; including term(s) and years, day(s) of week, time(s) of day, total number of hours of Ed-Net instruction for the entire program.**

Note that this program is already being delivered via Ed-Net. Current schedule calls for four courses being delivered each term. The courses are offered at 4:00 pm and 5:30 pm on Mondays and Wednesdays or Tuesdays and Thursdays. Since the courses are 3 credit, 12 hours per week or 120 hours per term of Ed-Net time will be utilized.

16. **Are copyrighted materials to be used in the program being cleared for use?**

Responsibility for clearing copyrighted material clearly rests with the instructor. All instructors are encouraged to complete a course on distance learning offered through the Communications Media Center prior to their first distance learning course. Written policy guidelines for the use of all materials will be provided to the instructors.

17. **Indicate the type/amount of training instructors have or will receive regarding use of Ed-Net.**

All instructors in this program have extensive classroom experience and are encouraged to complete a course on distance learning offered by the Communication Media Center at Oregon State University.

18. **What networks are proposed for use?**

Ed Net I is currently being proposed if two-way video and one-way audio is used in delivering the courses. Other alternatives are also being explored. OSSHE guidelines for the protection of intellectual property rights will be strictly followed. With the possible exception of a copy held personally by the instructor, all copies of video-tapes are destroyed within two weeks following the end of the term in which the course is offered.

19. **What special technical requirements for course delivery will be needed?**

There are no special technical requirements.

20. **Indicate if site coordination has occurred and list names of on-site facilitator(s).**

Barbara Simpson, The Boeing Company, Seattle, WA.

21. **Indicate the estimated cost of the program for the first four years of its operation.**

The quarterly incremental budget for the expanded program is shown below. It provides the schedule for OCATE reimbursement to the departments for students who will be registering for these courses.

Schedule of reimbursement to originating department

	On a Per Course Basis	
Number of Remote Students	OCATE pays department	OJGSE pays TV costs
6-14	$ 6,500	$6,600
15-24	9,000	6,600
25-34	12,500	6,600
35-45	15,000	6,600

- The Academic Program Director receives a 35 percent release time for administration and advising funded by the Oregon Joint Graduate School of Engineering (OJGSE).
- Enrollment funding resides with the institution conducting the class, not with OCATE.
- Payment to the department includes instruction, travel, and teaching assistantship and secretarial support. The level of support depends on student enrollment. Average expenses include: TA support = $2,000, Secretarial support = $500, Mailing = $500, and Travel = $1,000.

LIBRARY ASSESSMENT FOR CURRICULUM PROPOSAL

Category I: Masters in Manufacturing Engineering at Boeing EdNet site

Category II:

The subject librarian responsible for collection development in the pertinent curricular area has assessed the ability of library collections and services to support the proposal by examining: shelf list holdings; journal support (including standing orders and memberships); reference support; OASIS for pertinent subject headings, call numbers, authors, titles; existing external sources of support; related services (LIRS; CD-ROM: Documents; Maps; Special Collections; Guin Library; Microforms); comparisons with other library collections via RLIN, OCLC,, AMIGOS CD-ROM, Internet (NOTE: The collections and services examined vary with the level of the proposal). Based on the examination, the subject librarian concludes that present collections and services are:

( ) inadequate to support the proposal (see budget needs below)
( ) marginally adequate to support the proposal
(X) adequate to support the proposal

Estimated funding needed to upgrade collections and services to support the proposal (details are attached):

Year 1: $___0_____
Ongoing $ ___0_____

Comments and Recommendations:

The Boeing Technical Library has excellent facilities to support the proposed extension of the program to the Boeing and Renton remote EdNet site. The attached opac analysis using manufacturing engineering indicates 394 book holdings. This does not include many other related terms. The attached serials list of manufacturing journals is very comprehensive. The engineering librarian's site visit answered many of questions regarding support of students not obivious in the Directory of Special Libraries and Information Centers (Copy attached) and sampling of their manufacturing engineering holdings. Book, Journal, and document delivery support is excellent. Over 96% of all requests for information are fulfilled through in-house resources. Although no formal information literacy or educational program exists through Boeing Technical Library, this function is supported on a personal basis on request. Opportunity exists for the engineering librarian to help support this program through the development of an engineering information web course. Although seating is limited (20 study areas), most working students use the library for resource acquisition not study areas. One concern is the inconvenience of library support for the Renton remote site - a 45 minute drive away. The advocacy of current E-mail reference, electronic reserves

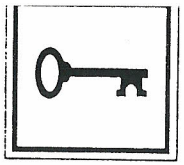
fax document delivery and development of web interactive services should alleviate most of this inconvenience.

Date Received: Dec 15, 1995 Date Completed: January 6th, 1996

Subject Librarian: John C Matylonek J. C Matylonek

Head of Collection Services:

University Librarian:



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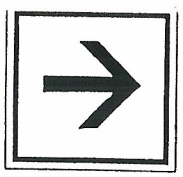
- We charge you no fees. Because we are an overhead-funded service of Boeing Support Services, all Boeing employees are entitled to the unlimited use of the technical libraries.
- We can take your request over the phone, by facsimile, or by electronic mail (PROFS or DOBIS).
- Much of the information you need can be sent to you electronically, on floppy disk, by facsimile, or by inplant mail.
- If you are near a library, you may prefer to stop in and pursue your research on your own. If so, we can steer you in the right direction.
- We offer tours of any Boeing technical library on request.
- We make presentations to your staff members about library services.

When you ask our librarians to research a topic, the results can come to you in several ways. We may send you—

- An annotated bibliography, from which you select items for further reading;
- A photocopied compilation of the information you requested;
- Scheduled printouts of news on a topic of current interest to you;
- Or printouts of contract awards or other specialized listings.



Stop in or call us at any of these locations:

Bellevue Library
Boeing Computer Services
Bellevue Complex
Building 33-07, 4th floor, door 42D1
MS 7L-61 Telephone: 865-3266
Fax: 865-2964 PROFS: TECHLIB6
Hours: 8:00 a.m. to 4:30 p.m.

Kent Library
Kent Space Center
Building 18-04.1, bay C-1
MS 8K-38 Telephone: 773-0590
Fax: 773-2458 PROFS: TECHLIB5
Hours: 8:00 a.m. to 4:30 p.m.

Renton Library
Renton Plant
Building 10-13.1
MS 62-LC Telephone: 237-8311
Fax: 237-3491 PROFS: TECHLIB3
Hours: 7:00 a.m. to 4:30 p.m.

Motion Picture-Video Library
Gateway Corporate Center
Building 733-4
MS 6Y-48 Telephone: 393-7729
FAX: 393-7741 PROFS: TECHLIB17
Hours: 7:30 a.m. to 4:00 p.m.

SHEA Library
Blackriver Corporate Park
Building 7-311.2, door 22B15
MS 7E-EX Telephone: 477-0697
Hours: 7:30 a.m. to 4:00 p.m.



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Boeing Support Services

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15.
V1
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Directory of Special Libraries and Information Centers

19th Edition

A Guide to More Than 22,110 Special Libraries, Research Libraries, Information Centers, Archives, and Data Centers Maintained by Government Agencies, Business, Industry, Newspapers, Educational Institutions, Nonprofit Organizations, and Societies in the Fields of Science and Engineering, Medicine, Law, Art, Religion, the Social Sciences, and Humanities.

1996

GWEN E. TURECKI
Editor

JOHN KROL
Contributing Editor

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A-M

(Entries 1-11,760)

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★2133★
BOCES - Orleans-Niagara Educational Communications Center (Educ, Aud-Vis)
195 Beattie Ave. Phone: (716)439-4333
Lockport, NY 14094-5618 Douglas David, Supv., Instr.Svc.
Founded: 1968. **Staff:** 13. **Holdings:** 10,703 AV programs. **Remarks:** Maintained by the Orleans-Niagara BOCES (Orleans-Niagara Board of Cooperative Educational Services). FAX: (716)439-4314.

★2134★
BOCES - Putnam/Northern Westchester - BOCES Professional Library (Educ)
Yorktown, NY 10598 Phone: (914)245-2700
Barbara Ayers, Media Spec.
Subjects: Education, child psychology. **Holdings:** 9500 books; 16,000 bound periodical volumes; 300,000 nonbook items. **Services:** Interlibrary loan; copying; library open to the public with restrictions (reference use only for those not residing or working in the 18 school districts). **Computerized Information Services:** Ovid Online, ERIC, Bibliofile, Mandarin. **Special Catalogs:** Union list of serials for secondary schools. **Remarks:** Maintained by the Putnum/Northern Westchester BOCES (Board of Cooperative Educational Services). FAX: (914)245-4540.

★2135★
Bockus Research Institute - Library (Med)
415 S. 19th St. Phone: (215)893-7604
Philadelphia, PA 19146 Diane Farney
Founded: 1962. **Subjects:** Cardiovascular research, cardiology, physiology, cancer research, neurology, emphysema, pulmonary research. **Holdings:** 1000 volumes. **Subscriptions:** 25 journals and other serials. **Services:** Library open to Graduate Hospital staff. **Computerized Information Services:** Ovid Online. **Remarks:** FAX: (215)893-4178.

Bodega Marine Laboratory - Library
See: **University of California - Bodega Marine Laboratory** (19431)

★2136★
Bodine Electric Company - Library (Sci-Engr)
2500 W. Bradley Place Phone: (312)478-3515
Chicago, IL 60618 Kristine A. Hack, Sec.
Staff: 1. **Subjects:** Microprocessors, electrical engineering, mechanical engineering, business administration. **Holdings:** 1610 volumes; 551 manufacturers' catalogs; 238 engineering project reports; 27 VF drawers. **Subscriptions:** 119 journals and other serials. **Services:** Interlibrary loan; library not open to the public. **Remarks:** FAX: (312)478-3232.

Martin Bodmer Foundation
See: **Fondation Martin Bodmer - Bibliotheca Bodmeriana** (6452)

★2137★
Seymour S. Bodner Collection (Sci-Engr)
27 Shadowlawn Dr. Phone: (201)994-3472
Livingston, NJ 07039 Seymour S. Bodner, Prin.
Founded: 1971. **Subjects:** Forensic and mechanical engineering, history of industrial and product safety standards. **Special Collections:** Plastics molding machinery. **Holdings:** Figures not available. **Services:** Collection open to attorneys and insurance companies. **Remarks:** FAX: (201)994-3472.

Boeckmann Center for Iberian and Latin American Studies
See: **University of Southern California - Library - Boeckmann Center for Iberian and Latin American Studies** (20556)

The Inge P. Boehm Library
See: **ABC-CLIO, Inc.** (25)

★2138★
Boehringer Ingelheim Animal Health, Inc. - Library (Med, Biol Sci)
2621 N. Belt Hwy. Phone: (816)233-[illegible]
St. Joseph, MO 64506 Judy Heinje, [illegible]
Staff: Prof 1; Other 1. **Subjects:** Veterinary medicine, bacteriology, virol[illegible] pharmaceuticals, immunology, parasitology. **Holdings:** 5000 books; 15[illegible] bound periodical volumes; 750 documents and dissertations. **Subscriptions:** [illegible] 165 journals and other serials. **Services:** Interlibrary loan; copying; libr[illegible] open to researchers for reference use only. **Networks/Consortia:** Member [illegible] National Network of Libraries of Medicine - Midcontinental Regio[illegible] **Remarks:** FAX: (816)233-0215.

★2139★
Boehringer Ingelheim Pharmaceuticals Inc./Scientific and Corporate Information Services (Sci-Engr, Med)
900 Old Ridgebury Rd. Phone: (203)798-51[illegible]
Ridgefield, CT 06877 Martha R. Matteo
Founded: 1975. **Staff:** Prof 6; Other 4. **Subjects:** Pharmacology, chemistry, biochemistry, clinical medicine, pharmaceutical trade and industry, business. **Holdings:** 7,500 books; 16,000 bound periodical volumes; 35,000 items in product files. **Subscriptions:** 1200 journals and other serials. **Services:** Interlibrary loan; SDI; library not open to the public. **Automated Operations:** Computerized cataloging, acquisitions, serials, circulation (TECHLIBplus; Faxon SC-10), and Interlibrary loan (DOCLINE). **Computerized Information Services:** Ovid Online, NLM, Chemical Abstracts Service (CAS), DIALOG, STN International, Dow Jones News/Retrieval, Data-Star, LEXIS, NEXIS; internal databases. **Networks/Consortia:** Member of Southwestern Connecticut Library Council (SWLC). **Publications:** Notes and Acquisitions, monthly; Product Bibliography, monthly - both to corporate staff; Library Guide, annual. **Remarks:** FAX: (203)791-6172; 791-6184. Telex: 179153 BICUT. **Formerly:** Boehringer Indelheim Pharmaceuticals Inc./Strategic Information & Assessment Services. **Staff:** Len Sierra, Supv., Prof.Info.Serv.; Rita Goetz, Info.Sci.; Helen Oen, Info.Sci.; Christine Carter, Info.Serv.; Peggy Anthony Acq.; Nancy Cunniff, Ser.; Carolyn Brady, ILL.

★2140★
Boeing Aerospace Operations, Inc. - Technical Library
16840 Buccaneer Phone: (713)280-2[illegible]
Houston, TX 77058 Sue York, Data Mgt.Mgr.
Services: Library not open to the public. **Remarks:** FAX: (713)280-0071. No further information was supplied by respondent.

Boeing of Canada Ltd. - De Havilland Division - Library Services
See: **De Havilland Inc.** (5065)

★2141★
Boeing Company - Boeing Support Services - Technical Libraries (Sci-Engr)
Box 3707, MS 62-LC Phone: (206)237-8[illegible]14
Seattle, WA 98124-2207 Corinne A. Campbell, Mgr.
Founded: 1929. **Staff:** Prof 26; Other 21. **Subjects:** Aeronautics, astronautics, engineering, electronics, computing, transportation, industrial medicine, business, management. **Special Collections:** International Data Bank. **Holdings:** 75,000 books; 18,000 bound periodical volumes; 150,000 reports; one million reports on microfiche; 200,000 company documents; 5000 maps; 8000 films and videos; 50 CD-ROMs. **Subscriptions:** 6000 journals and other serials. **Services:** Interlibrary loan; library not open to the public. **Automated Operations:** Computerized cataloging, acquisitions, serials, and circulation. **Computerized Information Services:** DIALOG, Ovid Online, Dow Jones News/Retrieval, NEXIS, LEXIS, NASA/RECON, FIRST, DTIC, Congressional Quarterly, Reuter TEXTLINE, Reuter Country Reports, NewsNet, Inc., Gartner Group, Inc., Dun & Bradstreet Business Credit Services, Data Resources (DRI), MEDLINE, DataTimes, STN International, WLN, WILSONLINE, OCLC; internal databases for access to trade newsletters. **Networks/Consortia:** Member of Western Library Network (WLN), Seattle Area Hospital Library Consortium (SAHLC). **Publications:** Technical Libraries Accession Bulletin, monthly; Boeing Documents Announcement Bulletin, monthly; custom literature searches and information surveys. **Special Catalogs:** Catalog of holdings and Boeing documents (online); Union List of Serials (hardcopy). **Remarks:** FAX: (206)237-3491; (206)237-4582. Collections include the holdings of the Bellevue, Kent, and Renton Technical Libraries, the Safety, Health and Environmental Affairs (SHEA) Library, and the company Film Library. FAX: (206)237-3491. **Staff:** Nancy L. Wilson, Info.

& Res.Serv.Mgr.; Cheryl C. Morton, Tech.Proc.Mgr.; Katherine R. Harkness," Renton Lib.Res. Lead; Sarah R. Cannon, Renton Info.Serv. Lead; Richard A. Curtis, Kent Lib.Res. Lead; T. Patrick Dwyer, Kent Info.Serv. Lead; Kathy O. Courter, Bellevue Lib. Lead; Brenda H. Sharp, Film Lib.Lead; Barbara E. Olson, SHEA Libn.; Geneva St. Clair, Ser. Lead; Roseann Nystrom, Acq. Lead; Kathryn A. Trump, Doc.Cat. Lead; Gail S. Shurgot, Cat. Lead; Michael A. Crandall, Ext.Sys. Requirements Libn.; Solange V. McIntyre, Intl.Bus.Libn.

142★
ing Company - Wichita Division - Technical Library (Sci-Engr)
PO Box 7730, K78-38 Phone: (316)526-3801
Wichita, KS 67277-7730 Roger Zwemke, Lib.Mgr.
Founded: 1944. **Staff:** Prof 2. **Subjects:** Aircraft engineering - aeronautical, electrical, mechanical; aerospace, physics, mathematics, computer science, manufacturing, materials handling, management, metallurgy, plastics. **Special Collections:** Computer services library (3000 vols.). **Holdings:** 8,000 volumes; 6,500 technical reports; 3 drawers of microfilm. **Subscriptions:** 325 journals and other serials. **Services:** Interlibrary loan; library not open to the public. **Computerized Information Services:** DOBIS Canadian Online Library System, DIALOG, NEXIS, Aviation/Aerospace Online - McGraw-Hill Information Services Company; PROFS (electronic mail service). Performs searches. **Remarks:** Library located at 3801 S. Oliver, Wichita, KS 67210-2196. Alternate telephone number(s): 526-3802. FAX: (316)523-1169. **Staff:** Mary K. Yeager, Acq.; Jack B. Robertson, Cat., Online.

★2143★
Boeing Defense and Space Group - Technical Library (Sci-Engr)
PO Box 240002
499 Boeing Blvd., M/S JC-73 Phone: (205)461-2549
Huntsville, AL 35824-6402 Harriet B. McKay, Tech.Libn.
Founded: 1985. **Staff:** Prof 1. **Subjects:** Space Station Alpha, space, defense. **Holdings:** Space Station Alpha documents. **Subscriptions:** 51 journals and other serials. **Services:** Interlibrary loan; SDI; library open to the public upon registration at visitor center. **Automated Operations:** DOBIS Canadian Online Library System. **Computerized Information Services:** Internet (electronic mail service) **Publications:** Recent Acquisitions. **Remarks:** FAX: (205)461-5666. Electronic mail address(es): mckayh@ssmail.A1.boeing.com (Internet).

★2144★
Boeing Helicopters - Lydia Rankin Technical Library, P32-01 (Sci-Engr)
PO Box 16858
Philadelphia, PA 19142-0858 Phone: (215)591-2536
Founded: 1945. **Staff:** Prof 1; Other 1. **Subjects:** Helicopters, rotorcraft, aircraft, aerospace, composite materials, military specifications and standards. **Special Collections:** Peterson Memorial Collection (transportation); Boeing Management Collection (business). **Holdings:** 1500 books; 50 bound periodical volumes; 5000 reports; 32,000 technical reports; 40 drawers of microfiche; 59 CD-ROMs. **Subscriptions:** 200 journals and other serials. **Services:** Interlibrary loan; library not open to the public. **Automated Operations:** Computerized cataloging. **Computerized Information Services:** DIALOG; DOBIS Canadian Online Library System: **Remarks:** FAX: (215)591-4169.

Larry Bogart Memorial Library
See: **Citizen's Energy Council - Larry Bogart Memorial Library** (4069)

Alice Morrell Bogert Library
See: **Planned Parenthood of Central and Northern Arizona - Alice Morrell Bogert Library** (14021)

★2145★
(Bogota) Centro Colombo-Americano - USIS Collection (Educ)
Ave. 19, No. 3-05
Apdo. 3815 Phone: 1 3421758
Bogota, Colombia Cecilia Granados, Lib.Dir.
Founded: 1942. **Staff:** 10. **Subjects:** Social science, history, linguistics. **Holdings:** 10,800 books; 855 microfiche. **Subscriptions:** 123 journals and other serials; 5 newspapers. **Services:** Copying; SDI; library open to the public. **Computerized Information Services:** CD-ROMs; internal database. **Publications:** Subject bibliographies. **Remarks:** Alternate telephone number(s): 1 3201300, ext. 315. FAX: 1 2823372. A Branch library is located at Calle 109A, No. 17-10. Maintained or supported by the U.S. Information Agency. Focus is on materials that will assist peoples outside the United States to learn about the United States, its people, history, culture, political processes, and social milieux. **Staff:** Piedad de Ortiz; Ivan [illegible]alez; Luz Mary Suarez.

★2146★
Bogue Banks Library (Biol Sci)
320 Salter Path Rd.
Pine Knoll Village Phone: (919)247-4660
Pine Knoll Shores, NC 28512 Ernestine Conway, Libn.
Founded: 1981. **Staff:** 4. **Subjects:** Marine sciences. **Special Collections:** Large print books; National Geographic Magazine (1966-1990). **Holdings:** 8000 volumes. **Subscriptions:** 21 journals and other serials; 5 newspapers. **Services:** Interlibrary loan; faxing; copying; library open to the public with restrictions. **Remarks:** FAX: (919)247-4660. Affiliated with Craven-Pamlico-Carteret Regional Library. **Formerly:** NC Aquarium/Pine Knoll Shores. **Staff:** Wayne Modlin, Dir., Lib.Sys.

R.M. Bohart Museum of Entomology
See: **University of California, Davis - R.M. Bohart Museum of Entomology** (19490)

Niels Bohr Library
See: **American Institute of Physics - Center for History of Physics** (701)

★2147★
Boiron Research Foundation, Inc. - Library (Med)
6 Campus Blvd. Phone: (610)532-8388
Norwood, PA 19074 Thierry R. Montfort
Founded: 1982. **Subjects:** Homeopathy, autohemic therapy. **Holdings:** 100 volumes. **Publications:** International Journal of Immunotherapy.

★2148★
Boise Art Museum - Library (Art)
670 S. Julia Davis Dr. Phone: (208)345-8330
Boise, ID 83702 Kathleen Bettis, Libn.
Founded: 1971. **Subjects:** Art. **Holdings:** 1200 books; 4000 national and international exhibition catalogs, auction catalogs. **Subscriptions:** 10 journals and other serials. **Services:** Library open to the public by appointment. **Remarks:** FAX: (208)345-2247.

★2149★
Boise Bible College - Library (Rel-Phil)
8695 Marigold Phone: (208)376-7731
Boise, ID 83714 Glennis Thomas, Libn.
Founded: 1946. **Staff:** Prof 1; Other 2. **Subjects:** Bible, missions, Greek, speech, psychology, archeology, Hebrew history. **Special Collections:** U.S. Restoration history (300 volumes). **Holdings:** 27,800 books; 178 bound periodical volumes; 10 VF drawers of reports, pamphlets, and documents; 407 cassettes; 924 volumes on microfiche. **Subscriptions:** 126 journals and other serials. **Services:** Interlibrary loan; copying. **Remarks:** FAX: (208)376-7743.

★2150★
Boise Cascade Corporation - Business Library (Bus-Fin)
1111 Jefferson
PO Box 50 Phone: (208)384-7377
Boise, ID 83728-0001 Margarita Santos, Lib.Hd.
Founded: 1992. **Staff:** 1. **Subjects:** General business, forest products, pulp and paper. **Holdings:** 1000 volumes. **Subscriptions:** 100 journals and other serials. **Services:** Library open to the public at librarian's discretion. **Automated Operations:** Computerized cataloging and serials. **Computerized Information Services:** DIALOG, NEXIS; CD-ROMs (WLN, West's Federal Securities Library, West's Federal Taxation Library). **Remarks:** FAX: (208)384-7945. Telex: 170362 VIATRT. Contains the holdings of the former Boise Cascade Corporation - Corporate Library Services.

★2151★
Boise Cascade Corporation - Law Library (Law)
1111 Jefferson
PO Box 50 Phone: (208)384-7377
Boise, ID 83728 Margarita Santos, Libn.
Founded: 1992. **Staff:** 1. **Subjects:** Law. **Holdings:** 10,000 volumes. **Subscriptions:** 100 journals and other serials. **Services:** Library not open to the public. **Automated Operations:** Computerized cataloging and serials. **Computerized Information Services:** DIALOG, LEXIS, NEXIS, WESTLAW, Dun & Bradstreet Business Credit Services; CD-ROMs (WLN, West's Federal Securities Library, West's Federal Taxation Library). **Remarks:** FAX: (208)384-7945. Telex: 170362 VIATRT. Contains the holdings of the former Boise Cascade Corporation - Corporate Library Services.

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DEPARTMENT OF
CHEMISTRY

OREGON
STATE
UNIVERSITY

Gilbert Hall 153
Corvallis, Oregon
97331-4003

Telephone
503-737-2081
Fax
503-737-2062

20 March, 1996

Professor Ken Krane
Faculty Senate Office
Oregon State University

Dear Professor Krane,

I am pleased to report to you that the Curriculum Council approved the Category 1 proposal to establish a BS degree in Biological Engineering. This action was taken at the Council's regular meeting on 5 March, 1996. We are transmitting this proposal to you in hopes that the Faculty Senate can act in a timely manner on this proposal.

Thank you.

Sincerely,

Walter Loveland

Walter Loveland
Professor of Chemistry
Chair, Curriculum Council

WDL/clp

Category I Proposal

B.S. Degree in Biological Engineering

Department of Bioresource Engineering

Oregon State University

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Oregon State University
College of Agricultural Life Sciences
College of Engineering
Department of Bioresource Engineering

Category I Proposal for the Initiation of a New Instructional Program Leading to a B.S. in Biological Engineering

OVERVIEW

The Department of Bioresource Engineering currently offers programs leading to M.S. and Ph.D. degrees in Bioresource Engineering, and proposes to offer an undergraduate degree program in **Biological Engineering**. The proposed Biological Engineering B.S. degree was developed by the BRE faculty, with input from several regional biotechnology companies. A large national need for biological engineers has emerged from the recent advances in understanding and manipulating DNA. Numerous biological products have evolved from this newly attained knowledge. However, as biologically-derived products move from the research to production stage, qualified engineers are needed to design and scale-up processes for successful commercialization. The proposed program addresses this need for engineers trained in the both the traditional physical sciences and engineering (including physics, transport phenomena and thermodynamics) and the life sciences (including biochemistry, microbiology and cell biology).

Technological innovation in industry typically comes about through the work of individuals from widely dissimilar backgrounds working well together, in the absence of parochial impediments to progress. This type of interdisciplinary teamwork and cooperation are rarely evident in academia. In particular, at many universities, life science and engineering are more or less parallel cultures, reflected in two almost completely disparate disciplines, where students in one have trouble taking courses in the other. Our proposed program attempts to serve at the interface between these disciplines.

1. DEFINITION OF ACADEMIC AREAS

a. *Define or describe the academic area or field of specialization with which the proposed program would be concerned.*

The proposed program will establish a new area of specialization at OSU, serving at the interface of engineering and biological sciences. Students will be trained in both physical and life sciences, as well as engineering fundamentals. Advanced coursework in bioprocess engineering will include: analysis and design of bioprocesses (with special consideration given to the use of mixed cultures, genetically engineered cells, and plant and animal cell cultures); bioconversion processes; and bioproduct recovery. Graduates of the program will be prepared to initiate the process leading to the status of Professional Engineer.

b. What subspecialties or areas of concentration would be emphasized during the initial years of the program?

The proposed program of study in biological engineering requires a substantial number of core credit hours, leaving only a few elective courses. Thus, it will not include any subspecialties at this time.

c. *Are there other subspecialties the institution would anticipate adding or emphasizing as the program develops?*

Bioengineering can be sub-divided into two areas: bioprocess and biomedical engineering. Our proposed program will focus on bioprocesses, and only briefly cover biomedical engineering topics during a lower-level bioengineering overview course. We do not anticipate any changes in this emphasis as the program develops.

d. *Are there other subspecialties that the institution intends to avoid in developing the program?*

No.

e. *When will the program be operational, if approved?*

Following approval, students would be accepted into the program Fall quarter, 1997. Note that the first two years of the proposed curriculum includes courses that already exist on campus and at many Oregon community colleges. Thus, once the program is operational, students could be accepted directly into the junior year of the program.

2. DEPARTMENT OR COLLEGE RESPONSIBLE

a. *What department and college would offer the proposed program?*

The Biological Engineering program will be offered by the Department of Bioresource Engineering, which is administered and funded by the College of Agricultural Sciences. Similar to the department's graduate programs, the undergraduate Biological Engineering curriculum will be jointly administered by the Colleges of Agricultural Sciences and Engineering.

b. *Will the program involve a new or reorganized administrative unit within the institution?*

The program will not involve a new or reorganized administrative unit. The responsibilities of the administrative units which oversee the current M.S. and Ph.D. programs in Bioresource Engineering will be extended to include the proposed B.S. degree in Biological Engineering.

3. OBJECTIVES OF THE PROGRAM

a. *What are the objectives of the program?*

The overall objective of the proposed program is to provide an ABET accredited curriculum in biological engineering that addresses the national need for persons able to analyze and solve engineering problems within the complex realm of biological systems. In order to attain this goal, students will be trained in the fundamentals of engineering as well as the physical, chemical, biological and social sciences. Graduates from this program will provide the unique expertise needed to exploit the recent advances in molecular biology, and advance the frontiers of biotechnology.

The specific objectives of this proposed Bachelor of Science in Biological Engineering are:

Objective 1. To provide an accredited Biological Engineering baccalaureate degree program, as granted by the Accreditation Board for Engineering and Technology (ABET);

Objective 2. To provide students with a strong background in engineering and life sciences, thereby enabling them to significantly contribute to the emerging field of biotechnology;

Objective 3. To provide the agricultural, biological, food, medical, and pharmaceutical industries, as well as government agencies, with highly qualified professionals whose unique expertise will foster the continued viability and growth of these companies and institutions;

Objective 4. To prepare students for graduate studies in agricultural, biological, chemical, food or environmental engineering, or professional schools, including various medical, dental, and public health programs;

Objective 5. To prepare students for registration as professional biological engineers; and

Objective 6. To foster interdisciplinary teaching and research endeavors among the engineering, agricultural and biological science faculties within the University.

b. *How will the institution determine how well the program meets these objectives? Identify specific post-approval monitoring procedures and outcome indicators to be used if the program is approved.*

The success of the program will be evaluated by the Department of Bioresource Engineering, as well as an external review team. The Department of Bioresource Engineering will be responsible for gathering the needed information for the critical assessment of the program. Specific objectives will be monitored as follows:

Objective 1.

- During the first year of the program, a member of an ABET biological engineering program review team will evaluate the program's potential for accreditation. Suggestions from the external reviewer will be incorporated into the program prior to the official accreditation visit.
- After the first class graduates, ABET will review the program for accreditation.
- The number of B.S. degrees awarded in Biological Engineering will be recorded.

Objectives 2 and 3.

- A survey of students' satisfaction with the program will be conducted at graduation and again after three years.

- Following graduation, job placement of biological engineering students will be monitored.
- Employers who hire BE graduates will be surveyed to determine the job preparedness of, and satisfaction with, BE employees.

Objective 4.

- The numbers of B.S. BE students entering graduate or professional school will be recorded.

Objective 5.

- The passing rates for B.S. BE students completing the Fundamentals of Engineering examination will be determined. This examination is the first of two required for registration as a Professional Engineer, and is commonly taken by students during their senior year.

Objective 6.

- The development and delivery of interdisciplinary courses and workshops, as well as interdisciplinary research projects, will be monitored.

Overall success will be indicated by:

1. recognition of the program both within and outside of OSU, exemplified by the ability to attract high quality students;
2. a steady enrollment of approximately 50-75 students in the program within five years;
3. successful placement of graduates into professional careers, or further study in quality graduate or professional schools;
4. a high percentage of students passing the Fundamentals in Engineering exam;
5. awards received by graduates and faculty.

c. *How is the proposed program related to the mission and academic plan of the institution?*

The mission of OSU as a Land Grant university is to "serve the people of Oregon, the nation and the world through education, research, and service" (Oregon State University, 1994). More than a decade ago, OSU recognized the opportunities that the emerging field of biotechnology would offer to the state of Oregon and the nation. Since that time, OSU has made a significant commitment to the advancement of this area. A notable accomplishment of this effort is the establishment of the Center for Gene Research and Biotechnology. This institutional center was created to foster research collaboration among faculty research groups. Currently, over 80 faculty from 17 departments in the Colleges of Agricultural Sciences, Engineering, Forestry, Pharmacy, Science and Veterinary Medicine participate in its programs. This interdisciplinary research environment has positioned OSU among the national leaders in biotechnology research. By coupling the renowned, interdisciplinary biotechnology program with OSU's strong engineering and pharmacy programs, the proposed undergraduate program will advance OSU's commitment and contributions to the field of biotechnology. Specifically, the biological engineering graduates will have the expertise needed for translating molecular and cellular-level research efforts into economically viable products or processes. In turn, this will foster economic growth, and enhance the livelihoods of the people of Oregon and beyond.

d. *What are the employment opportunities for persons who have been educated in the proposed program?*

Employment opportunities for students completing the B.S. in Biological Engineering exist in industry, consulting firms, and government agencies. There are over 40 companies in Oregon alone that are involved in using living organisms or parts of organisms to make or modify products, improve plants or animals, or develop microbes for specific applications. In addition, students completing the proposed program will be prepared to enter graduate school

in agricultural, biological, chemical, environmental, or food engineering, as well as to enroll in professional schools, such as medical, veterinary, dental, or optometry institutions.

In 1992, a report released by a committee commissioned by the National Research Council (NRC) of the National Academy of Sciences, assessed the current state of bioprocess technology, and the future needs of the biotechnology industry. The report, entitled "Putting Biotechnology to Work: Bioprocess Engineering", estimated that over the next ten years, university teaching and research programs would grow by 75%, while the biotechnology industry grows by 1000% (NRC, 1992). This need is especially clear in the Pacific Northwest, where it is estimated that industry revenues will grow by 4,000% in the next five years (BC Biotechnology Alliance, 1995). Currently, industry growth in the PNW is about 20 to 30% per year, with as many as 25 new companies forming in the region each year. Seattle is widely recognized as one of America's six principal biotech centers, and Portland's biotech industry has recently been selected as one of three key industries with the most potential to stimulate economic development and job creation (BC Biotechnology Alliance, 1995). Specific industries expected to expand, and be in need of engineers who can communicate with life-scientists, include: biomedical, food, biopharmaceutical, agricultural, and bioenvironmental industries. Program guides from two of many national "job fairs" held recently in La Jolla (sponsored by Career Connection, September 23-24, 1994) and San Francisco (sponsored by Life Science Associates, October 27, 1994), showed literally dozens of biotech/pharmaceutical companies with one or more openings in bioprocess engineering, including Amgen, Bristol-Meyers Squibb, Genentech, Glaxo, Perkin Elmer and Pfizer. With the projected shortage of qualified biological engineers, graduates from the program should encounter little trouble in finding employment.

4. RELATIONSHIP OF PROPOSED PROGRAM TO OTHER PROGRAMS IN THE INSTITUTION

List the closely related programs and areas of strength currently available in the institution which would give important support to the proposed program.

The majority of academic support required by the proposed program will come from several departments within the Colleges of Science and Engineering. Oregon State University has strong, comprehensive, science programs, as well as respected, ABET accredited, engineering programs. A strong graduate program in Bioresource Engineering, which includes bioprocess engineering, has been established at Oregon State. Currently, 27 M.S. and 15 Ph.D. students are enrolled in this program. Finally, resources and expertise available through the Center for Gene Research and Biotechnology, and the College of Pharmacy, could give important support to the proposed program, as a number of faculty members encourage involvement of undergraduate students in their research.

5. COURSE OF STUDY

a. Describe the proposed course of study.

The 192 course credits required for the B. S. degree in Biological Engineering are outlined in Table 1. The proposed program meets requirements for OSU's baccalaureate core as well as the requirements for accreditation conferred by ABET. Fulfillment of the baccalaureate core and ABET requirements, in addition to the significant breadth of study needed in biology, physics and chemistry, leaves few elective courses in the program. However, we have attempted to provide some latitude in the rigorous program by not restricting the perspectives and synthesis credits, and including both free and technical electives. The proposed elective credits should be sufficient for the accommodation of students with special needs. For example, a student planning to pursue a Doctor of Medicine degree could fulfill the pre-medicine requirements by selecting a third quarter of organic chemistry. Alternatively, those students wishing to work in the food industry might opt to take several Food Science and Technology courses. An example of a four-year program, broken into quarters, is shown in Table 2.

Table 1. Course Requirements for the B.S. in Biological Engineering

Baccalaureate Core			33
Perspectives		15	
Synthesis		6	
Writing I, II			
WR 121	English Composition	3	
WR 327	Technical Writing	3	
Speech			
COMM 111	Public Speaking or		
COMM 114	Argument and Critical Discourse	3	
Lifetime Fitness (HHP 231)		3	
Requirements for the Major			
Mathematics, Statistics, Basic Computing			27
MTH 251	Differential Calculus	4	
MTH 252	Integral Calculus	4	
MTH 253	Infinite Sequences and Series	4	
MTH 254	Vector Calculus I	4	
MTH 256	Applied Differential Equations	4	
ST 314	Introduction to Statistics for Engineers	3	
CS 151	Introduction to C Programming	4	
Chemistry[1]			24
CH 221	General Chemistry	5	
CH 222	General Chemistry	5	
CH 223	General Chemistry	5	
CH 334	Organic Chemistry	3	
CH 335	Organic Chemistry	3	
CH 440	Physical Chemistry	3	
Physics			12
PH 211	General Physics with Calculus	4	
PH 212	General Physics with Calculus	4	
PH 213	General Physics with Calculus	4	
Biological Sciences[2]			21
BI 214	Cell and Molecular Biology	3	
BB 450	General Biochemistry	4	
BB 451	General Biochemistry	3	
BB 493	Biochemistry Laboratory	3	
BB 494	Biochemistry Laboratory	3	
MB 302	General Microbiology	3	
MB 303	General Microbiology Laboratory	2	

32.

Table 1 (continued). Course Requirements for the B.S. in Biological Engineering

General Engineering and Engineering Science		34
ENGR 201 Electrical Engineering Fundamentals	3	
ENGR 211 Statics	3	
ENGR 212 Dynamics	3	
ENGR 311 Thermodynamics	3	
ENGR 331 Momentum, Energy, and Mass Transfer	4	
ENGR 332 Momentum, Energy, and Mass Transfer	4	
ENGR 333 Momentum, Energy, and Mass Transfer	3	
ENGR 390 Engineering Economics	3	
CHE 211 Material Balances	4	
CHE 212 Energy Balances	4	
Biological Engineering Core Courses		31
BRE 111 Biological Engineering Orientation I	3	
BRE 112 Biological Engineering Orientation II	1	
BRE 113 Biological Engineering Orientation III	1	
BRE 221 Introduction to Biological Engineering	3	
BRE 456 Bioprocess Engineering I	3	
BRE 457 Bioprocess Engineering II	3	
BRE 461 Bioconversion Processes	4	
BRE 462 Bioproduct Recovery (candidate for required WIC[3])	4	
BRE 470 Biosystems Modeling Lab	3	
BRE 490 Bioprocess Design I	3	
BRE 491 Bioprocess Design II	3	
Restricted and Free Electives		10
Engineering Science and Design Electives[4]	7	
Free electives	3	
Total Credits Required		**192**

1 Transfer students with the prior credit of CHE 201-203, and CH 219 may fulfill the CH221-223 requirement by taking four additional hours of chemistry.

2 An interdisciplinary, university committee was formed in order to address the biology content in the proposed Biological Engineering undergraduate program. Committee members included: David Barnes, Professor, Department of Biochemistry and Biophysics; Michelle Bothwell, Assistant Professor, Bioresource Engineering; Chris Mathews, Distinguished Professor and Chair, Department of Biochemistry and Biophysics; Joe McGuire, Professor, Department of Bioresource Engineering; and Mike Mix, Professor and Chair of the Biology Program, Department of Zoology. The decision to exclude the introductory biology series (BI 211-213) from the program was based on the limited number of available credit hours, and the program's focus on molecular and cell biology. The committee unanimously felt that the BE students would be better served by BI 214 and the upper-division biology courses. In addition, it was thought that these students could be successful in BI 214 without formal instruction in the material covered in BI 211-213. Note that BI 214 uses the same book as BI 211-213, allowing students a ready reference for the material not formally covered in their program.

3 Writing Intensive Course

4 Engineering science and design restricted electives must be selected from the College of Engineering to meet accreditation requirements.

Table 2. B. S. in Biological Engineering - Example Program

Freshman Year			Sophomore Year		
Fall	**Winter**	**Spring**	**Fall**	**Winter**	**Spring**
Differential Calculus MTH 251 4	Integral Calculus MTH 252 4	Infinite Series & Seq. MTH 253 4	Vector Calculus I MTH 254 4	Applied Diff. Eqns. MTH 256 4	Electrical Engr. Fund. ENGR 201 3
General Chemistry CH 221 5	General Chemistry CH 222 5	General Chemistry CH 223 5	Organic Chemistry CH 334 3	Material Balances CHE 212 4	Cell & Mol. Bio. BI 214 3
Biol. Eng. Orientation BRE 111 3	Intro. to Programming CS 151 4	General Physics/Calc PH 211 4	Technical Writing WR 327 3	General Physics/Calc PH 213 4	Dynamics ENGR 212 3
English Composition WR 121 3	Lifetime Fitness HHP 231 3	Biol. Eng. Orientation BRE 113 1	General Physics/Calc PH 212 4	Organic Chemistry CH 335 3	Intro. to Statistics for Eng. ST 314 3
	Biol. Eng. Orientation BRE 112 1	Speech Communications COMM 111/114 3	Material Balances CHE 211 4	Statics ENGR 211 3	Intro. to Biol. Eng. BRE 221 3
15	**17**	**17**	**18**	**18**	**15**

Junior Year			Senior Year		
Fall	**Winter**	**Spring**	**Fall**	**Winter**	**Spring**
Transport ENGR 331 4	Transport ENGR 332 4	Transport ENGR 333 3	Bioconversions BRE 461 4	Bioproduct Recovery BRE 462 4	Synthesis 3
Physical Chemistry CH 440 3	General Biochemistry BB 451 3	Bioprocess Eng II BRE 457 3	Biosystems Model. Lab BRE 470 3	Engr. Science/Design Elective 3	Bio. Eng. Design BRE 491 3
General Biochemistry BB 450 4	Biochemistry Lab BB 494 3	Engr. Economics ENGR 390 3	Perspectives 3	Bio. Eng. Design BRE 490 3	Free Elective. 3
Biochemistry Lab BB 493 3	Bioprocess Eng I BRE 456 3	Thermodynamics ENGR 311 3	General Microbiol. MB 302 3	Perspectives 3	Perspectives 3
	Perspectives 3	Perspectives 3	General Microbiol. Lab MB 303 2	Synthesis 3	Engr. Science/Design Elective 4
14	**16**	**15**	**15**	**16**	**16**

b. *What elements of this course of study are presently in operation in the institution?*

All of the courses offered by supporting departments are currently available. Of the eleven BRE courses needed for the proposed program, five are already being offered.

c. *How many and which courses will need to be added to institutional offerings in support of the proposed program?*

Six new BRE courses will be developed for the proposed curriculum. A description of each follows:

BRE 111, 112, 113 (3, 1, 1) Biological Engineering Orientation
Introduction to the biological engineering profession, including field trips to regional biotechnology companies. Experiences that introduce design methodoligies will be included, developing students' problem solving and communication skills, as well as providing experiences with group-work.

BRE 221 (3) Introduction to Biological Engineering
Introduction to quantitative analysis of biological systems. Current problems emerging from the biomedical, bioprocessing and environmental fields will be analyzed using the fundamentals of biology and chemistry, and basic engineering principles of mass and energy conservation and transport phenomena.

BRE 490, 491 (3, 3) Bioprocess Design I,II
Design and optimization of bioprocesses. Consideration will be given to process dynamics, equipment, and regulations. Bioprocess performance will be evaluated and optimized within the constraints of economy, social and environmental impacts, and yields.

6. ADMISSION REQUIREMENTS

a. *Please list any requirements for admission to the program that are in addition to admission to the institution.*

In addition to applying for admission to the institution, students must apply for admission to the professional program in Biological Engineering. This procedure is required for all B. S. degree programs offered in the College of Engineering. Students must complete a set of standard core courses prior to petitioning for admittance to the professional program. This group of courses is generally completed by the end of the sophomore year.

b. *Will any enrollment limitations be imposed? Please indicate the limitation and rationale therefor. How will those to be enrolled be selected if there are no enrollment limitations?*

In order to offer a quality program, with sufficient faculty-student interaction and hands-on experience, the enrollment will be capped at 25 students per academic class. However, the need to impose restrictions on enrollment is not anticipated during the first several years. Admittance to the program will be based on a student's cumulative grade point average in the set of standard core courses. Appendix A lists this group of standard, pre-professional core courses, as established by the College of Engineering.

7. RELATIONSHIP OF PROPOSED PROGRAM TO FUTURE PLANS

a. *Is the proposed program the first of several steps the institution has in mind in reaching a long-term goal in this or a related field?*

The University is committed to advancing the highly promising field of biotechnology. In 1991, a Ph.D. program in Bioresource Engineering was approved. This was a first step in formally bridging the biosciences with an engineering program to address important needs in the bioprocessing area. The proposed program leading to a B.S. degree in Biological Engineering

will extend this opportunity to the undergraduate population, and meet critical needs for engineering systems in the rapidly growing field of biotechnology. No further developments are anticipated.

b. *If so, what are the next steps to be if the Board approves the program presently being proposed?*

Not applicable.

8. ACCREDITATION OF THE PROGRAM

a. *Is there an accrediting agency or professional society which has established standards in the area in which the proposed program lies? (Please give name.)*

The Engineering Accreditation Commission of ABET is responsible for accrediting the engineering programs at Oregon State University. ABET establishes minimum professional standards that must be met before granting accreditation. Following program accreditation, continued quality is ensured by periodic program reviews, conducted by an ABET-appointed, external, accreditation-review team.

b. *If so, does the proposed program meet the accreditation standards? If it does not, in what particulars does it appear to be deficient? What steps would be required to qualify the program for accreditation? By what date is it anticipated that the program will be fully accredited?*

ABET has established minimum curriculum requirements for an accredited undergraduate program in "Bioengineering" (ABET, 1995). Table 3 compares these specific ABET minimums with the course credits of the proposed Biological engineering curriculum. Note that the proposed program satisfies all of ABET's requirements.

ABET cannot review the program for accreditation until the first class of students has graduated. It is expected that the first students will complete the program in the Spring of 1999. An ABET review will be schedule after this time, probably in the Fall of 1999. Note that if accreditation is granted, it will be retroactive, applying to all previous graduates of the program.

c. *If the proposed program is a graduate program in which the institution offers an undergraduate program, is the undergraduate program fully accredited? If not, what would be required to qualify it for accreditation? What steps are being taken to achieve accreditation?*

Not applicable.

Table 3. Comparison of the ABET Requirements For an Accredited Bioengineering Program and the Proposed Biological Engineering Curriculum

ABET Requirements	Proposed Curriculum
Mathematics & Science • 48 Hours of Combined Math and Science • One of the Following Additional Topics Is Highly Desirable: Statistics, Numerical Analysis, Linear Algebra... • 12 Hours of Biology • 12 Hours of Chemistry	Mathematics & Science • 84 Hours of Combined Math and Science • Statistics (ST 314) Numerical Analysis (BRE 470) • 21 Hours of Biology • 24 Hours of Chemistry
Engineering • 72 Hours of Combined Engineering Science and Design • 1 Engineering Course Outside of Major Discipline • At Least 1 Course That Is Primarily Design	Engineering • 72 Hours of Combined Engineering Science and Design • Several Engineering Courses Outside of Major Discipline, e.g. CHE 211, 212 • Bioprocess Design I & II (BRE 490, BRE 491)
Humanities • 24 Hours of Humanities & Social Sciences	Humanities • 24 Hours of Humanities & Social Sciences
General • Laboratory Experience Basic Science Labs Higher-Division Labs • Knowledge of the Application of Probability and Statistics to Engineering Problems • Appropriate Computer Experience • Competence in Written and Oral Communication	General • Laboratory Experience CH 221-223; MB 303; BB 493-494 BRE 461; BRE 462 • Statistics (ST 314) • C-Programming (CS 151); Modeling Techniques (BRE 470); BRE Design Sequence Will Include Process Optimization Software • English Composition (WR 121); Technical Writing (WR 327); Writing Intensive Course (BRE 491); Public Speaking (Comm 111)

9. EVIDENCE OF NEED

a. What evidence does the institution have of need for the program? Please be explicit.

Society has been using microbial processes to generate useful products for centuries. Food and beverages, organic acids, fuels, antibiotics and other pharmaceuticals, as well as specialty products, have been produced by applying fermentation, enzymes, and product separation techniques. The recent advances in recombinant DNA technology have expanded the opportunities for exploiting biological systems, and for increasing the number and quality of biologically-based products. The sales generated from biologically-derived products has been steadily increasing over the last decade, and now exceeds $100 billion/yr (NRC, 1992). The increased understanding and manipulation of living systems, along with the pervasive role biologically-derived products play in our society, has placed the biotechnology industry in a position for explosive growth.

While the United States has been, and continues to be, the world leader in basic life-science research, as it applies to biotechnology, Europe and Japan are the world leaders in applying this technology. Both have aggressively established infrastructure among government, industrial and academic resources, and have focused efforts on the development of bioprocess engineering (NRC, 1992). A committee commissioned by NRC (1992) presented three recommendations that would enable the US "to meet the global challenges of competition in industrialization of biotechnology and to address national needs". One of these specifically called for the establishment of "research and educational programs in bioprocess engineering that emphasize cross-disciplinary interactions between scientists and engineers and a multidisciplinary team approach to problem-solving" (NRC, 1992). As recently as 1994, Jens-Peter Gregerson identified the major technical weakness in US biotechnology industries as the lack of qualified fermentation and bioprocess engineers. The United States needs to protect and capitalize on its substantial investment in basic life-science research. Development of the bioprocess engineering area is crucial to this effect.

In the United States, most training and education of bioprocess engineers occurs at the graduate level (NRC, 1992). However, as biologically-derived products move from the research to production stage, the staff distributions within biotechnology industries will shift from Ph.D. level research scientists to B.S. level process engineers, cell culture and fermentation specialists, and bioseparation experts. The U.S. Congress, Office of Technology Assessment (OTA), reported that this shift in personnel at biotechnology companies is already underway (U.S. Congress, 1988). Several of the biotechnology companies surveyed by OTA reported "difficulties hiring biochemical engineers at the B.S./M.S. level with cell culture and fermentation experience". A graduate of the proposed B.S. program in Biological Engineering would be highly qualified for these positions, as well as for employment in the more traditional engineering fields, such as the agricultural, chemical, food and environmental industries.

The increased demand for qualified biological engineers has spurred the establishment of a substantial number of bioengineering undergraduate programs (See Table 4). However, over 75% of the eighty undergraduate bioengineering programs are biomedically oriented. In addition, only a few of the 19 reported programs in Biological Engineering (BE) emphasize bioprocesses. Of the baccalaureate degree programs in BE that do focus on bioprocesses, none exist within the Pacific Northwest. Clearly, the proposed program will fulfill a state and regional need for an undergraduate, educational program which emphasizes bioprocess engineering.

There is substantial student interest in biological engineering. Recently established B.S. programs in BE show steady growth in enrollment over the first five years of operation. For example, the enrollment of Rutgers University's Biological Engineering program climbed from 32 to 134 students, in a five year span. Likewise, the BE programs at Clemson University and the University of Nebraska-Lincoln, increased enrollments from 20 to 70 students, and from 26 to 58 students, respectively. Several programs have sustained total student

enrollments of over one hundred. It is anticipated that the proposed OSU program will draw a similar response.

Table 4. Number of Existing Bioengineering B.S. Programs
(American Society for Engineering Education, 1994)
(BMEnet Biomedical Engineering Resource, 1995)

Biomedically-Oriented Programs		Biologically-Oriented Programs (Includes Programs Which Emphasize: Agriculture, Biochemical Processes, Bioprocesses, Biomechanics, and Food)	
ABET-Accredited	Non-Accredited	ABET-Accredited	Non-Accredited
21	40	14	5

b. What is the estimated enrollment and the estimated number of graduates of the proposed program over the next five years? If the proposed program is an expansion of an existing one, give the enrollment in the existing program over the past five years.

Table 5 lists enrollment and graduation estimates of the proposed undergraduate program in BE over the next five years. These estimates are based on enrollment figures of BE programs at other academic institutions (University of Nebraska Lincoln, Rutgers University, Clemson University). The proposed program is not an expansion of an existing one; thus, there is not previous enrollment data to report.

Table 5. Enrollment and Graduation Estimates of the Proposed B.S. Program in BE

Academic Year	Students Enrolled	Graduates
1997-1998	12	0
1998-1999	25	2
1999-2000	40	3
2000-2001	60	8
2001-2002	70	10

Is the proposed program intended primarily to provide another program option to students who are already being attracted to the institution, or is it anticipated that the proposed program will draw its clientele primarily from students who would not otherwise come to the institution were the proposed program not available here?

The proposed program will establish a new undergraduate area of study at OSU. It is anticipated that the program will attract students who would feel it necessary to leave the state to best prepare themselves for careers in applied biotechnology, as well as draw students who would attend OSU in another major if this program were not available.

c. Identify statewide and institutional service area manpower needs the proposed program would assist in filling.

See Sections 3d and 9a.

d. *What evidence is there that there exists a regional or national need for additional qualified persons such as the proposed program would turn out?*

See Sections 3d and 9a.

e. *Are there any other compelling reasons for offering the program?*

Oregon State University has a strong commitment to research, training and education in the area of biotechnology. Strong interdisciplinary collaborations, in both teaching and research, have been fostered through the establishment of the Center for Gene Research and Biotechnology (CGRB). In 1992, the $25.4 million Agricultural and Life Sciences building was dedicated and occupied by the CGRB and several biological science departments. This new facility is connected to two other major buildings (Cordley and Nash Halls) and forms an agricultural and life sciences complex of well over 500,000 square feet. This complex is adjacent to Gilmore Hall, the building that houses the Department of Bioresource Engineering. The Central Services Laboratory of the CGRB was established in 1985 to acquire and operate shared research equipment, and has developed into an important faculty and student resource. These exceptional facilities and formal professional ties among academic departments interested in biotechnology provide a strong base for the development of an undergraduate program in Biological Engineering.

Furthermore, current faculty in the Department of Bioresource Engineering are highly qualified to deliver such a program. Two new faculty members (M. Bothwell and A. Velayudhan) joined BRE during FY 94-95. Both have teaching and research experience in the bioprocess engineering area. The combined expertise of the present BRE faculty spans the design of upstream bioprocesses, such as pretreatment and fermentation, as well as the development and optimization of downstream bioprocesses. The exceptional strengths of existing science, pharmacy, and engineering programs at OSU, coupled with the infrastructure provided by CGRB, and the exceptional qualifications of the BRE faculty, provide a firm rationale for initiation of a baccalaureate degree program in BE at Oregon State University. The proposed program would establish OSU as the leader in Biological Engineering education in the Pacific Northwest.

Finally, the External Review Committee, commissioned by the Chancellor's Office to conduct an outside review of the Ph.D. program proposed, recommended that the department assess the need and appropriateness of an undergraduate program in a three to five year time frame. This review was conducted in September 1990, by three eminent academicians, two of which are members of the National Academy of Engineering.

f. *Identify any special interest in the program on the part of local or state groups (e.g., business, industry, agriculture, professional groups.)*

The rapidly expanding biotechnology industry in Oregon will benefit from the proposed program. The Industrial Advisory Committee (IAC), consisting of representatives from several regional biotechnology companies and a representative from the Oregon Biotechnology Association, critiqued the proposed degree program and showed enthusiastic support. Their comments regarding the proposal, as well as a summary of the curriculum revisions made based on IAC's reccomendations, are in Appendix B.

g. *Have any special provisions been made for making the complete program available for part-time or evening students?*

The B.S. program in Biological Engineering is designed for resident undergraduate students, with class offerings during traditional class hours. However, the needs of part-time, day students can be accommodated.

10. SIMILAR PROGRAMS IN THE STATE

a. *List any similar programs in the state.*

There are no other biological engineering undergraduate programs offered in the State of Oregon.

b. *If similar programs are offered in other institutions in the state, what purpose will the proposed program serve? Is it intended to supplement, complement, or duplicate existing programs?*

Not applicable.

c. *In what way, if any, will resources of any other institutions be utilized in the proposed program?*

Resources at other institutions will not be used.

11. FACULTY

a. *List any present faculty who would be involved in offering the proposed program, with pertinent information concerning their special qualifications for service in this area. Attach an up-to-date resume for each individual.*

The majority of the proposed program will be delivered by a core of 6 faculty in the Department of Bioresource Engineering. A brief description of each of these faculty's qualifications, and teaching and research interest follows:

John P. Bolte, Ph.D., Auburn University, 1987. Dr. Bolte's teaching activities include biological systems modeling. His research interests include ecosystems modeling, decision support and artificial intelligence.

Michelle K. Bothwell, Ph.D., Cornell University, 1994. Dr. Bothwell's teaching activities include the fundamentals of bioprocessing technology: enzyme systems; basic bioreactor kinetics; metabolic stoichiometry; and recombinant DNA technology. Her research interests are centered around biomass conversion and utilization. Specific areas of focus include: enzymatic hydrolysis of polysaccharides, with a particular emphasis on enzyme adsorption; modeling of heterogeneous enzymatic processes; biomass characterization; and fermentation.

Marshall J. English, Ph.D., University of California, Davis, 1978. Dr. English's teaching activities include modeling techniques and instrumentation. His research interest include water resources and systems analysis, irrigation management, and optimum irrigation system design and operation.

Joseph McGuire, Ph.D., P.E., North Carolina State University, 1987. Dr. McGuire's teaching activities deal with operations associated with downstream processing in biotechnology. His research interests are in the general area of colloidal and interfacial phenomena, with most activity focused on protein behavior at interfaces, particularly as it relates to problems in bioprocess and biomedical technology. Current work is focused on issues related to bacterial biofilm development and control, and biocompatibility of blood-contacting materials.

Ajoy K. Velayudhan, Ph.D., Yale University, 1990. Dr. Velayudhan's teaching interests include bioreactor theory and separation processes. His research interests are in biotechnological downstream processing, with emphasis on large-scale adsorption and chromatography.

The resumes of the above faculty are in Appendix C. Note that BRE is currently recruiting for an assistant professor whose background and expertise is in bioprocess engineering. This person will serve as the sixth member of the faculty core who will deliver the proposed

program.

b. *Estimate the number, rank, and background of new faculty members that would need to be added to initiate the proposed program; that would be required in each of the first four years of the proposed program's operation, assuming the program develops as anticipated in item 9b. What kind of commitment does the institution make to meeting these needs? What kind of priority does the institution give this program in staff assignment?*

The initiation of the proposed program will not require any new faculty. However, if substantial program growth occurs, and/or there is a significant interest in the development of a biomedical option (See section 1c), new faculty with appropriate expertise will be required, and additional resources will be needed.

c. *Estimate the number and type of support staff needed in each of the first four years of the program.*

The need for additional support staff is not anticipated; the current staff should be adequate.

12. LIBRARY

a. *Describe, in as objective terms as possible, the adequacy of the Library holdings that are relevant to the proposed program (e.g., if there is a recommended list of library materials issued by the American Library Association or some other responsible group, indicate to what extent the institution's library holdings meet the requirements of the recommended list).*

Because OSU has had a Land Grant tradition for over 125 years, its library has considerable holdings in the agricultural and biological sciences, and engineering. The library needs of an undergraduate Biological Engineering student should be adequately met by the present library holdings that serve the graduate and research programs of Bioresource Engineering.

b. *How much, if any, additional library support will be required to bring the Library to an adequate level for support of the proposed program?*

An assessment of the Library's resources was conducted. The Subject Librarian concluded that the present collections are adequate to support the proposed program; no additional funds are needed to upgrade collections and services to support the proposal.

c. *How is it planned to acquire these Library resources?*

No new Library resources are needed.

d. *Attach a statement from the Director of Libraries indicating present resources and funding of future needs.*

The statement from the Director of Libraries is in Appendix D.

13. FACILITIES AND EQUIPMENT

a. *What special facilities in terms of buildings, laboratories, equipment are necessary to the offering of a quality program in the field and at the level of the proposed program?*

The Bioresource Engineering program is housed in Gilmore Hall. Since 1990, the interior of Gilmore Hall has been completely renovated. Nine new research laboratories have been established along with two large graduate student offices, a student computer lab, and a remodeled classroom. In addition, the adjacent Gilmore Annex was remodeled to accommodate two graduate student offices, a 1000 ft^2, fully instrumented teaching laboratory, a research laboratory, and a research shop. The total floor-space of these two facilities is approximately 16,000 ft^2. Note that a building addition to Gilmore Hall has been included in

OSU's Education and General Projects for 1997-1999, at an amount of $775,000. The planned addition will provide another 3000 ft^2 of floor-space; most of this additional space will be research and teaching laboratories. Delivery of the upper-division laboratories of the proposed program will use the BRE laboratories, as well as the pilot plant facilities of the Department of Food Science and Technology. Although this pilot facility is presently being used by the Food Science and Technology Department as a teaching laboratory, and by a local company (Osmotek) as a research and development center, sufficient space remains for additional activity. Moreover, Osmotek has expressed willingness to share, under their supervision, their membrane processing equipment for laboratory instruction.

To accompany the renovated facilities and planned building expansion, BRE has invested in a substantial amount of equipment to support its teaching and research efforts. Available resources include: walk-in environmental chambers, HPLCs, differential scanning calorimeter, laboratory fermenters/chemostats, gas chromatographs, automatic *in-situ* ellipsometers, contact angle goniometer, liquid surface tensiometer, torsion rheological test system, high temperature/pressure reactors, full-field light transmission moisture measurement chamber, ground penetrating radar, and high speed time domain reflectometer. Given this comprehensive list of available equipment, along with the previously described laboratories, a quality program in Biological Engineering can be readily offered.

b. *What of these facilities does the institution presently have on hand?*

Equipped with the resources stated in 13a, the Department of Bioresource Engineering is fully instrumented to deliver a quality Biological Engineering undergraduate program. No new facilities are required.

c. *What facilities beyond those now on hand would be required in support of the program?*

No new facilities are required.

d. *How does the institution propose these additional facilities and equipment shall be provided?*

Not applicable.

14. BUDGETARY IMPACT

a. *Please indicate the estimated cost of the program for the first four years of its operation, following the format found on page 22 of this document.*

The estimated cost of the program is shown on the attached table entitled "Summary of Estimated Costs or Savings and Sources of Funds". The first-year cost is estimated to be $212,052. Program costs are expected to increase to 295,052 (excluding inflation) for the fourth year as the program becomes fully implemented. Total funding for this program will come from existing departmental resources, as described in Sections 14e-f.

b. *If a special legislative appropriation is required to launch the program (as shown in item 4b of the estimated budget), please provide a statement of the nature of the special budget request, the amount requested, and the reasons a special appropriation is needed. How does the institution plan to continue the program after the initial biennium?*

No special legislative appropriation is necessary.

c. *If federal or other grant funds are required to launch the program (items 4c and 4d), what does the institution propose to do with the program upon termination of the grant?*

None is required.

Summary of Estimated Costs or Savings and Sources of Funds

Program/Unit Biological Engineering/Department of Bioresource Engineering

Institution Oregon State University

	First Year	FTE	Second Year	FTE	Third Year	FTE	Fourth Year	FTE
RESOURCES REQUIRED								
Personnel								
Faculty	$ 160,500	2.0	$ 160,500	2.0	$ 200,000	2.5	$ 240,000	3.0
Graduate Assistants	$ 25,000	1.2	$ 25,000	1.2	$ 25,000	1.2	$ 25,000	1.2
Support Personnel	$ 12,052	0.4	$ 12,052	0.4	$ 12,052	0.4	$ 12,052	0.4
Fellowships & Scholarships	$ 3,000		$ 3,000		$ 5,000		$ 6,000	
Total	$ 200,052		$ 200,052		$ 242,052		$ 283,052	
Percentage Total from State Funds	$ 98%		$ 98%		$ 98%		$ 98%	
Other Resources								
Library	$ 0		$ 0		$ 0		$ 0	
Supplies & Services	$ 12,000		$ 12,000		$ 12,000		$ 12,000	
ovable Equipment	$ 0		$ 0		$ 0		$ 0	
otal	$ 12,000		$ 12,000		$ 12,000		$ 12,000	
Percentage Total from State Funds	$ 100%		$ 100%		$ 100%		$ 100%	
Physical Facilities								
Construction of New Space or Major Renovation	$ none		$ none		$ none		$ none	
Percentage Total from State Funds	$ NA		$ NA		$ NA		$ NA	
GRAND TOTAL	$ 212,052		$ 212,052		$ 254,052		$ 295,052	
Percentage Total from State Funds	$ 99%		$ 99%		$ 98%		$ 98%	
SOURCE OF FUNDS								
State Funds—Going Level Budget	$ 209,052		$ 209,052		$ 249,052		$ 295,052	
State Funds—Special Approp.	$ 0		$ 0		$ 0		$ -0-	
Federal Funds	$ 0		$ 0		$ 0		$ 0	
her Grants	$ 0		$ 0		$ 0		$ 0	
rees, Sales, Etc.	$ 0		$ 0		$ 0		$ 0	
Other	$ 3,000		$ 3,000		$ 5,000		$ 6,000	

d. *Will the allocation of going-level budget funds in support of the program have an adverse impact on any other institutional programs? If so, which program and in what ways?*

No adverse impact to other institutional programs is expected.

e. *If the program will be financed from existing resources, specifically state:*

(1) what the budgetary unit will be doing as a result of the new program that is not now done in terms of additional activities; and

(2) what these new activities will cost and whether financed or staffed by shifting of assignments within the budgetary unit or reallocation of resources within the institution.

As noted previously, many of the courses needed for the program are already in existence. New activities include teaching oreintation and design courses, and additional advising of students.

Funding for this program will come from existing departmental resources. During Fiscal Year 1994-95, the department's recurring State funding was $1.17 million to support its teaching, research and extension activities. An additional $1.2 million in external grant and contract funds were expended. This resource base is sufficient to accommodate the new activities of the undergraduate program.

f. *State which resources will be moved and how this will affect those programs losing resources.*

As the undergraduate program develops, we anticipate some migration of funding from our graduate programs and research activities to support the undergraduate program. We intend to limit our enrollment in our graduate program to 50 students. We also anticipate that teaching and research FTE within the department will be redistributed to more accurately reflect the increased teaching responsibilities of the faculty members involved in the program.

Our plan to deliver the proposed program with existing departmental funds is perhaps best addressed with reference to the shift in effort BRE has made over the last several years in order to establish research and teaching strength in bioprocess engineering. During the 1994-95 academic year we filled two, "newly-created" tenure track assistant professor positions in bioprocess engineering. These were newly created in the sense that these positions were formerly focused in areas completely unrelated to bioprocess engineering; by design, none of the teaching and research activities of the former faculty members are being continued by the new assistant professors. We are now advertising for a third "new" tenure track assistant professor position totally dedicated to teaching and research in bioprocess engineering (closing date March 15), a result of Dr. Hashimoto's move to Academic Affairs and Dr. Moore's move to Head of BRE. In addition to the newly acquired positions, the teaching effort of several tenured faculty members has been redirected to support the new bioprocessing emphasis. Furthermore, although we are a graduate department, the majority of our existing course offerings are 400/500-level and no major changes will be needed to deliver them to undergraduates. In summary, our department has completed a substantial redirection of research, teaching and extension effort to research and teaching in bioprocess engineering. After filling the currently advertised position, teaching faculty in the program will be responsible for only 1.5 to 3 courses per year, while maintaining capacity to deliver more than the two 600-level courses in bioprocess engineering we offer now.

15. REFERENCES

Accreditation Board for Engineering and Technology (ABET), Engineering Accreditation Commission, Criteria for Accrediting Programs in Engineering in the United States, Effective for Evaluations During the 1995-96 Accreditation Cycle, Baltimore, Maryland 1995.

American Society for Engineering Education, Directory of Engineering and Engineering Technology Undergraduate Programs, Washington, DC, 1994.

British Columbia Biotechnology Alliance, Pacific Northwest - A Hot Spot for Biotechnology, Third Annual Pacific Northwest Biotechnology Exposition, Vancouver, Canada, 1995.

BMEnet Biomedical Engineering Resource, http://fairway.ecn.purdue.edu:80/bme, 1995.

Gregerson, J.-P. Research and Development of Vaccines and Pharmaceuticals from Biotechnology, VCH, New York, 1994.

National Research Council, Committee on Bioprocess Engineering, Putting Biotechnology to Work: Bioprocess Engineering, National Academy Press, Washington DC, 1992.

Oregon State University, "Mission Statement," Fact Book, 1994.

U.S. Congress, Office of Technology Assessment, New Development in Biotechnology: U.S. Investment in Biotechnology-Special Report, OTA-BA-360, Washington, DC, U.S. Government Printing Office, July 1988.

Appendix A

College of Engineering Core

The College of Engineering Core is shown on the following page. Note that the Biological Engineering, Environmental Engineering and Chemical Engineering programs require the CH 221, 222, 223 sequence in lieu of CH 201, 202, and 203.

Oregon State University
College of Engineering
Engineering Core

A change in the courses required for admission to the Professional Program will take place with the Spring 1995 application. At that time, ABET accredited programs will require completion of a common set of courses for admission to the Professional Program. The degree programs to which the "Engineering Core" applies include Chemical Engineering, Civil Engineering, Computer Engineering, Electrical and Electronics Engineering, Industrial Engineering, Mechanical Engineering and Nuclear Engineering.

The Engineering Core GPA will be used for the competitive admission process. Besides the required courses listed below, students must complete a minimum of 80 credits before admission to the Professional Program.

This change only affects which courses are required for admission to the Professional Program. It does not change any current degree requirement. Additional prerequisite courses must be completed before taking many upper division courses.

Courses in the Engineering Core include:

CH 201[1]	Chemistry for Engineering Majors	(3)
COMM 111 or	Public Speaking	
COMM 114	Argument and Critical Discourse	(3)
ENGR 112[2]	Engineering Orientation II	(3)
ENGR 201	Electrical Fundamentals	(3)
ENGR 211	Statics	(3)
ENGR 212	Dynamics	(3)
MTH 251	Differential Calculus	(4)
MTH 252	Integral Calculus	(4)
MTH 253	Infinite Series and Sequences	(4)
MTH 254	Vector Calculus I	(4)
MTH 256	Applied Differential Equations	(4)
PH 211,212,213[3]	General Physics with Calculus	(12)
WR 121	English Composition	(3)
	total	53 credits

Note 1. CH 121 or CH 221 may be substituted for CH 201. Only three credits will be counted in the "admission GPA" calculation. Admission to the Chemical Engineering program requires CH 221.

Note 2. An engineering problem solving class (e.g. CHE 102, ME 102, FE 215, or NE 113) or a three credit computer programming class may be substituted.

Note 3. PH 213 is not required for admission to the Chemical Engineering program.

Roy Rathja

January 25, 1993

48.

Appendix B

Summary of Program Revision and Industrial Advisory Committee's Letters of Evaluation

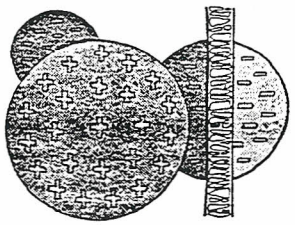
At our invitation four members of the IAC visited our department for a hallf day meeting on September 22, 1995, to discuss the proposal from their perspective; we met independently with the two members who could not attend the meeting on the 22nd. Following is a summary of the major issues discussed, and how we addressed them.

A need for additional laboratory experience in biochemistry was voiced by the IAC and the unanimous recommendation was to add BB 494 (3 credit hrs), the biochemistry laboratory developed to accompany BB 451. As a result of this change, our proposed curriculum shows the number of engineering science and design electives at 7 credit hours, and the number of free electives at 3 credit hours. However, should BRE 456, Bioprocess Engineering I (3 credit hrs), be approved as a baccalaureate core "synthesis" course, the number of free electives would increase to 6 credit hours. Support was also voiced for a course in pharmacology. Although we did not formally include this in the curriculum, BE students will be strongly encourage to enroll in PHAR 387, Essentials of Pharmacology (4 credit hrs).

The importance of regulatory issues, validation of processes, etc. was discussed and we all agreed that this material should be delivered as an integral part of our design sequence. In addition, we will introduce these issues in BRE 221, Introduction to Biological Engineering, and incorporate them into our BRE courses wherever appropriate. Instruction in experimental design was discussed and this topic will constitute an important component of the design sequence as well.

The importance of internship experiences was discussed. An infrastructure to support an internship program would greatly facilitate meaningful and nearly continuous review of our program, in addition to enhancing each student's academic program. With the goal of eventually requiring a three- or six-month internship of each student, we will continue to inquire into the possibility of taking part in internship programs in and outside Oregon. In this regard, we will cooperate with MECOP (Multiple Engineering Cooperative Program) administrators here on campus to enhance our efforts.

The reasoning for the exclusion of the three course introductory biology series (BI 211-213) was accepted by the IAC as straightforward, but has been incorporated into the proposal for clarity. Other important issues that were raised, including our providing a list of potentially useful elective courses for various specializations, and incorporating specific subject matter of critical concern into the design experience (e.g. water treatment and use), are not considered in the proposal singly because they are best developed and delivered following the program's inception.



OSMOTEK INC.

Advanced Membrane Separation Technology

October 11, 1995

Dr. Michelle Bothwell
Dr. Joe McGuire
Department of Bioresource Engineering
Gilmore Hall 116
Corvallis, OR 97331-3906

re: OSU's Biological Engineering Program

Dear Dr. Bothwell and Dr. McGuire,

The proposed B.S. Degree in Biological Engineering will provide Oregon and other Western states with people qualified to work with bioprocesses. Bioprocesses will be utilized more and more by industry in the coming years, so this degree program will become a valuable resource.

I support the proposed curriculum, because it will do an excellent job of producing top-notch Biological Engineers. With very few institutions offering this degree, the graduating engineers should be in high demand.

Sincerely,

Edward D. Beaudry

Edward G. Beaudry, D.Sc., P.E.
Director of Technology Development
Osmotek, Inc.

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Michelle Bothwell
Joe McGuire
Dept. of Bioresource Engineering
Oregon State University
Gilmore Hall 116
Corvallis, OR 97331

October 16, 1995

Dear Michelle and Joe:

I fully support the proposal of a new undergraduate program in Biological Engineering. As a member of the Industrial Evaluation committee, I was invited to contribute my ideas freely and openly. The faculty members setting up the program were receptive to my ideas, especially in an additional Biochemistry lab and incorporating pharmaceutical regulation as part of the curriculum.

I envision that the need for students from a program such as this will increase rapidly. Currently, Oregon biotech industries are somewhat small, but are growing at a rapid rate and increasing their technical staff. Large pharmaceutical companies, such as Glaxo, are already seeing the need for engineers with knowledge of chemistry and molecular biology to aid in the design of the equipment and facilities. I believe it is wise for Oregon State to get a jump on the market in producing biological engineering. Industry statistics show a large number of Biotech companies emerging. Biotechnology continues to be involved in the Food, Pharmaceutical and Horticultural industries as well as many others I haven't mentioned.

I believe this is a commendable proposed program and I fully support its initiation.

Best Regards,

Cynthia M. Lund

Cynthia Lund
Manager Therapeutics
Oligos Etc, Inc./Oligo Therapeutics, Inc

Genentech, Inc.

460 Point San Bruno Boulevard
South San Francisco, CA 94080-4990
(415) 225-1000
FAX: (415) 225-6000

September 19, 1995

Dr. Michelle Bothwell
Department of Bioresource Engineering
College of Engineering
Oregon State University
Corvallis, Oregon 97331-7305

Dear Dr. Bothwell;

I very much enjoyed visiting with you and Dr. McGuire to discuss you proposal to initiate an instructional program leading to a BS in Biological Engineering. I have read the complete proposal with great interest and enthusiasm. As I told you I was in the Cell Culture and Fermentation Research and Development Department in the Process Sciences division of Genentech for ten years. This group is composed of engineers, microbiologists, biochemists, and biologists who were responsible for developing the large scale process for recombinant production of Genentech's pharmaceuticals. I very much agree with you that there is a growing need for people with expertise in this area.

I am excited by your proposed program because I think it will meet a very real need in training young people for this type of work. While the engineers coming from traditional biochemical engineering programs have a good grounding in engineering, they frequently have no biological training and thus tend to miss the opportunity to work with and take advantage of the unique biology of the different expression systems in designing production systems. In my experience, the more understanding the scientists and engineers have of the biology, the more innovative and productive the process.

I see your program as, overall, very solid and think it will turn out highly competitive graduates. I do have one comment. I would ask whether you go far enough in providing basic biology courses. I would think that the students should take an introductory biology course the first year. Move the microbiology course and lab to the second year, then have them take the Cell and Molecular Biology course the spring of the junior year or the senior year when they have more background to help in understanding the concepts. This would also reinforce the Bio Eng Design material by learning the basic biology and the engineering at the same - or nearly the same time. In addition, this

field is moving so fast that the closer to graduation they study it, the more useful it will be.

I do understand that you have constraints as to time and a very full schedule- but the students should at least be allowed the option of taking this material in a way that will give them the greatest advantage over other graduates.

I would also encourage you to write to the following people when your program gets started, describing your program and inquiring into the possibility of having your students apply to our summer intern program.

The Summer Intern Program
Human Resources
Genentech, Inc.
460 Point San Bruno Blvd.
South San Francisco, CA 94080

And copy:
Dr. Bryan Lawlis
Vice President, Process Sciences

We take Junior and Senior undergraduates into the program for 3 months each summer as paid interns. They work individually in different laboratories as active participant in Genentech's research and development programs. While this program is highly competitive (it accepted 1 in 8 applicant this year) it would provide an excellent opportunity for some of your students and for labs in the process science division to get well trained interns.

Good luck with your program. Please feel free to contact me if you have any other questions.

Sincerely yours,

Jennie P. Mather, Ph.D.
Cell Biology
Technology Research

54.

Oregon Biotechnology Association
Oregon Biotechnology Foundation

2611 SW 3rd Avenue, Suite 200 • Portland, Oregon 97201
(503) 241-7802 • FAX (503) 241-0827 • E Mail: orbio@ortel.org

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WILLIAM A. BIRDWELL & ASSOCIATES

October 10, 1995

To: Oregon State Board of Higher Education
From: Nanette Newell
Re: Biological Engineering Program at OSU

On behalf of the Oregon Biotechnology Association (OBA) and the Oregon biotechnology industry, I am writing in support of the newly created Biological Engineering Program at Oregon State University.

Recent advances in understanding and manipulating DNA have created a national need for biological engineers. The proposed program addresses this need by training engineers in both the traditional physical sciences and engineering and in the life sciences.

As a member of the review board for the program, I have been very impressed with the Bioresource Engineering Department's responsiveness to our comments and criticisms. This is one of the few undergraduate Biological Engineering programs in the country, and will be of great benefit not only to Oregon State University but to Oregon's biotechnology community.

cc: Michelle Bothwell, BRE Department

Printed on recycled paper



October 16, 1995

Andrew G. Hashimoto, Ph.D.
Professor and Head
Oregon State University
Department of Bioresource Engineering
Gilmore Hall 116
Corvallis, Oregon 97331

Re: Proposed Undergraduate Biological Engineering Program

Dear Dr. Hashimoto:

I strongly recommend the acceptance of the proposed undergraduate Biological Engineering program. This program should address both national and regional needs for engineers capable of assisting the scale-up and manufacturing of biologically based products.

The maturing of biological products from the research and development phase to commercial use requires specific skills that combine the interdisciplinary tools of cell biology, chemical engineering, pharmacology, and biochemistry. However, the companies which are currently capitalizing on their research "investment" often do not have the in-house experience to understand the complexities and dynamics of commercial production.

I have seen an increase in biologically related products requiring Oregon Freeze Dry's technology. As the Research and Process Development Manager for Advanced and Specialty Products, I am involved with a variety of companies with products that are either fermented, expressed or synthesized

525 25th Avenue S.W.
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from biological compounds. I deal constantly with their scale-up frustrations and recognize that the opportunity for commercial success is invariably in the hands of microbiologists or chemical engineers. The microbiologists typically lack the engineering background to anticipate the difficulties involved with going from a 100 liter fermenter to a 1000 liter fermenter. In contrast, the chemical engineer is unprepared for the biological changes scale-up has upon the end product.

Sincerely,

Walter S. Pebley
S.W.

Walter S. Pebley
Research Manager
Oregon Freeze Dry

WSP:sw

Appendix C

Abbreviated Vitae for BRE Faculty Significantly Involved in the Program's Delivery

58.

Departments of Bioresource Engineering
and
Crop and Soil Science

Oregon State University

BOLTE, John P.
Associate Professor

BIRTH DATE
July 20, 1957

DEGREES

B.S. Plant Science, University of Florida, Gainesville, 1977
M.S. Agricultural Engineering, University of Florida, Gainesville, 1983
Ph.D Agricultural Engineering, Auburn University, Alabama, 1987

ACADEMIC POSITIONS

Research Associate, Auburn University, Agricultural Engineering Department, February 1983 - April, 1987
Post-Doctoral Systems Research Scientist, Oregon State University, Crop & Soil Science Department, April 1987 - March 1988
Assistant Professor, Oregon State University, Crop & Soil Science Department. March 1988 -June 1989, (Non-tenure track)
Assistant Professor, Oregon State University, Bioresource Engineering and Crop & Soil Science Departments. July 1989 - June, 1995
Associate Professor, Oregon State University, Bioresource Engineering and Crop & Soil Science Departments. July 1995 - present

FIELDS OF SPECIALIZATION

Artificial intelligence applications in bioresource management. Mathematical modeling and simulation of agricultural, aquacultural and environmental systems. Geographic Information Systems-based spatial modeling.

PROFESSIONAL ACTIVITIES

Professional Affiliations

American Society of Agricultural Engineers

Professional Recognition

Honor Societies:

Alpha Epsilon - National Honorary in Agricultural Engineering
Gamma Sigma Delta - National Honorary in Agriculture

Invited Workshops:

" Expert Systems Development in Agriculture", Cornell University, Ithaca, NY, January, 1990

SELECTED PUBLICATIONS

Refereed Journal Articles:

Bolte, J.P. and D.T. Hill. 1993. A comprehensive dynamic model of attached growth anaerobic fermenters. *Transactions of the ASAE.* 36(6):1805-1814.

Bolte, J.P., D.B. Hannaway, P.E. Shuler and P.J. Ballerstedt. 1991. An intelligent frame system for cultivar selection. A.I. *Applications in Natural Resource Management.* 5(3):21-31.

Hill, D.T. and J.P. Bolte. 1991. Bioretentive properties of synthetic media for anaerobic digestion of animal wastes. *Biological Wastes.* 35(2):711-715.

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Bolte, J.P., R.A. Nordstedt and M.V. Thomas. 1984. Mathematical simulation of upflow anaerobic fixed-bed reactors. *Transactions of the ASAE*. 25(5):1483-1490.

Symposia/Published Proceedings:

Bolte, J.P. J.A. Fisher, and D.H. Ernst. 1993. An object-oriented, message-based environment for integrating continuous, event-driven and knowledge-based simulation. Proceedings: Application of Advanced Information Technologies: Effective Management of Natural Resources. ASAE. June 18-19, Spokane, WA.

Bolte, J.P. and D.T. Hill. 1985. Modeling suspended particle-attached growth anaerobic reactors. Proceedings of the Fifth International Conference on Agricultural Wastes. ASAE, St. Joseph, MI.

Hill, D.T., J.P. Bolte, T.J. Prince and T.A. McCaskey. 1985. Operating characteristics of suspended particle-attached growth anaerobic fermenters treating screened swine waste. Proceedings of the Fifth International Symposium on Agricultural Wastes. ASAE, St. Joseph, MI.

60.

Department of Bioresource Engineering

Oregon State University

BOTHWELL, Michelle K.
Assistant Professor

BIRTH DATE
July 14, 1967

DEGREES

B.S. Agricultural Engineering, Purdue University, 1989
Ph.D. Agricultural and Biological Engineering, Cornell University, 1994

ACADEMIC POSITIONS

Assistant Instructor, Department of Agricultural and Biological Engineering, Cornell University, Ithaca, NY, 1994
Graduate Research Assistant, Department of Agricultural and Biological Engineering, Cornell University, Ithaca, NY, 1994
Assistant Professor, Department of Bioresource Engineering, Oregon State University, Corvallis, OR, October 1994-present

FIELDS OF SPECIALIZATION

Biomass conversion and utilization: enzymatic hydrolysis of polysaccharides, with a particular emphasis on enzyme adsorption; modeling of heterogeneous enzymatic processes; fermentation; bioremediation and decolorization of pulp mill effluents using fungi.

PROFESSIONAL ACTIVITIES

Registration

Engineer in Training, 1989

Professional Affiliations

American Chemical Society; American Society of Agricultural Engineers; Institute of Biological Engineering; Center for Gene Research and Biotechnology, Oregon State University

Professional Recognition

Honor Societies:

Tau Beta Phi- National Engineering Honorary
Alpha Epsilon- National Agricultural Engineering Honorary

Awards:

National Needs Fellowship, United States Department of Agricultural, August 1989-August 1992

PUBLICATIONS

Refereed Journal Articles

Bothwell, M. K., Walker, L. P., Wilson, D. B., Irwin, D. C., Price, M. (1993). Synergism Between Pure *Thermomonospora fusca* and *Trichoderma reesei* Cellulases. *Biomass and Bioenergy* 4(4): 293-299.

Bothwell, M. K., Walker, L. P. (1995). Evaluation of Parameter Estimation Methods for Estimating Cellulase Binding Constants. *Bioresource Technology* **53**:21-29.

Bothwell, M. K., Daughhetee, S. D., Chau, G. Y., Wilson, D. B. and Walker, L. P. Binding Capacities for *Thermomonospora fusca* E_3, E_4, and E_5, the E_3 Binding Domain, and *Trichoderma reesei* CBHI on Avicel and Bacterial Microcrystalline Cellulose. *Bioresource Technology*, **In Review.**

Bothwell, M. K., Walker, L. P., Wilson, D. B. and Irwin D. C. Binding Reversibility and Surface Exchange of *Thermomonospora fusca* E_3 and E_5, and *Trichoderma reesei* CBHI Cellulases. *Enzyme and Microbial Technology*, **In Review.**

Symposia/Published Proceedings:

Bothwell, M. K., Walker, L. P., Wilson, D. B. and Irwin D. C. 1995. Binding Reversibility and Surface Exchange of *Trichoderma reesei* CBHI, and *Thermomonospora fusca* E_3 and E_5 Cellulases. Proceedings: Conference of Food Engineering, AIChE, November 1-3, Chicago, IL.

Department of Bioresource Engineering

Oregon State University

ENGLISH, Marshall J.
Professor

Birth Date
December 28, 1940

DEGREES

B.S., Electrical Engineering, San Jose State College, 1965
M.S., Civil Engineering, University of California, 1973
Ph.D., Civil Engineering, University of California, 1978

ACADEMIC POSITIONS

Associate/Assistant Professor, Agricultural Engineering Department, Oregon State University, Corvallis, OR 1978-1989
Visiting Professor, University of Zimbabwe, Soil Science and Agricultural Engineering Department, 1992 (sabbatical)
Professor, Bioresource Engineering Department, Oregon State University, Corvallis, OR, 1989-present.

NON-ACADEMIC POSITIONS

Electronic Systems Analyst, Lockheed Space Systems Division, 1965-1971
Hydrologist, U.S. Arm Corps of Engineers, 1974
Associate Development Engineer, Civil Engineering Department, University of California, Davis, CA 1976-1977
Senior Research Fellow, New Zealand Ministry of Agriculture and Fisheries, 1984-1985
Fulbright Fellow, Irrigation research in sub-Saharan Africa, 1992-1992

FIELDS OF SPECIALIZATION

Optimization of Irrigation; Systems Analysis/Modeling and Operations Research

PROFESSIONAL ACTIVITIES

Registration

Professional Engineer #15476, State of Oregon (Civil Engineering)

Professional Societies

International Congress on Irrigation and Drainage; American Society of Civil Engineers; American Society of Agricultural Engineers

Professional Recognition

Past Chairman, Irrigation and Drainage Division - American Society of Civil Engineers
Editorial Board; "Agricultural Water Management"
Fulbright Fellow, Irrigation research in sub-Saharan Africa, Zimbabwe, 1991-1992
Guest of the Water Research Commission, Republic of South Africa, for an invited lecture tour concerning deficit irrigation; 1992
USAID, sponsored tour of Pakistan national research facilities and critical review of irrigation management research program for Pakistan 1989
Guest of Ningxia Province, China; Invited lecture and discussion tour dealing with salinity control in irrigated agriculture, 1986
Senior Research Fellowship, awarded by the New Zealand National Research Advisory Council, 1984-85
One year fellowship offered by the International Rice Research Institute, Philippines, 1983 (declined)

Honor Societies:
Alpha Epsilon- National Agricultural Engineering Honorary
Gamma Sigma Delta- National Honor Society of Agriculture

PUBLICATIONS

Book/Chapters

English, M.J., J.T. Musick and V.V.N. Murty. Deficit Irrigation; IN Management of Farm Irrigation Systems; ASAE, St. Joseph, MI; 1990

James, L.G. and M.J. English (eds). Irrigation Systems for the 21st Century; Proceedings of a Conference, ASCE-ID, Portland, OR July 28-30, 1987

Refereed Journal Articles

English, M.J., A.R. Taylor and S. Abdelli; A Sprinkler Efficiency Model, ICID Bulletin 1992, Vol. 41. No. 2

English, M.J. Deficit Irrigation; An Analytical Framework. (1 of 2) ASCE, Journal of the Irrigation and Drainage Engineering, Vol., No. 3, pp. 399-412, 1990.

English, M.J., L.G. James, C-F Chen. Deficit Irrigation; Observations in the Columbia Basin. ASCE, Journal of the Irrigation and Drainage Engineering, Vol. 116, No. 3, pp 413-426, 1990.

English, M.J. and B.C. Nakamura. Effects of Deficit Irrigation and Irrigation Frequency on Wheat Fields. ASCE, Journal of the Irrigation and Drainage Division, Vol. 115, No. 2, pp. 172-184, 1989.

English, M.J., A.R. Taylor and P. John. Evaluating Sprinkler System Performance; New Zealand Journal of Agricultural Sciences 20 (1):32-38, 1986.

English, M.J. and G.S. Nuss. Designing for Deficit Irrigation, ASCE, Vol. 108, No. IR2:91-106, 1982.

English, M.J. The Uncertainty of Crop Models in Irrigation Optimization, Transactions ASAE, 20 (4):917-928, 1981.

English, M.J. and G.T. Orlob. Decision Theory and Irrigation Optimization, California Water Resources Center Contribution No. 174, 1978.

English, M.J. and J.A. Amorocho. Salinity Modeling in the Upper Colorado River Basin, Journal of the National Water Supply Improvement Association, 2 (1):61-66, 1975.

Department of Bioresource Engineering

Oregon State University

MCGUIRE, Joseph
Professor

BIRTH DATE
March 31, 1959

DEGREES

B.Ch.E., Chemical Engineering, Georgia Institute of Technology, 1980
M.S., Chemical Engineering, North Carolina State University, 1983
Ph.D., Chemical Engineering, North Carolina State University, 1987

ACADEMIC POSITIONS

Teaching Assistant, Department of Chemical Engineering, Georgia Institute of Technology, Atlanta, GA, 1980
Teaching Assistant/Research Assistant, Department of Chemical Engineering, North Carolina State University, Raleigh, NC, 1980-1982
Research Assistant, Department of Biophysics, Johns Hopkins University, Baltimore, MD, 1983-1984
Research Engineer, Department of Food Science, North Carolina State University, Raleigh, NC, 1984-1987
Assistant Professor, Departments of Bioresource Engineering and Food Science and Technology, Oregon State University, Corvallis, OR, 1987-1992
Associate Professor, 1992-1995
Professor, 1995-present

Sabbatical

Visiting Scientist, Department of Food Technology, Chemical Center, University of Lund, Sweden, 1993-1994

NON-ACADEMIC POSITIONS

Process Engineer, Clay Division, J.M. Huber Corporation, Huber, GA, summers 1977-1979
Process Engineer, Brunswick Pulp and Paper Company, Brunswick, GA, winter 1978
Manufacturing Associate, Milliken and Company, Greenville, SC, 1983

FIELD OF SPECIALIZATION

Colloidal and Interfacial Phenomena in Bioengineering: surfactant, protein and bacterial cell interactions at interfaces, with emphasis on application to problems in bioprocess and biomedical technology

PROFESSIONAL ACTIVITIES

Registration

Professional Engineer #14426, State of Oregon (Chemical Engineering)

Professional Societies

American Chemical Society; American Institute of Chemical Engineers; American Society for Engineering Education; Biomedical Engineering Society; Institute of Biological Engineering; Institute of Food Technologists

Patent

Daeschel, M.A. and J. McGuire. Bactericidal surfaces and articles with attached bacteriocin. Claims allowed March 16, 1995; pending number identification.

Professional Recognition

Engineering Research Initiation Award, National Science Foundation, 1989
Savery Outstanding Young Faculty Award, College of Agricultural Sciences, 1994

PUBLICATIONS

Book Chapters

McGuire, J. and V. Krisdhasima. Surface thermodynamics, protein adsorption, and biofilm development. Chapter 4 in *Physical Chemistry of Foods*, H. Schwartzberg and R. Hartel (eds.), Dekker, New York, pages 223-262. 1992.

McGuire, J., V. Krisdhasima, M. Wahlgren and T. Arnebrant. Comparative adsorption studies with synthetic, structural stability and charge mutants of bacteriophage T4 lysozyme. In *Proteins at Interfaces*, T.A. Horbett and J.L. Brash (eds.), ACS Books, Washington D.C. **In press.**

Refereed Journal Articles

McGuire, J., C.F. Dwiggins and P.S. Fedkiw. The electrosorption of phenol onto activated carbon. *J. Appl. Electrochem.* **15**: 53-62. 1985.

McGuire, J. and K.R. Swartzel. On the use of water in the measurement of solid surface tension. *Surf. Interface Anal.* **10**: 430-433. 1987.

McGuire, J. and S.A. Kirtley. Surface characterization for prediction of food particle behavior at interfaces: theoretical considerations and limitations. *J. Food Eng.* **8**: 273-286. 1988.

McGuire, J. A predictive model for food particle interactions with contact surfaces. *J. Food Sci.* **54**: 22-24, 29. 1989.

McGuire, J. and S.A. Kirtley. On surface characterization of materials targeted for food contact. *J. Food Sci.* **54**: 224-226. 1989

McGuire, J. Elucidation of the surface influence on irreversible protein adsorption. *Biofouling.* **1**: 263-267. 1989.

McGuire, J. and K.R. Swartzel. The influence of solid surface energetics on macromolecular adsorption from milk. *J. Food Proc. Preserv.* **13**: 145-160. 1989.

Kirtley, S.A. and J. McGuire. On differences in surface constitution of dairy product contact materials. *J. Dairy Sci.* **72**: 1748-1753. 1989.

McGuire, J. and R.D. Sproull. Temperature effects on food contact surface properties. *J. Food Sci.* **55**: 1199-1200. 1990.

McGuire, J. On evaluation of the polar contribution to contact material surface energy. *J. Food Eng.* **12**: 239-247. 1990.

McGuire, J., E. Lee and R.D. Sproull. Temperature influences on surface energetic parameters evaluated at solid-liquid interfaces. *Surf. Interface Anal.* **15**: 603-608. 1990.

McGuire, J., K. Al-Malah, F.W. Bodyfelt and M.J. Gamroth. Application of ellipsometry to evaluate surface cleaning effectiveness. *J. Food Sci.* **55**: 1749-1750, 1752. 1990.

McGuire, J. and J. Yang. The effect of drop volume on contact angle. *J. Food Prot.* **54**: 232-235. 1991.

Luey, J.-K., J. McGuire and R.D. Sproull. The effect of pH and NaCl concentration on adsorption of β-lactoglobulin at hydrophilic and hydrophobic silicon surfaces. *J. Colloid Interface Sci.* **143**: 489-500. 1991.

Yang, J., J. McGuire and E. Kolbe. Use of the equilibrium contact angle as an index of contact surface cleanliness. *J. Food Prot.* **54**: 879-884. 1991.

Al-Malah, K., J. McGuire, V. Krisdhasima, P. Suttiprasit and R. Sproull. Ellipsometric evaluation of β-lactoglobulin adsorption onto low- and high-energy materials. *Biotechnol. Prog.* **8**: 58-66. 1992.

Krisdhasima, V., J. McGuire and R. Sproull. A one-film-model ellipsometry program for the simultaneous calculation of protein film thickness and refractive index. *Surf. Interface Anal.* **18**: 453-456. 1992.

Daeschel, M.A., J. McGuire and H. Al-Makhlafi. Antimicrobial activity of nisin adsorbed to hydrophilic and hydrophobic surfaces. *J. Food Prot.* **55**: 731-735. 1992.

Suttiprasit, P., V. Krisdhasima and J. McGuire. The surface activity of a-lactalbumin, b-lactoglobulin and bovine serum albumin I. Surface tension measurements with single component and mixed solutions. *J. Colloid Interface Sci.* **154**: 316-326. 1992.

66.

Suttiprasit, P. and J. McGuire. The surface activity of α-lactalbumin, β-lactoglobulin and bovine serum albumin II. Some molecular influences on adsorption to hydrophilic and hydrophobic silicon surfaces. *J. Colloid Interface Sci.* **154**: 327-336. 1992.

Krisdhasima, V., J. McGuire and R. Sproull. Surface hydrophobic influences on lactoglobulin adsorption kinetics. *J. Colloid Interface Sci.* **154**: 337-350. 1992.

McGuire, J. and V. Krisdhasima. Relating contact surface hydrophobicity to molecular events influencing biological adhesion. *J. Adhesion Sci. Technol.* **7**: 195-204. 1993.

Suttiprasit, P., K. Al-Malah and J. McGuire. On evaluating the emulsifying properties of protein using conductivity measurements. *Food Hydrocoll.* **7**: 241-253. 1993.

Krisdhasima, V., P. Vinaraphong and J. McGuire. Adsorption kinetics and elutability of α-lactalbumin, β-casein, β -lactoglobulin and bovine serum albumin at hydrophobic and hydrophilic interfaces. *J. Colloid Interface Sci.* **161**: 325-334. 1993.

Al-Makhlafi, H., J. McGuire and M.A. Daeschel. Influence of preadsorbed milk proteins on adhesion of *Listeria monocytogenes* to hydrophobic and hydrophilic silica surfaces. *Appl. Environ. Microbiol.* **60**: 3560-3565. 1994.

McGuire, J., M.C. Wahlgren and T. Arnebrant. Structural stability effects on the adsorption and dodecyltrimethylammonium bromide-mediated elutability of bacteriophage T4 lysozyme at silica surfaces. *J. Colloid Interface Sci.* **170**: 182-192. 1995.

McGuire, J., M.C. Wahlgren and T. Arnebrant. The influence of net charge and charge location on the adsorption and dodecyltrimethylammonium bromide-mediated elutability of bacteriophage T4 lysozyme at silica surfaces. *J. Colloid Interface Sci.* **170**: 193-202. 1995.

Al-Malah, K., J. McGuire and R. Sproull. A macroscopic model for the single-component protein adsorption isotherm. *J. Colloid Interface Sci.* **170**: 261-268. 1995.

Bower, C.K., J. McGuire and M.A. Daeschel. Suppression of *Listeria monocytogenes* colonization following adsorption of nisin onto silica surfaces. *Appl. Environ. Microbiol.* **61**: 992-997. 1995.

Al-Makhlafi, H., A. Nasir, J. McGuire and M.A. Daeschel. Adhesion of *Listeria monocytogenes* to silica surfaces after sequential and competitive adsorption of bovine serum albumin and β -lactoglobulin. *Appl. Environ. Microbiol.* **61**: 2013-2015. 1995.

Vinaraphong, P., V. Krisdhasima and J. McGuire. Elution of proteins from silanized silica surfaces by sodium dodecylsulfate and dodecyltrimethylammonium bromide. *J. Colloid Interface Sci.* **In press**.

Billsten, P., M. Wahlgren, T. Arnebrant, J. McGuire and H. Elwing. Structural changes of T4 lysozyme upon adsorption to silica nanoparticles measured by circular dichroism. *J. Colloid Interface Sci.* **In press.**

Al-Makhlafi, H., M. Lakamraju, N. Podhipleux, B. Singla and J. McGuire. Measuring surface hydrophobicity as compared to measuring a hydrophobic effect on adhesion events. *J. Food Prot.* **In press.**

Podhipleux, N., V. Krisdhasima and J. McGuire. Molecular charge effects on protein behavior at hydrophobic and hydrophilic solid surfaces. *Food Hydrocoll.* **In press.**

Bower, C.K., J. McGuire and M.A. Daeschel. Influences on the antimicrobial activity of surface adsorbed nisin. *J. Ind. Microbiol.* **In press.**

Lakamraju, M., J. McGuire and M. Daeschel. Nisin adsorption and exchange with selected milk proteins at silanized silica surfaces. *J. Colloid Interface Sci.* **In press.**

Department of Bioresource Engineering

Oregon State University

VELAYUDHAN, Ajoy
Assistant Professor

BIRTH DATE
13 February 1960

DEGREES

B. Tech. *Chemical Engineering*, Indian Institute of Technology, Madras, 1982
M.S *Chemical Engineering*, Yale University, 1983
Ph.D. *Chemical Engineering*, Yale University, 1990

ACADEMIC POSITIONS

Assistant in Research, Department of Chemical Engineering, Yale University, 1983-1989.
Post-Doctoral Research Associate, Laboratory of Renewable Resources Engineering, Purdue University, 1989-1991.
Senior Research Assistant, Laboratory of Renewable Resources Engineering, Purdue University, 1991-1994.
Assistant Professor, Department of Bioresource Engineering, Oregon State University, 1995-present.

FIELD OF SPECIALIZATION

Downstream processing in biotechnology: design, optimization and scale-up of preparative chromatographic and adsorptive separations of biological mixtures, particularly peptides and proteins.

PROFESSIONAL ACTIVITIES

Professional Societies

American Institute of Agricultural Engineers; American Chemical Society; American Institute of Chemical Engineers; Sigma Xi.

Professional Recognition

Awards:

Brownlee Student Award, 12th International Symposium on Liquid Chromatography, Washington, D.C., June 1988.

Co-chair of technical sessions and symposia:

"Chromatographic Separation and Extraction," 199th American Chemical Society Meeting, Boston, MA, April 1990.
"Chromatographic Separation of Biomolecules," 201st American Chemical Society Meeting, Atlanta, GA, April 1991.
"Protein Adsorption in Bioprocessing." AIChE Conference on Food Engineering, Chicago, IL, November 1995.

Invited Lectures:

"Sorption-Induced Gradient Deformation in Ion-Exchange Chromatography," Yale University, May 1994.

PUBLICATIONS

Refereed Book Chapters

Yang, Y., A. Velayudhan, C.M. Ladisch and M.R. Ladisch, "Liquid Chromatography Using Polymeric Continuous Stationary Phases," in *Advances in Biochemical Engineering/Biotechnology*, A. Fiechter and G.T. Tsao (eds.), **49**, 147-160 (1993).

Velayudhan, A. and M.R. Ladisch, "Plate Models in Chromatographic Analysis and Implications for Scale-Up," in *Advances in Biochemical Engineering/Biotechnology*, A. Fiechter and G.T. Tsao (eds.), **49**, 123-145 (1993).

Velayudhan, A. and M.R. Ladisch, "Modulator Sorption in Gradient Elution Chromatography," in *Bioproducts and Bioprocesses 2*, T. Yoshida and R.D. Tanner (eds.), Chapter 4.6, pp. 217-232 (1993).

Ladisch, M.R. and A. Velayudhan, "Scale-Up Techniques in Bioseparation Processes," in *Bioseparation Processes in Foods*, R.K. Singh and S.S.H. Rizvi (eds.), Chapter 4, pp. 113-138, Marcel Dekker, New York (1995).

Refereed Journal Articles

Velayudhan, A. and Cs. Horváth, "On the Stoichiometric Model of Electrostatic Interaction Chromatography for Biopolymers," *J. Chromatogr.*, **367**, 160 (1986).

Velayudhan, A., B. Lillig, and Cs. Horváth, "Analysis of Multiple Front Formation in the Wetting of Thin Layer Plates," *J. Chromatogr.*, **435**, 397 (1988).

Velayudhan, A. and Cs. Horváth, "Preparative Chromatography of Proteins: Analysis of the Multivalent Ion-Exchange Formalism," *J. Chromatogr.*, **443**, 13 (1988).

Lee, J.Y., A. Velayudhan, and M.R. Ladisch, "Maintaining Constant Enzyme Activity in a Continuous Flow Reactor," *Chem. Eng. J.*, **45**, B1 (1990).

Monke, K.R., A. Velayudhan, and M.R. Ladisch, "Characterization of the Swelling of a Size-Exclusion Gel," *Biotech. Progress*, **6**, 376 (1990).

Velayudhan, A. and M.R. Ladisch, "Role of the Modulator in Gradient Elution Chromatography," *Anal. Chem.*, **63**, 2028 (1991).

Ladisch, C.M., Y. Yang, A. Velayudhan, and M.R. Ladisch, "A New Approach to the Study of Textile Properties by Liquid Chromatography," *Textile Res. J.*, **62**, 361 (1992).

Yang, Y., A. Velayudhan, C.M. Ladisch, and M.R. Ladisch, "Protein Chromatography Using a Continuous Stationary Phase," *J. Chromatogr.*, **598**, 169 (1992).

Velayudhan, A. and M.R. Ladisch, "Effect of Modulator Sorption in Gradient Elution: Gradient Deformation," *Chem. Eng. Sci.*, **47**, 233 (1992).

Basak, S., A. Velayudhan, and M.R. Ladisch, "Characterization of Buffers for Electrokinetic Separations," *Appl. Biochem. Biotech.*, **44**, 243-261 (1994).

Velayudhan, A. and Cs. Horvath, "Adsorptive and Ion-Exchange Isotherms in Preparative Chromatography," *J. Chromatogr.*, **A663**, 1-10 (1994).

Velayudhan, A., R.L. Hendrickson, and M.R. Ladisch, "Simultaneous Concentration and Purification Through Gradient Deformation in Gradient Elution Chromatography," *AIChE J.*, **41**, 1184-1193 (1995).

Velayudhan, A., K.L. Kohlmann, P.J. Westgate, and M.R. Ladisch, "Design of Bioregenerative Life Support Systems in Space Travel Analysis of Plant Harvest Indices," *Enz. Microb. Technol.*, **In Press**.

Kohlmann, K.L., P.J. Westgate, A. Velayudhan, J. Weil, A. Sarikaya, M.A. Brewer, R.L. Hendrickson, and M.R. Ladisch, "Enzyme Conversion of Lignocellulosic Plant Materials for Resource Recovery in a Controlled Ecological Life Support System," *Adv. Space Research*, **In Press**.

Velayudhan, A. and M.R. Ladisch, "Effect of Modulator Sorption on Gradient Shape in Ion-Exchange Chromatography," *Ind. Eng. Chem. Research*, **In Press**.

Refereed Proceedings

Kalghatgi, K., A. Velayudhan, S.-H. Park, Cs. Horváth, and C.M. Ambrus, "Detoxification of Heavy Metals by Perfusion with Hollow Fiber Cartridges Containing Chelating Resin," in *Proc. 12th Annual Northeast Bioengineering Conference*, S.C. Orphanoudakis (ed.), I.E.E.E., New York, p. 229 (1986).

Lee, A., A. Velayudhan, and Cs. Horváth, "Preparative HPLC," *Proc. 8th Int. Biotechnology Symp.*, G. Durand, M. Bobichon, and J. Florent, (eds.), Société Française de Microbiologie, Paris, **1**, 593 (1988).

Velayudhan, A., J.E. Porter, and M.R. Ladisch, "Modeling of Non-Linear Elution Chromatography for Preparative Scale Separations," in *AIChE Symposium Series*, **290**, 1 (1993).

Appendix D

Statement From the Director of Libraries

LIBRARY ASSESSMENT FOR CURRICULUM PROPOSAL

Category I: BS in Biological Engineering

Category II:

The subject librarian responsible for collection development in the pertinent curricular area has assessed the ability of library collections and services to support the proposal by examining: shelflist holdings; journal support (including standing orders and memberships); reference support; OASIS for pertinent subject headings, call numbers, authors, titles; existing external sources of support; related services (LIRS; CD-ROM; Documents; Maps; Special Collections; Guin Library; Microforms); comparisons with other library collections via RLIN, OCLC, AMIGOS CD-ROM, Internet (NOTE: The collections and services examined vary with the level of the proposal). Based on the examination, the subject librarian concludes that present collections and services are:

( ) inadequate to support the proposal (see budget needs below)
( ) marginally adequate to support the proposal
XX adequate to support the proposal

Estimated funding needed to upgrade collections and services to support the proposal (details are attached):

Year 1: $ 0.0
Ongoing: $ 0.0

Comments and Recommendations:

Biological engineering study at the undergraduate level will require synthesis of a number of information resources in biology, chemical engineering, biochemistry, and physics. Fortunately these areas have been well represented by past collection development efforts. Unfortunately, classification of this area may be confused with medical engineering which has used the "biological engineering" classification. Using OASIS, an S=Biochemical engineering search leads to greater then 200 holdings under biochemical engineering, genetcs, markers and biochemistry. S=Biotechnology leads to greater than 200 holdings including congresses and 12 serials. Other holdings and serials are included under chemical engineering. Currently, canidates for the life sciences reference position are being interviewed and my service to engineering reference remains. Any gaps in our collection can be made through interlibrary loans from the Oregon Healt Sciences Institute and University of Oregon - both having strong biology sections. CD and indexes include: Agricultural and Biological Index, and Biological Abstracts & Applied Science & Technology index. EI-Page one and The Engineering Index provides engineering literature citations.

Date Received: 7/13/95 Date Completed: 7/21/95

Subject Librarian: J. C. M. Lylinck

AUL Collection Development:

University Librarian: Charline Cross acting for Dr. George

Distribution: white (Curriculum Council)
green (Dean, College)
canary (Department Chair)
pink (AUL for Collection Development)
goldenrod (Subject Librarian)

REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

541/737-4344

FACULTY SENATE OFFICE
Social Science 107

Thursday, May 2, 1996; 3:00 pm - 5:00 pm
Construction & Engineering Hall
LaSells Stewart Center

AGENDA

The agenda for the May Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the April Senate meeting, as published and distributed to Senators.

A. SPECIAL REPORTS

1. OPEU Collective Bargaining

   Lois Brittain, OPEU Local 083 Vice President, and Jacquelyn Rudolf, OSU Human Resources Director, will report on contract negotiations to date.

2. Interinstitutional Faculty Senate Effort to Place Faculty Members on the OSBHE

   Leslie Davis Burns, IFS Representative, will report on the effort by IFS to have faculty members appointed to the Oregon State Board of Higher Education (see IFS Recap under "Information Items"). Following is the resolution approved by the Faculty Senate on January 5, 1995:

   > *The OSU Faculty Senate supports the Interinstitutional Faculty Senate in its efforts to seek two faculty representatives on the State Board of Higher Education.*

B. ACTION ITEMS

1. Category I Proposal — MEngr in Environmental Engineering (pp. 1–43)

   Walt Loveland, Curriculum Council Chair, will present the attached proposal for an MEngr degree in Environmental Engineering.

2. OPEU Resolution

The Faculty Senate Executive Committee urges approval of the following resolution:

WHEREAS the classified staff at Oregon State University are valued employees who provide essential services to the faculty, without which services the faculty would be unable to carry out their instructional and research duties,

THEREFORE BE IT RESOLVED that the Faculty Senate of Oregon State University urge classified employees represented by the Oregon Public Employees Union and the Oregon State System of Higher Education to secure a fair and equitable contract.

3. Faculty Panels for Hearing Committees (p. 44)

The Board's Administrative Rules define criteria and procedures for the imposition of sanctions for cause, including terminations of appointment (OAR 580-21-320 – 580-21-375). If such a sanction is to be imposed, the faculty member is entitled to a formal hearing of charges by a hearing committee to be selected from a faculty panel which has been duly established.

Nominees for each new panel are randomly selected. Faculty Panels for Hearing Committees are elected on even numbered years.

Ballots will be distributed during the meeting; balloting will be limited to Senators or their official representatives.

C. DISCUSSION ITEM

1. Diversity Issues

President Krane will provide a recap of responses from the Diversity Teach-in.

D. INFORMATION ITEMS

1. Extension Apportionment (pp. 45–47)

Attached are the recommendations from the off-campus Extension faculty and from the Committee on Bylaws and Nominations.

2. Interinstitutional Faculty Senate (pp. 48–51)

Attached is a recap of the April IFS meeting.

3. The Future of OSU (pp. 52–60)

Attached is a letter from President Risser to Chancellor Cox summarizing his thoughts about the future of OSU.

4. University Development (pp. 61–70)

Attached is a document prepared by President Risser concerning reorganization of university development activities.

E. REPORTS FROM THE PROVOST

Roy Arnold, Provost & Executive Vice President for Academic Affairs

F. REPORTS FROM THE FACULTY SENATE PRESIDENT

President Ken Krane

G. NEW BUSINESS

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR UNIT AFFILIATION WHEN RISING TO SPEAK.

Please recycle this agenda

Faculty/Sabbatical Housing information available from the Faculty Senate Office via GOPHER:

— Select *OSU Information & Services*, then *Faculty/Sabbatical Housing List*

DEPARTMENT OF
CHEMISTRY

4 April, 1996

Professor Ken Krane
Faculty Senate Office
Oregon State University

Dear Professor Krane,

I am pleased to report to you that the Curriculum Council approved the Category 1 proposal to establish an ME degree in Environmental Engineering. This action was taken at the Council's regular meeting on 2 April, 1996. We understand that the State Board has approved of having the Faculty Senate examine/approve this proposal even though the Board has not finished its review of the pre-proposal for this degree. The approval by the Senate will allow timely action on this matter at a time when the normal Senate committees are not functioning. The pre-proposal has been approved by the Academic Council of the Board and this proposal has been approved by the Budgets and Fiscal Planning Committee. We are transmitting this proposal to you in hopes that the Faculty Senate can act in a timely manner on this proposal.

Thank you.

Sincerely,

Walter Loveland

Walter Loveland
Professor of Chemistry
Chair, Curriculum Council

WDL/clp

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TO: Faculty Senate Office

FROM: Jack Drexler, Chair
Graduate Council

DATE: April 17, 1996

SUBJECT: Proposal for Masters in Engineering in Environmental Engineering

Regarding the proposed Masters in Engineering in Environmental Engineering program, the Graduate Council "voted to approve the proposal with the condition that it be reviewed by the Graduate Council within three years of initiation." This action was taken on January 11, 1996 and the proposal reviewed had a Graduate School receipt stamp dated November, 1995.

CC: Tom Maresh
Mary Prucha
John Ringle

Category I Transmittal Sheet

Category I Proposal for the Initiation of a New Instructional Program Leading to an MEngr in Environmental Engineering

Submitted by the Department of Civil, Construction, and Environmental Engineering

College of Engineering

Oregon State University



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

Wayne C Huber 11/6/95

Wayne Huber, Head, Department of Civil, Construction and Environmental Engineering — Date

John Owen 6 November 1995

John Owen, Dean, College of Engineering — Date

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Oregon State University
College of Engineering
Department of Civil Engineering

Category I Proposal for the Initiation of a New Instructional Program Leading to an MEngr in Environmental Engineering

OVERVIEW

The Department of Civil Engineering currently offers graduate programs leading to M.S. and Ph.D. degrees in Civil Engineering and a Masters in Ocean Engineering (M.Oc.E). Graduate students with interests in environmental engineering currently elect the M.S. or Ph.D. in Civil Engineering and focus their major course work within environmental engineering. We are proposing to create a new MEngr in Environmental Engineering (EnvE). It will differ from the existing M.S. degree program in that it will provide a course work only option to allow distance learners to more readily meet requirements for graduation.

The proposed MEngr in Environmental Engineering was developed by the Environmental Engineering faculty in the Departments of Civil Engineering at Oregon State and Portland State Universities. The proposed degree is patterned after the model presented in the document entitled "Guidelines for Establishing Joint-Campus Graduate Programs" written by the Graduate Deans of the OSSHE Universities (1992).

This proposal describes the degree structure, admission and exit requirements for students pursuing OSU's MEngr in Environmental Engineering. A proposal is also being prepared to create an MEngr in Environmental Engineering at PSU. While the OSU and PSU degrees may differ in the areas of concentration that students elect within their major, the programs were created in parallel and course work is offered cooperatively. Because this is a joint-campus graduate program, additional program information is provided in Appendix A.

1. DEFINITION OF ACADEMIC AREAS

a. *Define or describe the academic area or field of specialization with which the proposed program would be concerned.*

The proposed MEngr in Environmental Engineering provides students with course work in environmental engineering science and environmental engineering design. Students will gain expertise in physical, chemical, and biological processes in engineered and natural systems.

b. *What subspecialties or areas of concentration would be emphasized during the initial years of the program?*

Students entering the MEngr in EnvE program commonly develop programs supporting the following areas (or combinations of areas):

- water and wastewater treatment,
- hazardous waste remediation,
- hazardous substance management,
- groundwater hydraulics and groundwater quality modeling,
- surface hydrodynamics and water quality modeling,
- natural systems modeling, and
- water resources engineering.

Student programs will be created in consultation with a faculty advisor and must be approved by a program committee consisting of OSU environmental engineering faculty and the Department Chair.

c. *Are there other subspecialties the institution would anticipate adding or emphasizing as the program develops?*

The environmental engineering profession is changing rapidly. Although we do not anticipate prescribing requirements for specializations, specializations may emerge as the program develops and the field evolves.

d. *Are there other subspecialties that the institution intends to avoid in developing the program?*

We intend to avoid developing subspecialties without an engineering focus.

e. *When will the program be operational, if approved?*

We will continue to accept students into our existing M.S. in Civil (Environmental) Engineering degree program. Upon approval of the MEngr in EnvE, students will be given the opportunity to choose between the M.S. and MEngr programs. We hope to have the program in place at the beginning of fall quarter, 1996.

2. DEPARTMENT OR COLLEGE RESPONSIBLE

a. *What department and college would offer the proposed program?*

The degree will be administered by the Department of Civil Engineering within the College of Engineering at OSU. The Civil Engineering Department at Portland State University within the School of Engineering and Applied Science will administer a similar degree program.

b. Will the program involve a new or reorganized administrative unit within the institution?

No new administrative structure is required. However, coordination with PSU is important.

3. OBJECTIVES OF THE PROGRAM

a. What are the objectives of the program?

Our goal is to provide a master's level graduate program for on-campus students and distance learners that will prepare students for environmental engineering careers in industry, regulatory agencies, consulting firms, and municipalities. Course work in support of this program is offered cooperatively by the Environmental Engineering faculty at OSU and PSU. The new MEngr will benefit on-campus students by providing a course work only option. The greatest benefit will be to distance learners and part-time students by providing them with a program that will allow them to meet the requirements for a graduate degree in environmental engineering.

b. How will the institution determine how well the program meets these objectives? Identify specific post-approval monitoring procedures and outcome indicators to be used if the program is approved.

The Oregon Joint Graduate Schools of Engineering (OJGSE) Technical Advisory Board (TAB) for Environmental Engineering has recommended funding for this program and will provide program evaluation and monitoring. TAB membership includes individuals representing industry, consulting, and regulatory agencies (Table 1).

If approved, the MEngr in EnvE will be subject to review by OSU's Graduate School. The Department of Civil Engineering will maintain records of student progress (acceptances, matriculation, graduation, etc.). A survey will be conducted at the end of the program's first year of operation to determine on-campus and off-campus responses. A survey of student employer's will also be conducted after the second year. This information will be provided to the TAB and the Graduate School for review and suggestions for program modification.

Table 1 - OJGSE Environmental Engineering Technical Advisory Board Membership

Advisory Board Member	Affiliation
Mark Lasswell, chair	CH2M Hill
Jeff Dresser	CH2M Hill
Roy Moore	RZA Agra
Stewart McKenzie	USGS
David Welch	Oregon Environmental Technology Association
Brian Krytenberg	Johnson Controls
Frank Deaver	Tektronix, Inc.
Robert Baumgartner	DEQ
David Driscoll	Geotechnical Resources, Inc.

c. *How is the proposed program related to the mission and academic plan of the institution?*

OSU is a Land Grant, Sea Grant, and Space Grant university with a "special responsibility for education and research enabling the people of Oregon and the world to develop and utilize human, land, atmospheric, and oceanic resources" (Oregon State University, 1994). Environmental research and education is one of OSU's greatest strengths. PSU is a comprehensive urban university whose mission is to "enhance the intellectual, social, cultural, and economic qualities of urban life" and seeks to accomplish this, in part, by providing an "appropriate array of professional and graduate programs especially relevant to the metropolitan area" (Portland State University, 1994). The proposed program will support these missions.

OSU and PSU, jointly, have a responsibility to deliver graduate environmental engineering education to students throughout the State of Oregon. This program is being developed to better serve distance learners. However, OJGSE funding and the MEngr program will also benefit on-campus students because it will allow us to provide additional course offerings and a course work only option. PSU will benefit from OSU's expertise in chemical and biological processes, while OSU will benefit from PSU's expertise in hydrologic, groundwater, and surface water quality modeling.

d. *What are the employment opportunities for persons who have been educated in the proposed program?*

Students completing the MEngr in EnvE will be well suited for employment in industry, consulting firms, municipalities, and regulatory agencies. Prior to 1980, environmental engineers focused on the design of water and wastewater treatment facilities, air quality, and solid waste management. Many environmental engineers focused on water quality, while others specialized in water quantity such as surface water hydrology or hydraulics. Although these areas continue to be central to environmental engineering, it is estimated that the costs for hazardous wastes remediation and hazardous substance management will dwarf the wastewater treatment plant construction boom of the 1970s. The proposed program offers students an opportunity the gain knowledge in the field of hazardous waste management and remediation.

4. RELATIONSHIP OF PROPOSED PROGRAM TO OTHER PROGRAMS IN THE INSTITUTION

List the closely related programs and areas of strength currently available in the institution which would give important support to the proposed program.

OSU has great strength in environmental education. Programs in Environmental Health, Toxicology, Chemical Engineering, Bioresource Engineering, and the basic and environmental sciences support the MEngr in Environmental Engineering program. Each year, we recommend over 100 different graduate courses to our current students for fulfillment of their degree requirements. While there are many supporting programs at OSU, none serve distance learners or part-time students with interests in environmental engineering.

The following programs are closely related to the MEngr in Environmental Engineering:

B.S. in Environmental Engineering
M.S. in Civil (Environmental) Engineering
M.S. in General (Environmental) Science

There are important differences between the MEngr in Environmental Engineering and each of the degree options listed above.

B.S. in Environmental Engineering. The EnvE baccalaureate degree was developed to prepare students for environmental engineering careers and for graduate education in environmental engineering. In creating the B.S. degree, we were careful to separate the undergraduate program from our graduate program. For example, only three required courses within the B.S. in EnvE degree are 400/500 level courses (ENVE 421/521, 422/522, 451/551). Most of our masters level course work is offered only at the graduate level.

The goals of the undergraduate and graduate programs in environmental engineering are different. Undergraduate environmental engineering education is broadly based. Students are required to take environmental engineering course work ranging from mass transfer to ecology. Course work includes environmental health, air pollution control, hazardous substance management, water and wastewater treatment, plus engineering design and engineering science course work to meet accreditation requirements and to prepare them for the Fundamentals of Engineering examination and for registration as a Professional Engineer. At the graduate level, students commonly specialize in one or two areas of environmental engineering such as the specializations listed on page 2.

M.S. in Civil (Environmental) Engineering. If the MEngr in Environmental Engineering is approved, the Department will continue to offer the M.S. in Civil Engineering and students may continue to complete the degree with an environmental engineering emphasis. The M.S. program differs from the MEngr in that thesis and project options are available. Additionally, while the MEngr degree program includes a course work only or internship option, these options are unavailable in the M.S. program.

M.S. in General (Environmental) Science. The primary difference between environmental engineering and environmental science curricula is in the importance that all engineering disciplines place on engineering design.

5. COURSE OF STUDY

a. Describe the proposed course of study.

The MEngr in EnvE requires 48 credits of course work with 33 credits focused in a major and 15 in a minor. A summary of degree requirements is provided in Table 2.

Students will be required to complete course work in each of the following areas:

1. physical processes such as surface water or groundwater hydraulics, surface water or groundwater quality modeling, or other approved course work;

10.

Table 2: Summary of Requirements for the Environmental Engineering Major

Minimum credit requirements for the MEngr in Environmental Engineering	48
Minimum credit requirements for the major	33
Minimum credit requirements for the minor	15
Distribution requirements within the major	
Minimum course work in physical processes	3
Minimum course work in chemical processes to include 2 or more credits of "Aqueous Environmental Chemistry" (currently ENVE 532; formerly CE 550)	6
Minimum course work in biological processes to include 2 or more credits of "Microbial Processes in Environmental Systems" (currently ENVE 541; formerly CE 555)	4
Minimum course work in engineering design	3
Minor	
Students may elect a departmental minor, an interdisciplinary minor (such as water resources), or an integrated minor.	
Credit limitations	
No more than 9 credits of blanket numbered course work (combined a, b, c, and d below) may be applied toward the MEngr degree with the following additional limitations:	
a. Internship (6 credits maximum)	0-6
b. Research (6 credits maximum)	0-6
c. Seminar (3 credits maximum)	0-3
d. Reading and conference (3 credits maximum)	0-3
Exit requirements	
All students will be required to pass a written exit examination. The exam will be administered quarterly and may be in the student's last quarter of course work. Students will be allowed to take the examination three times. Those unable to pass the examination upon the third attempt will be given the opportunity to be reexamined after repeating applicable course work.	
All programs must be approved by the Environmental Engineering Program Committee consisting of 3 members of OSU's Environmental Engineering faculty and by the Department Chair.	

1. chemical processes to include aqueous, analytical, and organic chemistry;

2. microbial processes to include biological wastewater treatment fundamentals and bioremediation;

3. engineering design; and

4. an approved minor.

Most of our current on-campus students in the M.S. in Civil (Environmental) Engineering program elect the interdisciplinary water resources minor or create an integrated minor that supports their interests. For example, students with interests in bioremediation may combine course work from the Departments of Civil Engineering, Crop and Soil Science, Microbiology, and Bioresource Engineering. Students with interests in environmental policy create an integrated minor typically including course work from the Colleges of Engineering, Liberal Arts, Health and Human Performance, and Business.

Examples of civil engineering course work at OSU and PSU in physical, chemical, and biological processes and environmental engineering design are provided in Table 3.

b. *What elements of this course of study are presently in operation in the institution?*

The program is a reorganization of existing OSU course work.

c. *How many and which courses will need to be added to institutional offerings in support of the proposed program?*

A course request to create an environmental engineering internship is being developed.

6. ADMISSION REQUIREMENTS

a. *Please list any requirements for admission to the program that are in addition to admission to the institution.*

Admission requirements for OSU's M.S. in Civil (Environmental) Engineering and the MEngr in Environmental Engineering will be identical. Admission requirements will be as follows:

- an undergraduate degree in engineering, science, or closed related field where students have completed course work in calculus, physics, and chemistry,
- a minimum GPA of 3.0 in the last 90 quarter hours of course work,
- combined (verbal and quantitative) GRE scores exceeding 1100, and
- a minimum TOEFL score of 580.

b. *Will any enrollment limitations be imposed? Please indicate the limitation and rationale therefore. How will those to be enrolled be selected if there are no enrollment limitations?*

All qualified students will be accepted.

12.

Table 3: Examples of Allowable Environmental Engineering Course Work

Distribution Requirement	Example OSU Environmental Engineering Course Work	Example PSU Environmental Engineering Course Work
Physical Processes		
	CE 514: Groundwater Hydraulics (3)	CE 569: Introduction to Subsurface Flow and Contaminant Transport (3)
	CE 518: Groundwater Modeling (3)	CE 570: Numerical Modeling of Subsurface Flow and Contaminant Transport (3)
		CE 571: Advanced Topics in Subsurface Flow and Contaminant Transport (3)
	CE 548: Water Quality Dynamics (3)	CE 578: Water Quality Modeling (3)
	CE 512: Hydrology (3)	CE 564: Hydrologic and Hydraulic Modeling (3)
	CE 543: Applied Hydrology (4)	CE 565: Advanced Hydrologic and Hydraulic Modeling (3)
	CE 525: Stochastic Hydrology (3)	CE 566: Stochastic Hydrologic and Hydraulic Modeling (3)
	CE 517: Hydraulic Engineering (3)	CE 567: Hydrologic and Hydraulic Design (3)
	CE 544: Open Channel Hydraulics (4)	
		CE 572: Environmental Fluid Mechanics I (3)
		CE 576: Environmental Fluid Mechanics II (3)
Chemical Processes		
	ENVE 521: Water and Wastewater Characterization (CE 551) (3)	
	ENVE 531: Transport and Fate of Organic Chemicals in Environmental Systems (CE 567) (3)	
	ENVE 535: Transport and Fate of Organic Chemicals Laboratory (1)	
	ENVE 532: Aqueous Environmental Chemistry (CE 550) (1,3)	
	ENVE 536: Environmental Chemistry Laboratory (1)	CE 574: Unit Operations of Environmental Engineering (3)
	ENVE 534: Physical and Chemical Processes for Water and Wastewater Treatment (CE 558) (3)	CE 575: Advanced Physical/Chemical Environmental Engineering Processes (3)
	ENVE 537: Physical/Chemical Processes Laboratory (1)	
	ENVE 553: Hazardous Waste Remediation (CE 557) (3)	

Table 3: Examples of Allowable Environmental Engineering Course Work, continued

Distribution Requirement	Example OSU Environmental Engineering Course Work	Example PSU Environmental Engineering Course Work
Biological Processes		
	ENVE 541: Microbial Processes in Environmental Systems (CE 555) (1,3)	
	ENVE 542: Microbiological Processes for Municipal and Hazardous Waste Treatment (CE 559) (1,3)	CE 574: Unit Operations of Environmental Engineering (3)
	ENVE 545: Microbial Processes Laboratory (1)	
Environmental Engineering Design		
	ENVE 534: Physical and Chemical Processes for Water and Wastewater Treatment (CE 558) (3)	CE 574: Unit Operations of Environmental Engineering (3)
	ENVE 542: Microbiological Processes for Municipal and Hazardous Waste Treatment (CE 559) (3)	CE 575: Advanced Physical/Chemical Environmental Engineering Processes (3)
	ENVE 554: Groundwater Remediation (CE 516) (3)	
	ENVE 522: Environmental Engineering Design (CE 553) (3)	
	ENVE 553: Hazardous Waste Remediation (CE 557) (3)	
	CE 520: Engineering Planning (3)	
	CE 511: Ocean Engineering (3)	
	CE 513: Water Resources Design (3)	
	CE 517: Hydraulic Engineering (3)	
	CE 519: Municipal Planning and Engineering (3)	
Other Elective Course Work		
	ENVE 551: Management of Hazardous Substances (CE 560) (3)	CE 573: Computer Modeling in Environmental Engineering (3)
	ENVE 511: Selected Topics in Environmental Engineering (1-3)	CE 591: Engineering Optimization (3)
	CE 566: Environmental Assessment (3)	CE 510 Environmental Data Statistics (3)
	CE 545: Sediment Transport (3)	CE 577: Solid Waste Management (3)
	CE 546: River Engineering (3)	CE 561: Water Resources System Analysis (3)

7. RELATIONSHIP OF PROPOSED PROGRAM TO FUTURE PLANS

a. Is the proposed program the first of several steps the institution has in mind in reaching a long-term goal in this or a related field?

The proposed program is part of a group of undergraduate and graduate degrees in environmental engineering. No additional degree programs in environmental engineering are anticipated. However, the Departments of Civil Engineering at OSU and PSU are cooperating to develop a Ph.D. program at PSU.

b. If so, what are the next steps to be if the Board approves the program presently being proposed?

None.

8. ACCREDITATION OF THE PROGRAM

a. Is there an accrediting agency or professional society which has established standards in the area in which the proposed program lies? (Please give name.)

No.

b. If so, does the proposed program meet the accreditation standards? If it does not, in what particulars does it appear to be deficient? What steps would be required to qualify the program for accreditation? By what date is it anticipated that the program will be fully accredited?

Not applicable.

c. If the proposed program is a graduate program in which the institution offers an undergraduate program, is the undergraduate program fully accredited? If not, what would be required to qualify it for accreditation? What steps are being taken to achieve accreditation?

The B.S. in Civil Engineering, as well as all baccalaureate programs in the College of Engineering at both OSU and PSU, is accredited. The new B.S. in Environmental Engineering will be evaluated for accreditation upon graduation of two classes. While it is not yet accredited, the B.S. in EnvE was designed to meet all accreditation requirements.

9. EVIDENCE OF NEED

a. What evidence does the institution have of need for the program? Please be explicit.

This program was developed in response to the need for increased access to graduate engineering education in the Portland Metropolitan Area and to serve place-bound students throughout Oregon. Although this degree program will also on-campus or off-campus students, the primary goal is to establish a program that will allow working professionals to complete an MEngr in Environmental Engineering.

b. *What is the estimated enrollment and the estimated number of graduates of the proposed program over the next five years? If the proposed program is an expansion of an existing one, give the enrollment in the existing program over the past five years.*

Is the proposed program intended primarily to provide another program option to students who are already being attracted to the institution, or is it anticipated that the proposed program will draw its clientele primarily from students who would not otherwise come to the institution were the proposed program not available here?

The current Environmental Engineering M.S. program is very well enrolled. We currently accept 50 to 80 students per year into the M.S. program; about 1/3 of which matriculate. Enrollment in the CE (EnvE) M.S. program for the past 5 years is shown in Table 4. It is the largest graduate program within the Department of Civil Engineering and is larger than graduate programs in many departments within the College of Engineering. While we expect that many of the current environmental engineering M.S. students will elect the MEngr, we expect little overall change in the numbers of on-campus (M.S. + MEngr) students. We expect that once the MEngr program is established, an equal number of distance learners will enter the MEngr program, thus doubling our total enrollment at the masters level. These distance learners would not otherwise have attended OSU.

Table 4. Summary of M.S. Civil (Environmental) Engineering Enrollment

Academic year	Number of M.S. students enrolled in the required fall term course (new students)
1991/92	22
1992/93	29
1993/94	39
1994/95	17
1995/96	23

c. *Identify statewide and institutional service area manpower needs the proposed program would assist in filling.*

See part d.

d. *What evidence is there that there exists a regional or national need for additional qualified persons such as the proposed program would turn out?*

It is estimated that baccalaureate and graduate engineering programs in the U.S. currently provide the environmental engineering field with 1,000 to 2,000 graduates per year. These include students completing graduate or undergraduate programs in environmental engineering plus students graduating from civil, chemical, or other engineering disciplines that become employed in the environmental field. This is less than half of the estimated demand of 2,000 to 5,000 new environmental engineering graduates per year (Baillod, et al., 1991).

e. *Are there any other compelling reasons for offering the program?*

This program presents an opportunity for OSU and PSU to cooperate to provide graduate level environmental engineering education to students throughout the State of Oregon. Student interest in the program is high, and we have a responsibility to provide education to students that cannot leave their homes and place of employment for extended periods of time to earn a graduate degree.

f. *Identify any special interest in the program on the part of local or state groups (e.g., business, industry, agriculture, professional groups.)*

This program has been recommended by the OJGSE Technical Advisory Board. It serves the needs of their employees and will provide a benefit to industry, consulting firms, and regulatory agencies.

g. *Have any special provisions been made for making the complete program available for part-time or evening students?*

This program has been created to serve on-campus students and distance learners, part-time and full-time students. The most important aspect of the program is the variety of ways in which students may gain course credits. Students may fulfill degree requirements with combinations of traditional graduate courses, short courses, correspondence courses, Ednet courses, and other forms of self-study (such as multi-media CD-ROM). Recitations, field trips, and laboratories will be offered on weekends and in the evening as well as during traditional class times; and they will be offered in Portland as well as Corvallis.

10. SIMILAR PROGRAMS IN THE STATE

a. *List any similar programs in the state.*

OSU, PSU and the Oregon Graduate Institute provide the only graduate programs in Environmental Engineering in the State of Oregon.

b. *If similar programs are offered in other institutions in the state, what purpose will the proposed program serve? Is it intended to supplement, complement, or duplicate existing programs?*

The MEngr is intended to be offered in addition to M.S. (thesis) programs currently offered at OSU and PSU. OGI offers a course work only M.S. for students in the Portland area. The MEngr program does not duplicate existing programs because it is being developed to serve distance learners throughout the State of Oregon.

c. *In what way, if any, will resources of any other institutions be utilized in the proposed program?*

Funding for this program is provided through the Oregon Joint Graduate Schools of Engineering. This funding allowed the addition of an environmental engineering faculty member at OSU and at PSU and provides $98,000 per year for the development and teaching of course work for distance learners.

11. FACULTY

a. *List any present faculty who would be involved in offering the proposed program, with pertinent information concerning their special qualifications for service in this area. Attach an up-to-date resume for each individual.*

The following is a brief description of the participating environmental engineering faculty within the Civil Engineering Department. Their vitae appear in Appendix B.

Wayne C. Huber, Ph.D., P.E., Massachusetts Institute of Technology, 1968. Dr. Huber is Head of the Department of Civil Engineering. His teaching interests are in the areas of applied hydrology and water quality modeling. Dr. Huber's research interests include urban stormwater hydrology, modeling, and management, and surface and groundwater quality assessment. Dr. Huber has major responsibility for development of the EPA's SWMM model which is widely used for urban stormwater management and combined sewer overflow studies.

Kenneth J. Williamson, Ph.D., P.E., Stanford University, 1973. Dr. Williamson serves as associate director of the Western Region Hazardous Substance Research Center in charge of Technology Transfer. His teaching interests include hazardous waste management, biological treatment process design, and environmental engineering fundamentals. He is also an expert at applying learning style theory to engineering education. Dr. Williamson's research interests include innovative biological and chemical waste treatment process development, bioremediation of contaminated soils and groundwater, hazardous waste management, and environmental impact assessments.

Sandra L. Woods, Ph.D., University of Washington, 1985. Dr. Woods' teaching interests include biological wastewater treatment, environmental fate of xenobiotic compounds, and bioremediation. Her research interests include the development of bioremediation strategies for chlorinated aromatic compounds, and understanding the factors that affect degradation pathways and kinetics for hazardous substances.

Peter O. Nelson, Ph.D., Cornell University, 1975. Dr. Nelson's teaching interests are in the areas of aquatic chemistry and physical and chemical treatment process fundamentals and design. His research interests include the environmental chemistry of metals, remediation of metals-contaminated soils and groundwater, and lake water quality assessment. Recent funded studies have focused on the sorption and reduction of hexavalent chromium in natural soils, nutrient loading model assessment of Oregon's coastal lakes, and lead chemistry in soils. Dr. Nelson is also technical adviser to the Western Region Lead Training Center funded by EPA.

Lewis Semprini, Ph.D. Stanford University, 1986. Dr. Semprini's teaching interests are in the areas of hazardous waste treatment, groundwater remediation, and laboratory-scale treatment processes. His

research interests include enhanced in-situ bioremediation of chlorinated solvents, field modeling studies of transport and fate of hazardous substances in the subsurface, and the use of radon as in in-situ tracer for determining properties of the subsurface system. Dr. Semprini has extensive experience in managing pilot scale field studies directed toward developing methodologies for aquifer restoration.

Jonathan D. Istok, Ph.D., Oregon State University, 1986. Dr. Istok's teaching interests are in the areas of groundwater hydraulics, groundwater transport modeling, and groundwater remediation. His research interests include geostatistical and mathematical modeling of groundwater flow and solute transport, and geostatistical methods for estimating hydrologic data. Dr. Istok has recently published two books in his areas of teaching and research interest.

b. *Estimate the number, rank, and background of new faculty members that would need to be added to initiate the proposed program; that would be required in each of the first four years of the proposed program's operation, assuming the program develops as anticipated in item 9b. What kind of commitment does the institution make to meeting these needs? What kind of priority does the institution give this program in staff assignment?*

No new faculty need be added to offer the MEngr in EnvE.

c. *Estimate the number and type of support staff needed in each of the first four years of the program.*

No additional staff are needed.

12. LIBRARY

a. *Describe, in as objective terms as possible, the adequacy of the Library holdings that are relevant to the proposed program (e.g., if there is a recommended list of library materials issued by the American Library Association or some other responsible group, indicate to what extent the institution's library holdings meet the requirements of the recommended list).*

An assessment of library resources was conducted and resources were determined adequate to support the proposed program (Appendix C).

b. *How much, if any, additional library support will be required to bring the Library to an adequate level for support of the proposed program?*

No additional resources are required.

c. *How is it planned to acquire these Library resources?*

Not applicable

d. *Attach a statement from the Director of Libraries indicating present resources and funding of future needs.*

See Appendix C.

13. FACILITIES AND EQUIPMENT

a. *What special facilities in terms of buildings, laboratories, equipment are necessary to the offering of a quality program in the field and at the level of the proposed program?*

Current facilities are adequate but will require multiple laboratory sections to accommodate students.

b. *What of these facilities does the institution presently have on hand?*

The Environmental Engineering program is housed in Merryfield Hall. Over 4000 ft^2 of laboratory space is used by the Environmental Engineering Program for research and teaching. Environmental Engineering's Groundwater Research Laboratory is an off-campus facility that houses several large-scale two- and three- dimensional physical aquifer models for contaminant transport and groundwater remediation studies. Field facilities include an experimental groundwater transport well array and a sediment bedload transport laboratory on a local stream.

c. *What facilities beyond those now on hand would be required in support of the program?*

No new facilities are required. As the program grows, additional laboratory equipment and facilities may be required. However, we feel we can schedule short-courses and laboratories within our current constraints by offering multiple sections.

d. *How does the institution propose these additional facilities and equipment shall be provided?*

No new facilities are required.

14. BUDGETARY IMPACT

a. *Please indicate the estimated cost of the program for the first four years of its operation, following the format found on page 22 of this document.*

All courses are in place and no additional resources are required to offer the MEngr for on-campus students. Resources are required, however, to develop and deliver course work for distance learners. The OJGSE Technical Advisory Board has allocated $98,000 per year in support of the MEngr. OSU expects to receive 5/8 of the total funding or $61,250 per year.

Our goal is to develop nine 1-credit teaching modules per year (5 by OSU faculty and 4 by PSU faculty). Over several years, distance learners should have access to adequate course work to complete degree requirements. Currently, we are developing CD-ROM based multi-media course work.

b. *If a special legislative appropriation is required to launch the program (as shown in item 4b of the estimated budget), please provide a statement of the nature of the special budget request, the amount requested, and the reasons a special appropriation is needed. How does the institution plan to continue the program after the initial biennium?*

No special legislative appropriation is necessary. OJGSE funds have been allocated.

c. *If federal or other grant funds are required to launch the program (items 4c and 4d), what does the institution propose to do with the program upon termination of the grant?*

None is required.

d. *Will the allocation of going-level budget funds in support of the program have an adverse impact on any other institutional programs? If so, which program and in what ways?*

No impact is expected.

e. *If the program will be financed from existing resources, specifically state:*

(1) what the budgetary unit will be doing as a result of the new program that is not now done in terms of additional activities; and
(2) what these new activities will cost and whether financed or staffed by shifting of assignments within the budgetary unit or reallocation of resources within the institution.

This program will be financed through OJGSE funds. The TAB has allocated $98,000 per year for the program. The portion of these funds coming to OSU is 5/8 or $61,250.

f. *State which resources will be moved and how this will affect those programs losing resources.*

New resources are not required and we do not anticipate the loss of resources from existing programs. In fact, we expect that tuition generated from the enrollment of 20 new part-time distance learners in the OSU/PSU programs will generate tuition revenue equal to the OJGSE's annual support of $98,000.

15. REFERENCES

Baillod, Robert et al., "Development of Environmental Engineering Baccalaureate Programs and Degrees," Environmental Engineering Education in the Year 2000, Kenneth Williamson, editor, Oregon State University, 1991.

Graduate Deans of the OSSHE Universities, "Guidelines for Establishing Joint-Campus Graduate Programs," prepared for the Oregon State Board of Higher Education, May 22, 1992.

Oregon State University, "Mission Statement," Fact Book, 1994.

Portland State University, General Catalog, 1994.

Summary of Estimated Costs or Savings and Sources of Funds

Program/Unit MEngr in Environmental Engineering; Department of Civil Engr.

Institution Oregon State University

	First Year	FTE	Second Year	FTE	Third Year	FTE	Fourth Year	FTE
RESOURCES REQUIRED								
Personnel								
Faculty	$ 42,936		$ 42,936		$ 42,936		$ 42,936	
Graduate Assistants	$ 12,960		$ 12,960		$ 12,960		$ 12,960	
Support Personnel	$ 2,200		$ 2,200		$ 2,200		$ 2,200	
Fellowships & Scholarships	$		$		$		$	
Total	$ 58,096		$ 58,096		$ 58,096		$ 58,096	
Percentage Total from State Funds	$ 100%		$ 100%		$ 100%		$ 100%	
Other Resources								
Library	$		$		$		$	
Supplies & Services	$ 3,154		$ 3,154		$ 3,154		$ 3,154	
Movable Equipment	$		$		$		$	
Total	$ 61,250		$ 61,250		$ 61,250		$ 61,250	
Percentage Total from State Funds	$ 100%		$ 100%		$ 100%		$ 100%	
Physical Facilities								
Construction of New Space or Major Renovation	$		$		$		$	
Percentage Total from State Funds	$		$		$		$	
GRAND TOTAL	$ 61,250		$ 61,250		$ 61,250		$ 61,250	
Percentage Total from State Funds	$ 100%		$ 100%		$ 100%		$ 100%	
SOURCE OF FUNDS								
State Funds—Going Level Budget	$		$		$		$	
State Funds—Special Approp.	$ 61,250		$ 61,250		$ 61,250		$ 61,250	
Federal Funds	$		$		$		$	
Other Grants	$		$		$		$	
Fees, Sales, Etc.	$		$		$		$	
Other	$		$		$		$	

22.

Appendix A

Joint-Campus Programs
Masters of Engineering in Environmental Engineering

PROGRAM REVIEW FORM: JOINT-CAMPUS GRADUATE PROGRAMS

I. PROGRAM ADMINISTRATION

1. *Describe the nature of cooperation between the departments/programs on participating campuses.*
   a) Identify home department(s) or program(s).
   b) Explain how individual students will determine their home department or campus.

The Departments of Civil Engineering at OSU and PSU will offer two separate, but coordinated MEngr degree programs. While entrance requirements and degree structures will be similar, each university will administer their own degree program. Cooperation will largely be in the form of shared course work.

Students will apply to enter either the MEngr in EnvE program at Oregon State or Portland State University. For students entering OSU's MEngr, their home department will be the Department of Civil Engineering.

2. *Describe the administrative organization of the proposed joint-campus program activity. Will this involve administrative units beyond the program units (Admissions Offices, Registrars, Financial Aid, etc.)?*

No new administrative structure will be required. Admissions, registration and financial aid will be a administered by existing units at OSU. Coordination of EnvE course work is performed by a committee of OSU and PSU environmental engineering faculty.

3. *What are the criteria for admission to the proposed program? What are the conditions and criteria for exceptions or provisional admissions? How is the review of applicants conducted, and by whom? Is application review campus-specific or on a joint-campus basis?*

Entrance to the MEngr program requires a minimum GPA of 3.0 in the last 90 quarter hours of course work, minimum GRE (verbal + quantitative) scores of 1100, and TOEFL scores exceeding 580. Provisional admittance may be granted upon review by the Graduate School, Department Chair, and an admission committee of Environmental Engineering faculty.

4. *What funds have been identified for support of graduate students? Describe the criteria and procedures for awarding of assistantships, fellowships, etc.*

Students entering the MEngr program may be on-campus students or distance learners. All students will be considered for financial assistance. However, distance learners are unlikely to gain funding through traditional research or teaching assistantships. We anticipate that most of the distance learners will be part-time students that are employed and self-supporting.

5. *What is the recruiting plan proposed for attracting students to the new program?*

Recruiting will be conducted jointly by OSU and PSU and individually by each institution. Upon approval of this degree program, OSU's environmental engineering faculty will revise our current brochure to include this new degree program. In addition, the Departments of Civil Engineering at OSU and PSU will create a brochure describing this joint program. This information will be distributed widely throughout the State of Oregon.

6. *What is the number of new students expected in the joint-campus program each year? Explain how this will impact the number of resident campus majors. What is the total number of enrolled students (resident and joint-campus) expected each year over a period of five years? What is the number of degrees expected to be awarded each year? What is the expected attrition level?*

The current Environmental Engineering M.S. program is very well enrolled. We currently accept 50 to 80 students per year into the M.S. program; about 1/3 of which matriculate. Enrollment in the CE (EnvE) M.S. program for the past 5 years is shown in Table 4 (page 12). While we expect that many of the current environmental engineering M.S. students will elect the MEngr, we expect little overall change in the numbers of on-campus (M.S. + MEngr) students. We expect that once the program is established, an equal number of off-campus students will enter the MEngr program, thus doubling our total enrollment at the masters level.

7. *How will data for the joint-campus program be collected and maintained? Who will record data, what data will be recorded, and in what format?*

Since the MEngr will be administered separately on each campus, data concerning student admissions, graduation, financial assistance, etc. will be maintained within the Department of Civil Engineering.

II. STUDENT PROGRAMS

1. *What are the major requirements and milestones of the degree program?*

The requirements for the program are described in Tables 2 and 3 (pages 6, 8 and 9). Students are required to complete a written exit examination.

a) *core requirements.* Distribution requirements are described in Tables 2 and 3. They include course work in physical, chemical, and biological processes as well as engineering design.

b) *elective credit:* Students select courses from a list (Tables 2 and 3) to fulfill each of the distribution requirements within their major; their minor is determined in consultation with a faculty advisor.

c) *major and minor requirements:* Students will be required to complete 33 credits within a major and 15 within a minor. At least 15 credits within the major must be non-blanket graduate level CE or EnvE course work taken from OSU or PSU. Students may elect a departmental, interdisciplinary, or integrated minor.

d) *language requirements:* There are no language requirements.

e) *research tools:* This is a degree program for engineering professionals. It is course work based with no thesis requirement.

f) *written and/or oral diagnostic, comprehensive, qualifying, and/or preliminary examinations:* None are required.

g) *practica and/or internships:* Students may gain up to 6 credits through an internship program. During the internship, students will complete a project under the guidance of a practicing environmental engineer. Students will be required to provide a written project proposal and final project report for evaluation by their mentor and an environmental engineering faculty member.

h) final oral/written exam: All students will be required to pass a written exit examination. The exam will be administered quarterly and may be taken during the student's final quarter. Students will be allowed to take the examination three times. Those unable to pass the examination upon the third attempt will be given the opportunity to be reexamined after repeating applicable course work.

2. *Describe procedures used for annual or periodic evaluation of student progress.*

The student's academic advisor will monitor student progress. In addition, a data base is used to track student progress.

III. ADVISING

1. *What initial advising is provided to incoming students*?

Every student will be assigned an academic advisor from the Environmental Engineering faculty. All students will be provided with a written description of program requirements. On-campus students will attend a group meeting followed by individual student appointments. Distance learners will be invited to visit OSU, but will also be advised by telephone or email.

2. *How and when is the major professor determined?*

All students are assigned an advisor upon entrance to the program. Students are then welcome to select a permanent advisor early in their program.

3. *Do all students have an advisory committee? If so, when is it established and what is the committee composition?*

All students will have a major professor, minor professor, and one other committee member. Most students will identify these faculty within the first two terms of their graduate programs. Until students make a selection, an academic advisor will be assigned.

4. *What is the role of the advisory committee? Does it provide program and research direction, or is it evaluative?*

Since this degree has a course work option, research option, or internship option, the primary role of the advisory committee (academic advisor/major professor) is in developing a program and direction of the internship or research. The advisory committee largely provides program direction. Evaluation of student performance is through course grades and a written exit examination.

5. *Describe the role of the advisory committee and other faculty in the development and evaluation of examinations?*

The exit examination is created and evaluated by the Environmental Engineering faculty.

IV. GRADUATE FACULTY

1. Describe the criteria for faculty eligibility to serve on graduate committees.

Faculty must be a member of OSU's Graduate Faculty and the Environmental Engineering Program within the Department of Civil Engineering at OSU. OSU and PSU faculty will become adjunct faculty within each other's program.

Appendix B

Environmental Engineering Faculty

(Vitae are on file in the Faculty Senate Office)

CIVIL ENGINEERING

OREGON STATE UNIVERSITY

College of Engineering

HUBER, Wayne C. — Professor and Head

DEGREES

B.S. Engineering, California Institute of Technology, 1963
M.S. Civil Engineering, Massachusetts Institute of Technology, 1965
Ph.D. Civil Engineering, Massachusetts Institute of Technology, 1968

ACADEMIC POSITIONS

Research Assistant, California Institute of Technology (summer), 1962
Research Assistant, Massachusetts Institute of Technology, 1963–68
Assistant Professor of Environmental Engineering Sciences, University of Florida, 1968–73
Associate Professor of Environmental Engineering Sciences, University of Florida, 1973–79
Professor of Environmental Engineering Sciences and Affiliate Professor of Civil Engineering, University of Florida, 1979–91
Professor and Head, Department of Civil Engineering, Oregon State University, 1991–present

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ISTOK, Jonathan D. — Professor

DEGREES

B.S. Geology, Ohio State University, 1978
M.S. Soil Science, Oregon State University, 1981
B.S. Civil Engineering, Oregon State University, 1986
Ph.D. Civil Engineering, Oregon State University, 1986

ACADEMIC POSITIONS

Professor, Department of Civil Engineering, Oregon State University, 1995–present
Associate Professor, Department of Civil Engineering, Oregon State University, 1990–95
Pacific National Laboratories Affiliate Staff Scientist, 1995–present
Assistant Professor, Departments of Agricultural Engineering and Civil Engineering, Oregon State University, 1986–90
Instructor, Department of Agricultural Engineering, Oregon State University, Spring quarter, 1984 and 1985
Exp. Biol. Tech. II, Department of Soil Science, Oregon State University, 1979–86
Research Assistant, Department of Geology, Ohio State University, 1976–78

CIVIL ENGINEERING

OREGON STATE UNIVERSITY

College of Engineering

NELSON, Peter O. — Associate Professor

DEGREES

B.M.E.	Mechanical Engineering, Cornell University, 1968
M.M.E.	Mechanical Engineering, Cornell University, 1971
M.S.	Environmental Engineering, Cornell University, 1973
Ph.D.	Environmental Engineering, Cornell University, 1976

ACADEMIC POSITIONS

Instructor, Cornell University, 1975
Assistant Professor, Oregon State University, 1975–81
Associate Professor, Oregon State University, 1981–present
Post-Doctoral Fellow, Norwegian Institute for Water Research, 1983–84

SEMPRINI, Lewis — Associate Professor

DEGREES

B.S.	Chemical Engineering, University of California, Berkeley, 1974
M.S.	Environmental Engineering, Stanford University, 1979
Engineers Degree	Civil Engineering, Stanford University, 1981
Ph.D.	Civil Engineering, Stanford University, 1986

ACADEMIC POSITIONS

Associate Professor, Department of Civil Engineering, Oregon State University, Environmental and Water Resources Program, 3/93–present
Assistant Director, Western Region Hazardous Substance Research Center, Department of Civil Engineering, Stanford University, 1/90–3/93
Senior Research Associate, Department of Civil Engineering, Stanford University, 1/91–3/93
Research Associate, Department of Civil Engineering, Stanford University, 1/86–12/90
Lecturer, Department of Civil Engineering, Stanford University, 9/90–12/90
Research Assistant, Civil Engineering Department, Stanford University, 9/77–9/85
Teaching Assistant, Civil Engineering Department, Stanford University, 9/80–6/81

CIVIL ENGINEERING

OREGON STATE UNIVERSITY

College of Engineering

WILLIAMSON, Kenneth J. — Professor

DEGREES

B.S. Civil Engineering, Oregon State University, 1968
M.S. Environmental Engineering, Oregon State University, 1970
Ph.D. Environmental Engineering, Stanford University, 1973

ACADEMIC POSITIONS

Instructor, Oregon State University, 1969–70
Instructor, San Jose State University, 1971–72
Assistant Professor, Oregon State University, 1973–78
Associate Professor, Oregon State University, 1978–85
Professor, Oregon State University, 1985–present
Director, Training and Technology Transfer, Western Region Hazardous Substance Research Center, Oregon State University, 1989–present
Associate Director, Western Region Hazardous Substance Research Center, Oregon State University, 1989–present
Director, Oregon Water Resources Research Institute, 1993–present

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WOODS, Sandra L. – Associate Professor

DEGREES

B.S. Civil Engineering, Michigan State University, 1976
M.S. Civil Engineering, University of Washington, 1980
Ph.D. Civil Engineering, University of Washington, 1985

ACADEMIC POSITIONS

Director, Minority Academic Institution Program, Western Region Hazardous Substance Research Center, 1994–present
Faculty Associate to the Provost and Vice President for Academic Affairs, Oregon State University, 1991–92
Director, Hazardous Waste Management Program, Oregon State University, 1991–93
Associate Professor, Department of Civil Engineering, Oregon State University, 1990–
Assistant Professor, Department of Civil Engineering, Oregon State University, 1984–90
Research Assistant, Department of Civil Engineering, University of Washington, 1980–84
Teaching Assistant, Department of Civil Engineering, University of Washington, 1978–80

Appendix C

Evaluation of Library Resources

LIBRARY ASSESSMENT FOR CURRICULUM PROPOSAL

Category I: MEngr in Environmental Engineering

Category II:

The subject librarian responsible for collection development in the pertinent curricular area has assessed the ability of library collections and services to support the proposal by examining: shelflist holdings; journal support (including standing orders and memberships); reference support; OASIS for pertinent subject headings, call numbers, authors, titles; existing external sources of support; related services (LIRS; CD-ROM; Documents; Maps; Special Collections; Guin Library; Microforms); comparisons with other library collections via RLIN, OCLC, AMIGOS CD-ROM, Internet (NOTE: The collections and services examined vary with the level of the proposal). Based on the examination, the subject librarian concludes that present collections and services are:

( ) inadequate to support the proposal (see budget needs below)
( ) marginally adequate to support the proposal
(X) adequate to support the proposal

Estimated funding needed to upgrade collections and services to support the proposal (details are attached):

Year 1: $ 0
Ongoing: $_____

Comments and Recommendations:

See Attached Analysis from the BSEngr in Environmental Engineering

Besides the conclusions reached in the prior analysis, a masters program requires access to comprehensive research information. The Environmental Science & Pollution Management databaseeand the Geobase database on First-Search provides this comprehensive access. For more difficult searches the engineering librarian has access to many online fee-based databases.

Environmental profiles on the BNA book orders, NTIS microfiche and ANSI standards will be reassessed in light of higher-level research.

Date Received: 10/9/95 Date Completed: 10/10/95

Subject Librarian: J. C. Malyslinek

~~AUL~~ Collection Development: [signature]

University Librarian: [signature]

Distribution: white (Curriculum Council)
green (Dean, College)
canary (Department Chair)
pink (AUL for Collection Development)
goldenrod (Subject Librarian)

Comments and Recommendations:

Strategy

The enclosed oasis print-outs document the Engineering Librarian's collection analysis. The general strategy was to first retrieve books and journals that were given the broadest (most general) classification that corresponds to the four subject areas that the BS in environmental engineering program proposal will require.

Environmental Engineering
Water and Wastewater Engineering
Solid and Hazardous Wastes Engineering
Environmental and Occupational Health

However, because of the interdisciplinary nature of environmental fields many useful materials will have multiple classifications. I then chose most natural permutations of classifications that correspond to the four subject areas.

In the process, I also noted the number of classifications that included our periodical holdings, and included lists of pertinent indexes and electronic resources.

Note: THIS IS ONLY A ESTIMATION OF THE RELATIVE STRENGTH OF THE ENVIRONMENTAL ENGINEERING COLLECTION - -THERE MAY BE MANY MORE NARROWER TERMS BY WHICH THE COLLECTION IS CLASSIFIED THAT THIS ANALYSIS HAS NOT INCLUDED..

Analysis

Environmental Engineering

S=environmental engineering 84 titles
SW=environmental and SW=engineering 430 titles
S=environmental engineering - - periodicals 13 titles

and many other narrower related terms.

Water and Wastewater Engineering

S=Sanitary Engineering 38 titles
S=Sanitary Engineering --"narrower terms" ~ 40 titles
S=Land Treatment of Wastewater --narrower terms (mostly geographical) ~ 25 titles
S=Water Supply Engineering 61 titles
S=Water Supply Engineering -- "narrower terms" ~ 50 titles
SW=Water and SW=engineering 349 titles
S=Water Supply Engineering - - Periodicals 29 titles

Solid and Hazardous Wastes Engineering

S=Hazardous Wastes 81 titles
S=Hazardous Wastes Sites >100 titles
S=Hazardous Wastes - "narrower terms" > 300 Titles
S=Sanitary Landfills 29 titles
S=Sanitary Landfills -- "subdivided geographically" > 100 titles
S=Hazardous Waste -- Management -- periodicals 3 titles

Environmental and Occupational Health

S=Industrial Safety 121 titles
SW=Industrial and SW=environmental 87 titles
S=Industrial Safety -Periodicals 9 titles

Recommendations:

This program proposal is a reorganization of existing courses at OSU. I believe that this analysis reflects prior support of this teaching and research. The BNA profile for engineering includes environmental engineering codes. Given the importance of "environmental research" and the problems of allocating an appropriate fund to current acquisitions, I wish we would create another fund code -- EnvE -- Environmental Engineering. I recommend that we seed this fund with an ongoing $300 dollars and use other reallocated firm money from AGRE, CIVI and NUCL to create another cost fund code.

Appendix D

Liaison

The memorandum shown on the following page was sent to all academic deans at Oregon State University as well as to the Department Heads within the College of Engineering. A supporting letter from the Civil Engineering Department Head at Portland State University is included. No negative comments were received concerning the program.

DEPARTMENT OF CIVIL ENGINEERING
Environmental & Water Resources Engineering Program

OREGON STATE UNIVERSITY
Apperson Hall 202 · Corvallis, Oregon 97331-2302
Telephone 503-737-2751 Fax 503-737-3462

Date: October 4, 1995

To: Department Chairs and Deans

From: Sandra Woods, Civil Engineering

Subject: Liaison concerning a proposed MEngr in Environmental Engineering

---

Enclosed please find a copy of a proposal to establish an MEngr in Environmental Engineering. If you have any comments or suggestions, I would be happy to accept them. If I do not hear from you before October 20th, I will assume that you have no objections to the proposal.

Thank you for your time and attention.

Portland State University

MEMORANDUM

To: Wayne Huber, Chair
Civil Engineering, OSU

From: Franz Rad, Chair
Civil Engineering, PSU

Date: October 9, 1995

Subject: MEngr in Environmental Engineering

Today we received the final copy of OSU's proposal to establish MEngr in Environmental Engineering. It appeared to be in good order and I propose no changes.

As the PSU/OSU Environmental faculty have agreed, a parallel proposal will be submitted on behalf of PSU. We are currently editing the first draft and should have a working copy for comments soon.

Best wishes for a smooth approval process of your proposal.

Portland State University

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Best wishes for a smooth approval process of your proposal.

N:\HOME\CARRIE\WORK\RAD\MENGR.DOC

Appendix E

Response to Graduate Council Questions

The memorandum shown on the following pages was provided as a response to graduate council questions. It describes our plans for course delivery to distance learners.

Oregon State University
College of Engineering
Department of Civil, Construction, and Environmental Engineering

Category I Proposal for the Initiation of a New Instructional Program Leading to an MEngr in Environmental Engineering

Response to Graduate Council Questions - January 11, 1996

The Oregon Joint Graduate Schools of Engineering (OJGSE) was established to improve cooperation between OSSHE institutions as well as the Oregon Graduate Institute. The OJGSE designated five areas of concentration including environmental engineering. Faculty at Oregon State University, Portland State University, and the Oregon Graduate Institute have been asked to cooperatively deliver environmental engineering graduate programs in the Portland area and throughout the State of Oregon. The MEngr in Environmental Engineering is an important step in developing this program. This document describes our plans for delivery of courses in support of the MEngr degree program.

Background. During the 1994/95 academic year, we delivered courses to the Portland area using two methods: Ednet II (2-way audio/2-way video) and traditional faculty instruction. Courses that were taught over Ednet II also included personal faculty interaction. At a minimum, faculty commuted to PSU five times each quarter to hold office hours, deliver lectures, and help sessions. As our experience grew using Ednet, we included increasingly more visits to PSU. By spring quarter (CE 559), we held separate recitations at OSU and PSU each week. While the Environmental Engineering faculty believe it is important to retain faculty/student interaction regardless of whether the students are on-campus or distance learners, we also recognize that it is impossible to deliver these graduate programs without incorporating new technologies. Therefore, we have adopted combinations of self-study and faculty contact.

Educational Model. Our experience with distance learners suggests that it is very difficult for these students to complete traditional 3-credit courses whether they are taught during the day or evening. Their family and work obligations are such that they miss several lectures. For our Ednet II courses, students often simply relied on viewing videotapes of the lectures. This is unacceptable to both the students and the faculty. To better accommodate distance learners while preserving the quality of our on-campus program, we have developed a graduate program based upon one-credit course modules. The modules will be taught using combinations of methods that are appropriate for the individual course. There will be no single method for delivery of courses. "Timeless" material (fundamental concepts that do not change with time such as mass balances, reaction kinetics, or reactor theory) will be taught using combinations of multi-media CD-ROMs and traditional lectures or recitations. Environmental engineering applications that are rapidly evolving such as bioremediation or hazardous substance management will be delivered to distance learners using Ednet II, traditional lectures, or in short-courses. Courses that focus on computers or mathematical modeling will rely on computers to deliver a portion of the course material (such as the WEB or Internet). Some one-credit modules will incorporate a combination of videotapes, written material, and traditional lectures. Regardless of the primary method used to deliver self-study materials, we will maintain faculty/student interaction in every course. Faculty will meet with distance learners a minimum of three hours per credit.

Our goal is to accumulate 30 credits of course work modules over the next three years. A typical 1-credit module might incorporate 20 to 25 hours of self-study and 5 to 10 hours of meetings with faculty at OSU or in Portland to complete examinations, recitations, laboratories, field trips, or to discuss current applications. Multi-media CD-ROMs will allow students to study at convenient times and will provide material equivalent to about 1/3 of a traditional course. The CD-ROMs will be used as the text by on-campus students.

Our plan for course work development for distance learners is shown in Table 1. PSU and OGI faculty are also developing modules. Until self-study materials are developed, classes will be taught in short-course or traditional course formats. All courses will incorporate "multi-media," but the types of media used (CD-ROM, videotapes, written material, computer programs) and the fraction of time spent in self-study will vary with the needs of the course.

Table 1. Course Work Plan for Distance Learners - January, 1996

Course	1- Credit Modules	Faculty Member	Delivery Methods (Primary method of delivery; other methods)
ENVE 541: Microbial Processes in Environmental Systems (formerly CE 555)	1. Kinetics and Reactor Theory 2. Applications of Microbial Ecology and Oxidation-Reduction Chemistry in Environmental Engineering 3. Energetics and Bacterial Growth	Sandra Woods (OSU)	CD-ROM; recitation, lecture
ENVE 542: Microbial Processes for Municipal and Hazardous Waste (formerly CE 559)	4. Wastewater Characterization 5. Suspended Growth Processes 6. Fixed-Film Processes	Kenneth Williamson (OSU)	CD-ROM; recitation, lecture
ENVE 545: Microbial Processes Laboratory (formerly CE 564)	7. Microbial processes laboratory	Sandra Woods and Kenneth Williamson (OSU)	Laboratories completed at OSU; preparation by correspondence
ENVE 431/531: Transport and Fate of Organic Chemicals in Environmental Systems (formerly CE 467/567)	8. Chemical Partitioning Fugacity for Determining the Fate and Transport of Organic Contaminants in the Environment 9. Thermodynamics in Environmental Engineering 10. Kinetics and Mass Transfer in Environmental Engineering	Lewis Semprini (OSU)	CD-ROM; recitation, lecture
ENVE 435/535: Transport and Fate of Organic Chemicals Laboratory	11. Transport and Fate of Organic Chemicals Laboratory	Lewis Semprini (OSU)	Laboratories completed at OSU; preparation by correspondence
ENVE 532: Aqueous Environmental Chemistry (formerly CE 550)	12. Introduction to and Overview of Aquatic Chemistry 13. Acid/Base Chemistry 14. Precipitation and Complexation Chemistry 15. Oxidation/Reduction Chemistry	Peter Nelson (OSU)	CD-ROM; recitation, lecture
ENVE 534: Physical and Chemical Processes for Water and Wastewater Treatment (formerly CE 558)	16. Coagulation/Precipitation 17. Sorption/Ion Exchange 18. Sedimentation/Filtration	Peter Nelson (OSU) and Scott Wells (PSU)	CD-ROM; recitation, lecture
ENVE 553: Hazardous Waste Remediation (formerly CE 557)	19. Separation Processes 20. Chemical and Thermal Destruction 21. Stabilization and Biological Treatment	Lewis Semprini (OSU)	Short-course, Ednet II, or traditional course format

Table 1. Course Work Plan for Distance Learners - January, 1996

Course	1- Credit Modules	Faculty Member	Delivery Methods (Primary method of delivery; other methods)
ENVE 537: Physical/Chemical Processes Laboratory	22. Physical/Chemical Processes Laboratory	Peter Nelson (OSU) and Lewis Semprini (OSU)	Laboratories completed at OSU; preparation by correspondence
ENVE 451/551: Hazardous Substance Management (formerly CE 460/560)	23. Risk Assessment 24. TSCA/RCRA/OSHA 25. CERCLA/SARA/CWA/CAA	Kenneth Williamson (OSU)	Lecture; CD-ROM
ENVE 554: Groundwater Remediation (formerly CE 516)	26. Site Characterization 27. Physical/Chemical Processes 28. In-Situ Treatment	Lewis Semprini (OSU)	Short-course, Ednet II, or traditional course format
CE 514: Groundwater Hydraulics (will not be delivered by multi-media CD-ROM)	29. Fundamental Characteristics of Groundwater Aquifers 30. Aquifer Testing and Site Characterization 31. Groundwater Flow and Contaminant Transport Processes	Jonathan Istok (OSU)	Combination of computer correspondence, personal instruction, and multi-media CD-ROM
CE 518: Groundwater Modeling	32. Governing Equations for Groundwater Flow and Contaminant Transport 33. Numerical Methods and Applications 34. Statistical Methods and Applications	Shuguang Li (PSU) and Jonathan Istok (OSU)	Multi-media including computer programs or the WEB and correspondence; lecture, recitation
ENVE 611: Special Topics	35. Bioremediation (for example)	OSU Faculty	Short course or Ednet II

1996 NOMINEES FOR FACULTY PANELS FOR HEARING COMMITTEES

AUNE, Patricia E. — Associate Professor, Multnomah County Extension
BAKER, Robert S. — Assistant Professor, Kerr Library
BELAIR, Diane M. — No Rank, Services for Students with Disabilities
BELL, Barbara A. — No Rank, OSU Portland Center
BLOCK, John H. — Professor, Pharmacy
BURKE, Michael J. — Professor, College of Agricultural Sciences
CAPUTO, John A. — Instructor, Seed Certification
COAKLEY, James R. — Assistant Professor, College of Business
CRATEAU, Carole A. — Instructor, Honors College
CROMACK, Kermit Jr. — Associate Professor, Forest Science
DUNNINGTON, Leslie G. — Associate Professor, Counseling & Psychological Services
FALKNER, Kelly K. — Assistant Professor, Oceanic & Atmospheric Sciences
GYGAX, Otto — Instructor, Electrical & Computer Engineering
HIGGINBOTHAM, Jack F. — Associate Professor, Radiation Center
HINMAN, R.C. — Associate Professor, Douglas/Lane County Extension
HRUBY, Dennis E. — Professor, Microbiology
LAWRENCE, Robert D. — Associate Professor, Geosciences
MARKLE, Douglas F. — Professor, Fisheries & Wildlife
MATZKE, Gordon E. — Professor, Geosciences
McGINTY, J.C. — Instructor, Educational Opportunities Program
MEAD, Clifford S. — Assistant Professor, Kerr Library
MOORE, Sylvia L. — Associate Professor, LaSells Stewart Center
MPITSOS, George J. — Research Professor, Pharmacy (Hatfield Marine Science Center)
MULL, Jeffrey C. — Associate Professor, Plageman Student Health Center
OWENS, Charlie — Instructor, Intercollegiate Athletics (Crew)
RAMSEY, Jeffry L. — Assistant Professor, Philosophy
ROOT, Jon R. — Professor, Communication Media Center
RUSK, Cherie — Assistant Professor, Kerr Library
RUTLEDGE, Jim — Professor, 4-H Youth Development
SAHR, Robert C. — Associate Professor, Political Science
SAYRE, Henry M. — Professor, Art
SMITH, Daniel E. — Instructor, Food Science & Technology
SMITH-ADAMS, Yvonne (Evee) — Instructor, Special Services Project & Educational Opportunities Program
STOLTZ, Michael A. — Professor, Umatilla County Extension
TAPPEINER, John C. — Professor, Forest Resources
UNSWORTH, Michael H. — Professor, Oceanic & Atmospheric Sciences
VECCHIONE, Gina M. — Instructor, Intercollegiate Athletics (Softball)
WOOD, Terry — Associate Professor, Exercise & Sport Science
WOODS, LaVerne — Instructor, Educational Opportunities Program

EXTENSION SERVICE
Wasco County Office

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Telephone 503-296-5494 Fax 503-298-3574

March 26, 1996

Ken Krane
OSU Faculty Senate
Social science 107
Corvallis, Ore. 97331

OSU Faculty Senate President Krane,

As directed by then President John Byrne, the off campus faculty members of the OSU Extension Service who had not previously done so, selected academic homes within a campus department in 1995.

At that time, faculty senate president Sally Francis requested the Extension senators to address the issue of where to place the apportionment of the off campus faculty.

Based on a poll of all of all off-campus based faculty, conducted by the OSUEA (OSU Extension Agents, a professional organization of extension agents) it is our recommendation that Extension remain as a separate apportionment unit.

The OSU Faculty Senate by-laws address the issue only as an apportionment group is eliminated due to merger or abolishment as a unit. The Extension unit has not been eliminated. We have our Dean and Director of Extended Education, Lyla Houglum, and we have our own budget for Extension. If a vacancy occurs within Extension the FTE remains with Extension, not the department in which that individual may have listed as his/her academic home. Our issues and concerns frequently vary from those of campus based faculty, which is part of the reason we maintain the professional association known as OSUEA. We conduct our own annual conference and professional improvement meeting each year in order to address those issues common to all Extension faculty regardless of one's academic home.

Another concern is the support for Extension faculty. For the off campus faculty, support funds for agent activities, including travel, are generated from local county tax dollars. For myself, attendance at faculty senate means a $100 investment; for the Extension senator from Lake County each appearance at faculty senate means a $300 investment from his travel budget.

OREGON STATE UNIVERSITY EXTENSION SERVICE Agriculture, Home Economics, 4-H Youth, Forestry, Community Development, Energy, and Extension/Sea Grant Programs, Oregon State University, United States Department of Agriculture, and Wasco County cooperating. The Extension Service offers its programs and materials equally to all people.

Despite the willingness of campus departments to welcome Extension faculty into academic homes and the willingness of many departments to share apportionment within their own ranks, none were willing to provide the support for off campus faculty to attend senate meetings and represent the department. We didn't ask, but we didn't think faculty senate had sufficient budget to provide for our attendance either.

The Extension apportionment, continued as is, is adequately covered in the by-laws. Considering the expenses and time involved in our participation, I think Extension's dedication and sincerity in supporting Faculty Senate is well documented.

It is for these reasons and the vote of the off campus faculty that we recommend no change in the apportionment of Extension as a separate unit in the OSU Faculty Senate.

Thank you.

Sincerely,

Sandy Macnab

Alexander W. ("Sandy") Macnab
OSU Extension Agent
Wasco & Sherman Counties
OSU Faculty Senator

cc: T. Miller
W. Riggs
R. Todd
J. Burridge
K. Locke
G. Farnsworth
J. Calvert
R. Fletcher
F. Lundin
G. Tiger
A. Schauber

English Department

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April 10, 1996

To: Ken Krane, President, Faculty Senate
From: Michael Oriard, Chair, Committee on Bylaws and Nominations
Re: Apportionment for Off-campus Extension Faculty

Following the restructuring of Extended Education, Sally Francis, then President of the Faculty Senate, after consultation with the Executive Committee, invited Extension Faculty to propose whether their representation in the Senate would be through the academic colleges or would remain in Extension as a distinct apportionment unit. Extension Faculty have now made their wishes known. In a letter to you dated March 26, 1996, Sandy McNab, Extension Faculty Senator, reports the results of a poll of all off-campus Extension faculty. These faculty wish to retain off-campus Extension as a separate apportionate unit. The question has therefore been referred to the Committee on Bylaws and Nominations for appropriate action.

In the spirit of the understanding between President Francis and off-campus Extension faculty, the Committee on Bylaws and Nominations recommends acceptance of this proposal. Although off-campus Extension faculty now have "academic homes" within the colleges, their FTE remains in Extension, which continues to have its own budget. Article V, Sec. 1 of the Bylaws currently states that the location of "academic rank or FTE" will determine the faculty member's apportionment unit. Off-campus faculty now have their academic rank in a college but their FTE in Extension; in this they are not unlike certain other faculty whose positions cross colleges and funding agencies.

Having reviewed the current Bylaws, the Committee has concluded that no revision is required. As noted, Article V, Sec. 1 of the Bylaws identifies either academic home or FTE as the basis for apportionment; in addition this section of the Bylaws names "off-campus Extension Faculty" as one of the apportionment units. The Committee therefore recommends that no action be taken, but that this memo be included as an Information Item in the agenda of the next Faculty Senate meeting, so that Senators will know how this issue has been resolved and can question this resolution if they desire.

Interinstitutional Faculty Senate Meeting
April 12 & 13, 1996 — OSU

IFS Senators present: Leslie Burns, Steven Esbensen, Mary Alice Seville
Report submitted by Seville

Friday Session

The session began with a welcome from OSU Provost Roy Arnold. Provost Arnold briefed the IF Senators on the discrimination incidents on campus, the subsequent student boycott and Faculty Senate "teach-in for diversity", and the slow but steady progress that OSU has made in improving the campus atmosphere for cultural and racial minorities. Arnold also challenged IFS to be proactive in reviewing the institution of tenure citing a recent Associated Oregon Industries (AOI) task force report that was critical of higher education faculty for not being responsive to the needs of business and a Minnesota plan for post-tenure review. The AOI report also mentioned it may be time to move to semesters.

Jon Root, Director of Distance Education for OSSHE and Ken Krane, OSU Faculty Senate President discussed distance education. Root presented a brief history of distance ed in Oregon, the technology currently being used to offer courses off site, an overview of what degree programs are being offered, and the OSSHE Distance Education Policy Framework document. While there is an OSSHE policy on distance learning, there is no policy on which (and when) courses should be delivered electronically to students on campus. He is seeing more sharing of courses between state system campuses. Root described the typical person currently taking distance courses as female, in her 40's or 50's, place bound by family or work, and seeking a degree.

Ken Krane stated his position that technology should enhance not replace courses and programs. He noted that many issues such as Resident credit, evaluation of graduate applications from distance learners, and intellectual property rights on class materials have not yet been addressed. (A committee has been organized by Vice Chancellor Clark to look at intellectual property rights and technology.) He reported on the OSU faculty senate debate at its April meeting on the manufacturing engineering program and OSU faculty senate plans for evaluating distance learning impacts and policies.

OSBHE Vice-President Herb Aschkenasy and student member April Waddy (OSU) shared their thoughts about Higher Education and OSSHE with us. Aschkenasy's comments were wide ranging and included the following:

* CHANGE — OSSHE must recognize that the world is changing and deal with it. It is better to start early and choose the right direction than wait for external forces to determine the course. The Board is examining ways to do things better - higher quality at lower cost. As a larger fraction of the population earn degrees, the degrees are being devalued by society. There is an increasing proportion of students attending higher ed institutions to get job skills. Will masters become the entry level degree?
* HIGHER ED IN NEXT LEGISLATIVE SESSION — Governor has said Higher Ed will get no larger percent of general fund than currently received. Last session OSSHE got more than the Governor asked for. OSSHE has never taken a cut in total revenue, but future cuts will be hard to make up with tuition increases. Possible cuts in federal funding will exacerbate the situation. OSSHE needs to look for ways to make funding go further. One possibility is to graduate people in three calendar years. The declining

political support of OSSHE is related to the perceived decline in value of education relative to the cost. ACCESS is the Board's mantra, but Aschkenasy is sure not all members define access the same. The closest to a common definition is financial access.

* FACULTY MEMBER ON THE STATE BOARD — He sees as a conflict of interest. Why would you want to be a non-voting member? Faculty can talk now. At the same time lay board members are often asked to vote on things they have no expertise in and little knowledge about. Most of the work of the Board is done at the meetings.

STRATEGIC PLANNING TASK FORCES - the first phase documenting the present situation is essentially completed and reports will be delivered to the Board at the meeting 4/19. The second phase is for the Board to set objectives. The third phase is how to meet the objectives. Aschkenasy was not sure if the original task forces would be involved in the third phase.

Waddy emphasized the changing demographics of students, the shift in purpose of higher education from "students want knowledge" to "customers want outcomes," and the trade-off between quality and access. Waddy supports faculty membership on the Board. She would like to see the faculty be more involved in the political process. She views the task forces as "groups of people empowered to comment" and hopes the task forces (including faculty) will continue to be involved in the second and third phases of the strategic planning process.

Both Board Members were asked if anything will come from the task forces. Aschkenasy has wondered that himself and strongly expressed the belief that something must come out of the process. Waddy is sure something will come out of the process although students are concerned that the process has been rushed. She doesn't think the end result was decided before the process was started.

Another question for the Board Members was how the state system will handle the projected bulge of high school graduates in the next few years. Aschkenasy said OSSHE would have to restrict access or educate more students with the same dollars. He suggested better articulation with Community Colleges would help. April believes the additional students will be handled without bricks and mortar. OSSHE needs to be flexible and could start by examining some Board policies that hinder access such as funding for summer school and continuing education.

Saturday Session

John Byrne, Chair of the Graduate Education and Research Task Force, discussed the efforts of his task force and the future of graduate education and research. His group will report to the Board on 4/19, but it also will prepare a comprehensive report on graduate education and research. John Byrne views graduate education and research as the Foundation for excellence in the other areas -- undergraduate education, Economic development and extended education. He reiterated the theme from Friday - change is coming. Change has to come from within, but we need to listen to outsiders too. John sees programs being eliminated; some reorganized. Some of the current structure, such as programs and counting student credit hours, are detriments to learning. Nationally, as in Oregon, there is dissatisfaction with higher ed. Is education irrelevant because it does not focus on the real world? Are the costs too high? At the moment the primary motivation for students appears to be getting a job.

Some interesting comments/ideas from the focus groups held as part of the planning process are:

* People don't distinguish between higher ed and community colleges. Cooperation between the two is expected.
* Communication skills, work ethic, critical thinking are expected outcomes from higher ed. (Side note - how does this reconcile with the emphasis on job training.)
* There is still goodwill toward higher ed but patience is wearing thin.
* Private institutions have become more competitive with state institutions particularly in lifelong learning.
* Need to market higher ed more.
* Research is not perceived by the public as being high quality.
* Public is unaware of how OSSHE functions.

ACADEMIC COUNCIL REPORT. Oshika reported on the Academic Council meeting in February. Discussions centered on the task forces and international internships on every campus (defined as internship with companies with an international focus). Grattan Kerans reported that education was more visible in this year's planning meeting. He is generally optimistic. Also program preproposals were approved.

SENATOR HARTUNG. Oshika attended a briefing of Senator Hatfield on higher education organized by Senator Hartung. Attending were Chancellor Cox, Basset (community colleges), Anderon (private colleges), the provost of OGI, Kohler (OHSU) and a representative of AOI. Most of the discussion centered on the private colleges and OGI in that they want "into the public pot" because they "contribute to the public good." Sargent attended a Senate Education Committee meeting (Hartung is Chair). Hartung has higher ed as his #1 priority and believes it should be #1 for the next legislature. In reaction to a presentation by Chancellor Cox, Trow emphasized that the issue of underpaid faculty must be included in planning.

OSSHE TASK FORCE DISCUSSION. The IF Senators serving on planning task forces reported. The task forces will be reporting their "issues" at the 4/19 OSBHE meeting. The Board, with the help of consultants, will group the issues according to commonalties. It is hoped these commonalties will drive phases 2 and 3. Broadly, the issues seemed to center around access, quality and cost.

Other comments by the task force members are: The task force had lots of perceptions not much data. Is there anything that will make a difference? One benefit of the task force was that Frohnmayer stated that the idea that programs shouldn't be duplicated across campuses should be laid to rest. Educating people is the major contribution to economic development. We need to communicate the things we do better.

FACULTY MEMBER ON OSBHE. IFS discussed and accepted the following proposal submitted by Esbensen "The Interinstitutional Faculty Senate (IFS) proposes that the Oregon State Board of Higher Education include the President and Immediate Past-President of IFS as ex-officio members." We discussed and decided on an appropriate strategy to implement this proposal. President Sargent is started working on notifying the appropriate people on 4/15.

The next meeting will be held at SOSC on June 7 and 8.

The following resolution was passed unanimously by the Interinstitutional Faculty Senate on April 13, 1996:

The Interinstitutional Faculty Senate (IFS) proposes that the Oregon State Board of Higher Education include the President and Immediate Past President of IFS as ex-officio members.

1. The current OSSHE strategic planning process has increased awareness of the dynamic nature of higher education. OSSHE must position itself to respond effectively to change. The Chancellor has stated repeatedly that the faculty are the "engine that drives the machine" of OSSHE. As such, we believe faculty representatives on the Board can provide valuable input to Board deliberations, unique insight about possible effects of Board decisions on the learning process, and can assist the Board in positioning OSSHE to capitalize on coming changes.

2. While current relations between faculty, members of the Board and the Chancellor are cooperative, respectful and productive, no formal mechanism exists to assure open communication and cooperation in the future.

3. The IFS president and immediate past president are appropriate faculty participants on the Board because member of the IFS are representative of all faculty in OSSHE.

4. Ex-officio, nonvoting, status allow faculty Board members to participate fully in discussions, receive communications and interact with other Board members and the Chancellor while reducing concerns about a possible conflict of interest.

5. Inclusion of two faculty representatives permits staggered two-year terms, providing continuity in the faculty presence and enabling the faculty representatives to become acquainted with Board members, activities and procedures.

52.

OFFICE OF THE
PRESIDENT

April 16, 1996

Dr. Joseph W. Cox, Chancellor
Oregon State System of Higher Education
P.O. Box 3175
Eugene, OR 97403

Dear Joe:

OREGON
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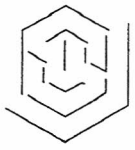
600 Administrative Services
Corvallis, Oregon
97331-2128

541-737-4133
Fax
541-737-3033

As I mentioned to you earlier, I have been thinking about the future of Oregon State University. This letter is my first summary of our thoughts as we prepare for the next legislative session. I hope this will also assist you as we make recommendations to the Governor.

As you and I have discussed, I am haunted by the smaller number of Oregon students currently accessing our public colleges and universities, and by the extraordinarily serious consequences this will have on our State, especially as personal success and satisfaction in the future will require strong professional development and life-long learning opportunities. I am also certain that the relatively low rate of State support for higher education will haunt the State as more talent flows out-of-state, as the business community finds it harder to attract industry to Oregon, and as the State finds itself unable to compete in an economic environment increasingly dependent upon those with higher education. Since the late 1980s, on average only those with at least a four-year college degree have been able to maintain an earning power to keep up with inflation.

As a result of Ballot Measure 5, State support for Oregon higher education has been reduced by 26 percent. This has contributed to some extremely negative impacts and trends such as those noted above. On the other hand, Oregon's system of higher education has become far more efficient and more focused, and it has demonstrated an unprecedented ability to re-structure itself much as the business community has done in a similar period of time. The difference is, however, that the business community can continue to specialize, to outsource some of its parts, and to focus on narrower markets; if higher education were to adopt these strategies, Oregon students and the State of Oregon would suffer unimaginably--and those of us responsible for the State's future will have acted completely irresponsibly.



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As I see the situation, Oregon higher education has responded to Ballot Measure 5, and has become far more efficient in a business sense. However, we are now in the precarious position of weakening higher education just at the time the State requires a far stronger program. This stronger program should not be simply a rebuilt replica of Oregon higher education of the 1980s; rather, it should be built on radically different processes and structures which will ensure the needs of our students are met as are Oregon's economic and human welfare needs.

As the State's land-grant institution, Oregon State University has very specific mandates to make the State of Oregon its campus. Thus, the purpose of this letter is to anticipate the different student populations of the future, and to share just how we expect to build Oregon State University into the exemplary land-grant university model for the whole country. This new model--a vastly different university from that before Ballot Measure 5--will require a 20 percent increase in State funding (still below the reduction from Ballot Measure 5), but it will result in exceptionally high-quality programs and a whole new concept for higher education--the land-grant university of the future. By implementing this land-grant model, the Oregon State Board of Higher Education, the Governor, and the whole State of Oregon will quickly resume a recognized national leadership position in higher education.

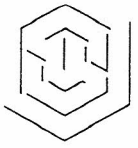
Cost Containment

The cost of education must remain affordable so there are no insurmountable financial hurdles for Oregon students to attend the State's land-grant university. Therefore, Oregon State University will:

(a) work with the State Board of Higher Education to guarantee that its tuition and fees will not increase at a rate higher than the CPI over the next six years;

(b) work with the State Board of Higher Education and with other public and private entities to encourage funding of State financial aid and scholarship programs; and

(c) focus the University's aggressive fund-raising activities primarily on increasing financial aid and scholarships for our students.



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These steps will ensure that the University will continue to employ the efficient operational procedures that have resulted from Ballot Measure 5, but in addition will mandate that financial assistance becomes a top priority at both the State and University levels to assist Oregon students with access to the University.

Courses and Schedules

It is our intention to develop an entirely new concept of flexible and dynamic scheduling of educational opportunities for on-campus and off-campus students. The purpose of this new schedule will be to ensure that students can progress through Oregon State University as rapidly as possible without the usual constraints of semesters or quarters, and to enable the length and format of courses to be tailored both to the content of the course as well as to the needs of the student. Therefore, over the next two biennia, Oregon State University will develop a course "catalog" which will include:

(a) courses ranging from one quarter to only a few days in length;

(b) courses taught during the week, in the evening, and during the weekend;

(c) courses offered on-campus, off-campus, on-site, and/or by electronic means; and

(d) "just-in-time" courses taught on an unscheduled basis as needed by various clients.

It is expected that the conventional "semester" or "quarter" length lecture course taught in a classroom will become a minor component of this new dynamic catalog of courses. Rather, courses will be taught in a variety of formats, for example, combining lectures with interactive computer exercises by individual students, student group sessions stressing critical thinking and leadership skills, electronic exchange of

international information, and perhaps experiential learning--all in the same course. Moreover, courses will be designed to easily cross conventional disciplinary boundaries. The contents of these "learning experiences" or courses needed to fill a specific degree program will be designed in partnership with our clients throughout Oregon, and in each case will be based on a clear understanding of the expected outcomes.

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Learning Environment

The learning environment, wherever it is located, that will prepare students to be successful in the future will be different from that of the past. Students graduating from the State's land-grant university must have a strong general education, focused thinking, communication and persuasion skills, leadership and interpersonal skills, proficiency in learning technologies, some education in science and business, and an understanding of international affairs. Therefore, within the next two biennia, Oregon State University will:

(a) ensure that no lower division lecture class at any of its locations will have more than 60 students;

(b) provide opportunities for every student to participate in specialized courses and cross-curricular programs to teach critical thinking techniques as well as persuasive communication and leadership skills;

(c) enhance the advising capabilities of the University to assist students in making sound choices in constructing their academic programs;

(d) ensure that every student who graduates from the University will have technical skills in managing information electronically;

(e) ensure that every student who graduates from the University will have significant learning experiences in science, business, and economics;

(f) ensure that every student will have experience in international affairs, either on campus, or preferably, abroad; and

(g) ensure that every student who graduates from the University will have the benefit of a substantial liberal studies component, such as the current Baccalaureate Core, regardless of his or her major.

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The learning environment of the new Oregon State University will provide a much broader array of learning opportunities, and is designed to make the student much more self-reliant. It is this accomplished, self-reliant person who will be successful in the future and who will make the most contributions to the State of Oregon.

Statewide Program Responsibilities

Oregon cannot afford to support unnecessarily duplicative programs, and yet Oregon must benefit from the combined expertise of its higher education system. Therefore, Oregon State University will:

(a) develop and offer 2 + 2 degree programs in the most important bachelors degree majors in collaboration with every public community college in the State; the University will also develop bridging degree programs with secondary schools;

(b) explore innovative exchange opportunities for students among other colleges and universities so students can take advantage of the combined expertise at the State's public and private institutions of higher education;

(c) lead a statewide engineering and computer science program, involving the other members of the higher education system and the community colleges, designed to meet the needs of the businesses in the State;

(d) lead in a statewide undergraduate business degree program, in cooperation with the community colleges throughout Oregon; and

(e) lead in a statewide undergraduate program in the combined areas of early childhood development--elementary education and an in-service program to assist Oregon teachers in meeting the challenges of implementing the new certificate of mastery program.

It is expected that additional statewide programs will be led by other universities, and that Oregon State University will participate in these programs. The essential ingredients of any such statewide program are (1) one institution should play the lead in each program to ensure both coordination and convenient access, (2) as possible, all colleges and universities should participate in these programs, and (3) the quality and acceptance of the programs will be measured by the satisfaction of our customers.

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Research and Graduate Education

Ultimately, much of the strength of Oregon in the future will depend on strong graduate programs that produce individuals who are technically very competent, and on University research programs that address issues of importance to the State and beyond. Within the next two years, Oregon State University will:

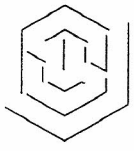
(a) continue to focus a significant part of its research program on issues vital to Oregon;

(b) bring its collective research strength together to analyze and synthesize existing information in innovative ways to inform State government and others of the technical basis for addressing the most pressing issues across the State; and

(c) reconstruct graduate degree programs to assure that each research topic makes not only a contribution to knowledge, but that its potential practical application is explicitly considered. Where feasible, the graduate student will also propose how the idea could be implemented and/or marketed.

It should be recognized that Oregon State University has an outstanding basic and applied research program in the national and international sense, and as a result, attracts excellent graduate students.

To retain its vitality and stature, the quality of the research must remain the paramount measure of its success. However, this new model commits the University to investing significantly in the issues of Oregon, and wherever possible, to search continually for practical applications of all of our research and scholarship.



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Extended Education

Oregon State University, as the land-grant university, has an extensive network of offices, laboratories, and field stations throughout the State. This extension service provides a tremendous amount of information and assistance to individuals, families, and businesses. This enormous contribution to Oregon must continue. However, in this model for the future land-grant university, some significant new resources and services will be provided. In the next biennia, Oregon State University will:

(a) employ twelve new information brokers, deployed across the State, who will have the responsibility of synthesizing the current myriad of information sources (ranging, for example, from our publications and mathematical models to world-wide economic data and policies) and making this information available to individuals, businesses, and commodity groups;

(b) work with other colleges and universities as possible, in making our new dynamic "course catalog" available throughout the State; and

(c) develop new mechanisms to bring the integrated research strengths of the University to communities throughout the State, focusing on issues identified by local communities and populations as being of importance.

The next generation of "extension service" recognizes that new information must continue to be produced from basic and applied research since this is the source of most answers to problems. However, the new model also recognizes that much of our progress will now be made from artful synthesis of existing information from many disparate national and international sources. Oregonians throughout

the State will want to continue to learn and to do so in formats that meet the needs of their schedules and of their places of living and employment. This new approach for extended education also recognizes that most of the problems faced by communities and populations will only be solved by combining scientific, cultural, humanistic, social, and economic considerations.

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Promotion and Tenure

The Oregon State University of the future will be directed at the needs of Oregon. This clear focus is appropriate for the State's land-grant university. The quality of performance of the faculty, however, will be judged not only against the expectations of Oregon, but at national and international scales. The University has just developed a very strong set of guidelines for promotion and tenure--perhaps the best in the nation. These new guidelines will ensure that the faculty establish and measure the necessary expectations for promotion and tenure. These same policies will allow the University to meet its new direction while preserving the necessary academic freedom on which Oregon State University is based. As a final step, these policies will be augmented by a post-tenure review procedure to ensure the continued productivity of the faculty.

Oregon State University will be a very different university--one that is responsive, dynamic, flexible, and one that puts the needs of our State first. This might be viewed as reckless since it implies that others, besides those at the University itself, have influence in the future directions of Oregon State University. However, the University is blessed with a very strong faculty who collectively understand the intellectual vitality and independence necessary for great universities. Thus, we are confident that we can build an even stronger university, while at the same time meeting the current and future needs more effectively than any university has ever met the needs of its state.

Joe, these are my plans based on my first three months at OSU. I welcome your comments and will await your guidance concerning possible future steps.

As you suggested, I have sent copies of this letter to members of the Oregon State Board of Higher Education and to my presidential colleagues as well.

I look forward to working collaboratively toward our shared goal of making Oregon the model higher education system in the country.

Sincerely,

Paul

Paul G. Risser
President

OREGON STATE UNIVERSITY

cc: Dave Frohnmayer, President, University of Oregon
Dave Gilbert, President, Eastern Oregon State College
Ken Krane, OSU Faculty Senate
Oregon State Board of Higher Education
OSU President's Cabinet
Judith Ramaley, President, Portland State University
Steve Reno, President, Southern Oregon State College
Larry Wolf, President, Oregon Institute of Technology
Betty Youngblood, President, Western Oregon State College

University Development

Oregon State University

Creating a Unified Approach

Paul G. Risser, President

April 15, 1996

Background

Oregon State University is a strong institution, composed of many programs noted for their national and international recognition. Over the years, the University has made numerous attempts to design effective development and university/alumni relations activities that support the pursuit of university aims. Multiple changes have been implemented, ranging from relatively simple name changes to more complex reorganizations. Yet, there is further need and opportunity to strengthen and better coordinate the development, marketing, and university relations functions of Oregon State University. These functions should achieve the same high quality found in the University's academic programs.

To continue its success, OSU must have a unified approach to development and university/alumni relations. Only with strong private support will the University be able to achieve its collective vision of ever-increasing academic excellence. A premier university development organization -- one which creates a cohesive, institution-wide development endeavor -- can promote and support achievement of university aims. This document describes how the development responsibilities will be re-aligned to truly maximize private financial support.

Several underlying assumptions form the basis for these changes:

1. University development is one of the President's top priorities. As such, the President will be personally involved in and committed to all major university development decisions.

2. Existing personnel have many strengths, and revised assignments will optimize each individual's talents. Structural and organizational supports will be created to maximize the opportunity for each individual, as well as university development programs, to succeed.

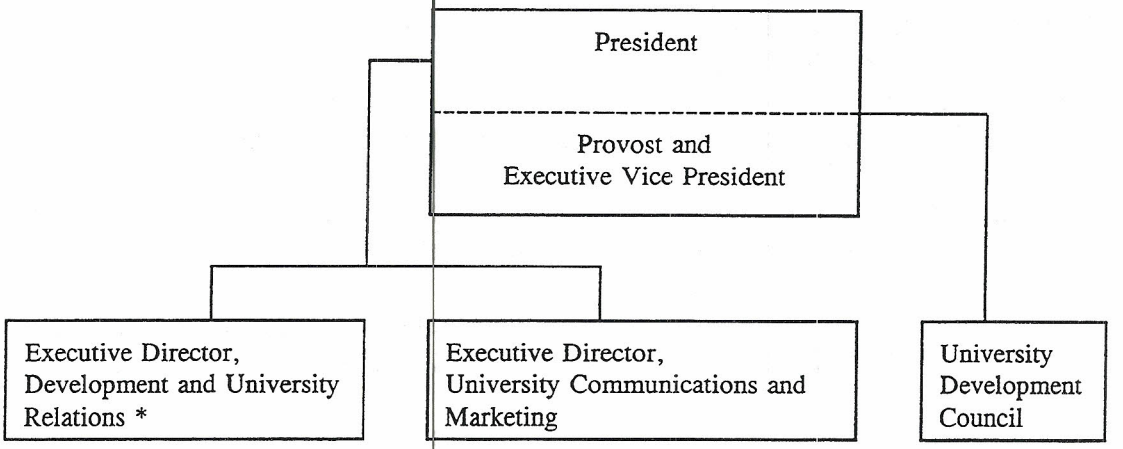
3. Working with existing personnel and resources is requisite. It is infeasible to create new positions and/or hire new personnel at this time.

4. Clarifying the purpose, expectations, and reporting structure of the Office of Development is an important component of an aggressive strategy to enhance the effectiveness of the Office of Development.

These changes are to be implemented on April 15, 1996.

Structure

Institutional Advancement will be re-aligned as follows:



- Director, Office of Development
- Director, Alumni Relations
- Director, Community and Government Relations

- Director, News and Communication Services
- Director, University Marketing
- Director, University Publications/ OSU Press
- Director, Conferences and Special Events

* Liaison to Executive Director, OSU Foundation

Membership of the *University Development Council* will include the following:

Provost and Executive Vice President (Chair)
Vice Provost, Research and International Programs
Deans, Academic Units
Chief Business Officer
Vice Provost, Student Affairs
Executive Director, Development and University Relations
Executive Director, University Communications and Marketing
Director, Office of Development
Director, Community and Government Relations
Director, Intercollegiate Athletics
Director, Alumni Relations
Executive Director, OSU Foundation (ex officio)

Responsibilities

The responsibilities of the *Executive Director, Development and University Relations* will be as follows:

1. Provide coordination leadership among the activities of the following offices:
   - Office of Development
   - Alumni Relations
   - Community and Government Relations (state and local)

2. Work closely with the Executive Director of OSU Foundation to ensure relevant university and foundation activities are coordinated.

3. Attend Cabinet meetings as directed by the President to represent division and ensure activities are coordinated with related university endeavors.

4. Under the guidance of the President, work with major donors to achieve priority fund-raising goals.

5. Prepare and manage the university-funded portion of the budgets for direct report units with oversight from the Chief Business Officer. Funding will be allocated to units based on the University's development strategies and priorities.

6. Assist the President in evaluating and improving the University's development program.

The responsibilities of the *Executive Director, University Communications and Marketing* will be as follows:

1. Provide coordination leadership among the activities of the following offices:
   - News and Communication Services
   - University Marketing
   - University Publications/OSU Press
   - Conferences and Special Events

2. Attend Cabinet meetings as directed by the President to represent division and ensure activities are coordinated with related university endeavors.

3. Work closely with the Director of University Marketing and other appropriate university units to develop and implement an aggressive, effective marketing program directed toward the University's various constituencies.

4. Prepare and manage the university-funded portion of the budgets for direct report units with oversight from the Chief Business Officer.

5. Assist the President in evaluating and improving the University's communications and marketing program.

The responsibilities of the newly constituted *University Development Council* will include the following:

1. Set general policies for university development activities, as well as recommend specific fund-raising priorities to the President. Fund-raising priorities will range from those focused on individual units to multiple units to institution-wide needs and opportunities. All fund-raising priorities are subject to the President's final approval.

   Resource constraints preclude pursuing all projects with equal vigor. Therefore, projects will be prioritized as follows:

   Category 1. Top priority for institutional leaders and all development officers.
   Category 2. High priority for unit fund raisers and the Office of Development.
   Category 3. Special priority, pursued with specifically designed strategies and teams of fund raisers.

   Projects and associated priorities will be reviewed annually by the University Development Council.

2. Identify and clearly define performance expectations and outcome-based performance measures for all development officers. Measures are to evaluate effectiveness within units as well as throughout the University.

3. Define a uniform prospect approval process to be used throughout the University. Once established, this process will be strictly adhered to by all participants involved in university fund-raising activities.

4. Make general recommendations to the President for strategic allocations within the budget of the Office of Development.

5. Assist the Director of the Office of Development to ensure fund-raising capability is fairly and equitably distributed throughout the academic units.

6. Advise the President on other topics and issues pertaining to university development activities.

Office of Development

The responsibilities and expectations of the *Director, Office of Development* will be as follows:

1. Create and implement a comprehensive development plan for the University that is designed to successfully meet the development goals established by the University Development Council.

The plan will contain:

(a) operational strategies for the directions and processes of the Office of Development, including: major gifts, charitable estate planning, annual giving, corporate and foundation programs, donor relations, and research;

(b) strategic and tactical components designed to facilitate achieving the goals and objectives of the University.

The plan, as well as development across campus, will be guided by one principle: all activities and programs will respond first to the interests of donors.

Among specific topics to be included in the plan are:

- ensuring that donors can easily contribute to a multitude of programs;
- developing strong relationships in the Portland region;
- improving the University's effectiveness in developing and maintaining long-term partnerships which serve the strategic interests of corporate and foundation donors;
- describing how decisions about donor cultivation and solicitation will be made within the institutional context of and consequences for the entire university, and in consideration of the donor's interests and abilities;
- working closely with the Research Office to ensure supportive coordination of activities;
- reorganizing staff assignments within the Office of Development to ensure the most effective use of resources.

2. Build a teamwork relationship across the campus and among all unit development officers.

Strategies pursued will include:

- offering a series of services to unit development officers;
- ensuring that (a) data bases are operated efficiently and (b) as appropriate, information is shared widely;
- ensuring development functions are not unnecessarily duplicated;
- promoting widespread understanding of the fund-raising goals of the University and all of its units.

(continued)

3. Consult with unit leaders and the University Development Council to implement a uniform personnel system.

The personnel system will include:

- consistent hiring practices;
- goal setting;
- performance standards and outcome-based performance measures;
- evaluation processes;
- a compensation plan with pay scales for members of the Office of Development as well as for unit development officers;
- professional development programs for all development officers.

Annual evaluations of each member of the Office of Development will be conducted. In conjunction with unit leaders, annual evaluations of each unit development officer will be conducted.

4. Prepare and manage the annual budget for the Office of Development.

Budget will include 15% of the salary expense for each unit development officer. It is expected development activities across campus be streamlined to be as economical and efficient as possible.

5. Chair the Advisory Committee to the Director of the Office of Development.

The President and the Provost/Executive Vice President will establish a committee to advise the Director. Membership will include one OSU Foundation Trustee, one member of the Alumni Board of Directors, and two unit development officers, as well as other representatives selected by the President and the Provost/Executive Vice President.

Additional Issues

Two issues impact the viability of this re-alignment and will be discussed at a future date.

1. *Sharpen the focus of Alumni Relations.*

   - Enhance and increase the rich array of high-quality opportunities for alumni to participate in academic and co-curricular activities. Such sharpening of focus may entail changing fund-raising responsibilities for the Office of Alumni Relations. In addition, responsibilities for cooperative programs may be allocated differently among Alumni Relations, the Office of Development, and the OSU Foundation.

2. *Improve the efficacy of the University's relationship with the OSU Foundation.*

   - Clarify the roles of the OSU Foundation and identify effective, efficient methods to coordinate development and university/alumni relations activities with related OSU Foundation endeavors.

   - Explore initiating a collaborative effort with the OSU Foundation to create a systematic set of activities to provide each Foundation Trustee an opportunity to be intimately involved in one or more activities of the University.

Personnel Assignments

Executive Director, Development and University Relations	John M. Evey
Director, Office of Development	Gene Kersey
Director, Alumni Relations	Donald S. Wirth
Director, Community and Government Relations	Kevin McCann
Executive Director, University Communications and Marketing	Robert K. Bruce
Director, News and Communication Services	Robert K. Bruce*
Director, University Marketing	Vacant
Director, University Publications/OSU Press	Jeffrey Grass
Director, Conferences and Special Events**	Sylvia L. Moore

* Dual appointment.
** Activities to be coordinated with Extended Education.

REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

541/737-4344

FACULTY SENATE OFFICE
Social Science 107

Thursday, June 6, 1996; 3:00 pm - 5:00 pm
Construction & Engineering Hall
LaSells Stewart Center

AGENDA

The agenda for the June Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the May Senate meeting, as published and distributed to Senators.

A. SPECIAL REPORTS

1. Faculty Senate Consideration of Degree Candidates (p. 1)

   Barbara Balz, Registrar, will present the recommended lists of degree candidates for Senior Honors, Baccalaureate Degree Candidates, and Advanced Degrees. The Faculty Senate is asked to approve these candidates on behalf of the Faculty of the University. These candidates have been certified by the appropriate academic units, committees, and councils. Attached is the Registrar's Memorandum dated May 1, 1996 which outlines the policies and procedures for the review and approval of degree candidates.

2. Paul Risser, OSU President

   President Risser will address the Senate.

3. Virtual OSU: A Walk on the Web Side

   Members of the OSU Web Group will present an update on OSU's Web pages and provide direction for the future.

B. ACTION ITEMS

1. Category I Proposal — Establish a Ph.D. Degree in Radiation Health Physics (pp. 2-21)

   Walt Loveland, Curriculum Council Chair, will present the Category I proposal which has been approved by the Curriculum Council, Graduate Council, and Budgets & Fiscal Planning Committee.

2. Standing Rules Revision (p. 22)

   Al Mukatis, Committee on Committees Chair, will present a proposal to revise the Standing Rules for the Committee on Academic Standing and the Instructional Media Committee. The highlighted sections indicate additions and the sections containing strike-throughs indicate deletions.

C. ANNUAL REPORTS

All Senate committees and councils are to report to the Senate and describe their work for the year. In most instances, the reports are for the information of the Senate, and committee chairs may not be present at the Senate meeting. These reports may contain specific recommendations and express views upon which further consideration could be taken. Questions regarding a report should be directed to the chair (prior to the meeting, through the departmental affiliation), or the Senate president, if appropriate.

Academic Advising Council, Mary Alice Stander, Chair (p. 23)
Academic Regulations Committee, Nancy Wendt, Chair (p. 24)
Administrative Appointments Committee, John Block, Chair (pp. 25–26)
Advancement of Teaching Committee, Cheryl Jordan, Chair (p. 27)
Baccalaureate Core Committee, Robert C. Sahr, Chair (pp. 28–31)
Committee on Academic Standing, Margaret Fox, Chair (pp. 32)
Attached copies referred to in the report are available for viewing in the Faculty Senate Office.
Committee on Committees, W. Alfred Mukatis, Chair (p. 33)
Curriculum Council, Walt Loveland, Chair (pp. 34–35)
Faculty Grievance Committee, Alice Mills Morrow, Chair (p. 36)
Graduate Admissions Committee, Richard J. Vong, Chair (p. 37)
Research Council, Steve Giovannoni, Chair (p. 38)
The Linus Pauling Institute memo referred to in the report is available for viewing in the Faculty Senate Office.
Retirement Committee, Mariol R. Wogaman, Chair (p. 39)
Undergraduate Admissions Committee, Mary Burke, Chair (p. 40)
University Honors College Council, Ken Krane, Chair (p. 41)

D. REPORTS FROM THE PROVOST

Roy Arnold, Provost & Executive Vice President for Academic Affairs

E. REPORTS FROM THE FACULTY SENATE PRESIDENT

President Ken Krane

F. NEW BUSINESS

Fall Calendar

September 16 - University Day; displays, am — program, pm

October 3 - Faculty Senate

November 7 - Faculty Senate

December 5 - Faculty Senate

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR UNIT AFFILIATION WHEN RISING TO SPEAK.

OFFICE OF THE REGISTRAR

OREGON STATE UNIVERSITY
102 Administrative Services · Corvallis, Oregon 97331 ·2130
Telephone 541 ·737 ·4331

May 1, 1996

TO: Dr. Kenneth S. Krane, President
Faculty Senate

FROM: Barbara S. Balz
Director of Enrollment Services and Registrar

SUBJECT: Faculty Senate Consideration of Degree Candidates

I would like to attend the Faculty Senate meeting on Thursday, June 6, 1996 to present the recommended lists of 1995-1996 degree candidates for Senate approval in the following categories:

1. Seniors Graduating with Academic Distinction

   As approved by the Faculty Senate on May 3, 1990, Seniors are eligible for conferral of "academic distinction" upon graduation. Seniors who meet the residency requirement and who achieve an Oregon State minimum grade point average of 3.50 to less than 3.70 graduate "cum laude", those in the range of 3.70 to less than 3.85 graduate "magna cum laude", and those with 3.85 and above graduate "summa cum laude". These notations will be shown in the Commencement program and on the student's diploma and transcript.

2. Baccalaureate Degree Candidates

   Those students verified as having completed all academic, college, school and departmental requirements by the academic dean, and institutional requirements by the Registrar's Office. These candidates are to be approved by the Academic Requirements Committee for recommendation to the Faculty Senate.

3. Advanced Degree Candidates

   Those graduate students who have completed degree requirements satisfactory to the Graduate Council for recommendation to the Faculty Senate.

cc: Provost and Executive Vice President Roy G. Arnold
Dean Thomas J. Maresh
Ralph H. Reiley, Jr.
Russell G. Dix

FACSEN.GRA

2.

DEPARTMENT OF
CHEMISTRY

3 May, 1996

Professor Ken Krane
Faculty Senate Office
Oregon State University

Dear Professor Krane,

I am pleased to report to you that the Curriculum Council approved the Category 1 proposal to establish a Ph.D. degree in Radiation Health Physics. This action was taken at the Council's regular meeting on 30 April, 1996. We understand that the State Board has approved of having the Faculty Senate examine/approve this proposal even though the Board has not finished its review of the pre-proposal for this degree. The approval by the Senate will allow timely action on this matter at a time when the normal Senate committees are not functioning. This proposal has been approved by the Budgets and Fiscal Planning Committee and the Graduate Council. We are transmitting this proposal to you in hopes that the Faculty Senate can act in a timely manner on this proposal.

Thank you.

Sincerely,

Walter Loveland

Walter Loveland
Professor of Chemistry
Chair, Curriculum Council

WDL/clp

OREGON
STATE
UNIVERSITY

Gilbert Hall 153
Corvallis, Oregon
97331-4003

Telephone
503-737-2081

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503-737-2062

3.

12/13 - [illegible]
[illegible]
[illegible]
2/27 - Brown - Budgets
3/15 - to Council

Category I Transmittal Sheet

Category I Proposal to Establish a Ph.D. Program in Radiation Health Physics

Submitted By:

The Department of Nuclear Engineering

College of Engineering

DEC 1995
RECEIVED
DIRECTOR
UNDERGRAD ACADEMIC PGMS
OREGON STATE UNIVERSITY



ATTACH: Library Evaluation and Liaison Documentation

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

[signature] 12-11-95

Department Head Date

[signature] 12/11/95

Dean Date

4-3-96 4.

OREGON STATE UNIVERSITY
College of Engineering
Department of Nuclear Engineering

Category I Proposal to Establish a Ph.D. Program in Radiation Health Physics

OVERVIEW

The Department of Nuclear Engineering proposes to establish a Ph.D. program in Radiation Health Physics. The department currently offers programs leading to B.S. and M. S. degrees in same field. The department also offers B.S., M.S., and Ph.D. degrees in Nuclear Engineering.

The Radiation Health program has been offered at Oregon State University since 1963. Initially it was offered through the General Science Department, but in 1988 the M.S. program was transferred to Nuclear Engineering with the B. S. program following in 1991. There was a subsequent curricular change which renamed the degrees to Radiation Health Physics. During the past four years the program has expanded in student enrollment, research activity and in the number of departmental faculty working in the field. There has also been great pressure from students and employers to add a doctorate program in Radiation Health Physics. This coupled with the faculty's need for highly gifted students to support their research activities has resulted in this effort to establish this degree at Oregon State University.

With the addition of another Health Physics faculty member in the fall of 1994, all of the courses to accomplish this program are currently offered by the Department of Nuclear Engineering.

1. DEFINITION OF ACADEMIC AREAS

a. Define or describe the academic area or field of specialization with which the proposed program would be concerned.

Radiation health physics is the academic field which is also known as radiation protection or simply health physics. Health physicists are dedicated to the protection of humans and their environment from the harmful effects of radiation. Their concerns include ionizing radiation, such as X rays and gamma rays, as well as non-ionizing radiation, such as microwaves and ultraviolet light. Health physics spans a wide range of disciplines, including biology, chemistry, physics, medicine, engineering, law and sociology.

Areas of concern to health physicists include environmental monitoring, radiation and radioactive material from nuclear facilities, nuclear medicine, natural radiation, criticality safety, radioactive waste management, radioactive material transportation, radiation shielding, particle accelerators, radiation dosimetry, radiation detection instrumentation, nuclear fuel cycle, emergency planning, decommissioning, pure and applied research, risk assessment, training, public information and more.

b. What subspecialties or areas of concentration would be emphasized during the initial years of the program?

The program concentration will be in the area of nuclear reactor health physics and associated areas including nuclear instrumentation, environmental radiological monitoring, radioactive waste management, transportation, regulations and emergency planning.

c. Are there other subspecialties the institution would anticipate adding or emphasizing as the program develops?

As the program develops, it is anticipated that the areas of nuclear medicine, non-ionizing radiation protection and non-reactor radiation protection will be added.

d. Are there subspecialties that the institution intends to avoid, in developing the program?

No.

e. *When will the program be operational, if approved?*

Fall 1996.

2. DEPARTMENT OR COLLEGE RESPONSIBLE

a. *What department and school or college would offer the proposed program?*

The Radiation Health Physics doctorate program will be administered by the Department of Nuclear Engineering in the College of Engineering.

b. *Will the proposed program involve a new or reorganized administrative unit within the institution?*

No. The addition of the Ph.D. program will not significantly add to the administrative burden of the Nuclear Engineering department since it already administers both the B. S. and M. S. programs in Radiation Health Physics as well as the B. S., M. S., and Ph.D. programs in Nuclear Engineering.

3. OBJECTIVES OF THE PROGRAM

a. *What are the objectives of the program?*

The objectives are to provide graduates from the program with a strong background to begin research or teaching careers in the field of health physics. Graduates should, after the required experience, be able to achieve certification as Certified Health Physicists under the requirements of the American Board of Health Physics (ABHP).

b. *How will the institution determine how well the program meets these objectives? Identify specific post-approval monitoring procedures and outcome indicators to be used if the program is approved.*

The Nuclear Engineering Department and the Department's Advisory Board will be responsible for collecting the following information which will be used for evaluating the program's success in achieving its objectives:

1. Recognition of the program outside of OSU;

2. Successful employment of students after graduation,

3. Successful certification of graduates by the ABHP.

4. Survey of student satisfaction with program at graduation and again after two to five years.

c. *How is the proposed program related to the mission and academic plan of the institution?*

The mission of Oregon State University as a land grant institution is to serve the people of Oregon, the nation and the world through education, research and service. The University regards itself among the leading comprehensive teaching and research universities in the nation. Implementation of the Ph.D. in Radiation Health Physics will improve the quality of educational offerings by building upon the already strong and recognized programs of the College of Engineering. The proposed program will use existing courses offered by the Department of Nuclear Engineering. Additional blanket graduate courses (at the 600 level) in support of doctoral level instruction will be added to parallel those already offered for the NE Ph.D. program.

d. *What are the employment outlets and the employment opportunities for persons who would be prepared by the proposed program?*

Employment opportunities exist in the nuclear power industry, in medicine, in teaching and research, in non-nuclear industrial radiation safety, in waste management, in environmental areas as well as in state and federal regulatory agencies. The specific data illustrating the range of opportunities and the need for health physicists is covered under question 9.a.

4. RELATIONSHIP OF PROPOSED PROGRAM TO OTHER PROGRAMS IN THE INSTITUTION

List the closely related programs and areas of strength currently available in the institution which would give important support to the proposed program.

The most closely related area which would strongly support the program is that of nuclear engineering. Some of the graduate courses would have overlapping benefit for both programs, for example radiation instrumentation and dosimetry.

5. COURSE OF STUDY

a. *Describe the proposed course of study.*

The student's doctoral study program will be developed by the student and his/her Ph.D. graduate committee following the requirements and policies of the Graduate School. Successful completion of both a preliminary and final oral exam are required. The program will consist of 135 credit hours divided approximately equally between the major area, a minor and thesis work. The major course work must include the following:

Nuclear Rules and Regulations	RHP 514	3 hrs
Radioecology	RHP 588	3 hrs
Field Practices in Radiation Protection	RHP 580	3 hrs
Applied Radiation Safety	RHP 584	3 hrs
Radiation Biology	RHP 587	3 hrs
Applications of Nuclear Techniques	RHP 537	3 hrs
Radioactive Waste Management	RHP 543	3 hrs
Nuclear Radiation Shielding	RHP 535	3 hrs

b. *What elements of this course of study are presently in operation in the institution?*

With the exception of the 600 level offerings, all other courses in the proposed curriculum are currently offered at OSU.

c. *How many and which courses will need to be added to institutional offerings in support of the proposed program?*

The additional courses to be added in support of the proposed program parallel those already offered for the Ph.D. program in Nuclear Engineering. Specific additions include:

Research	RHP 601	1 - 16 hrs
Thesis	RHP 603	1 - 16 hrs
Reading and Conference	RHP 605	1 - 16 hrs
Projects	RHP 606	1 - 16 hrs
Radiation Health Physics Seminar	RHP 607	1 hr

6. ADMISSION REQUIREMENTS

a. *Please list any requirements for admission to the program that are in addition to admission to the institution.*

Admission requirements for the Ph.D. Program in Radiation Health Physics will be the same as those of the OSU Graduate School.

b. *Will any enrollment limitation be imposed? Please indicate the limitation and rationale therefor. How will those to be enrolled be selected if there are enrollment limitations?*

Yes, enrollment will be limited to no more than 10 students. This limitation is based on the number of available positions with the current faculty. Enrollment selection will be performed by the department admission committee based on student background and qualifications.

7. RELATIONSHIP OF PROPOSED PROGRAM TO FUTURE PLANS

a. *Is the proposed program the first of several steps the institution has in mind in reaching a long-term goal in this or a related field?*

Addition of the Ph.D. program in Radiation Health Physics is actually the last step in achieving the Nuclear Engineering Department's long-term goal of providing a comprehensive teaching and research program in the application of nuclear and radiation technologies.

b. *If so, what are the next steps to be, if the Board approves the program presently being proposed?*

Not applicable.

8. ACCREDITATION OF THE PROGRAM

a. *Is there any accrediting agency or professional society which has established standards in the area in which the proposed program lies? (Please give name.)*

Neither the Health Physics Society nor the American Board of Health Physics has established any formal accreditation mechanism for Radiation Health Physics programs.

b. *If so, does the proposed program meet the accreditation standards? If it does not, in what particulars does it appear to be deficient? What steps would be required to qualify the program for accreditation?*

Not applicable.

c. *If the proposed program is a graduate program in which the institution offers an undergraduate program, is the undergraduate program fully accredited? If not, what*

would be required to qualify it for accreditation? What steps are being taken to achieve accreditation?

No accreditation body exists for Radiation Health Physics programs. Thus the OSU undergraduate program is not accredited. The first step towards achieving accreditation will be for the Radiation Health Physics faculty to work with the Health Physics Society in the development of an accreditation program.

9. EVIDENCE OF NEED

a. *What evidence does the institution have of need for the program? Please be explicit.*

No Ph.D. programs in Radiation Health Physics exist in Oregon or the Pacific Northwest. In fact only two of the 18 institutions granting Ph.D. degrees in Health Physics are located west of the Mississippi River. Even if only the U.S. Department of Energy is considered as a place of employment and research, this single government agency is responsible for activities at major nuclear sites in the states of Washington, California, Idaho, Nevada, New Mexico and Colorado. The geographic advantage of Oregon State University is tremendous in the areas of recruiting of top quality students, employment opportunities for the program's graduates and for involvement in research into environmental restoration, waste management and health and safety issues.

Student interest in the prospect of attaining a Ph.D. in Radiation Health Physics has been very strong. The current pool of interested, qualified students exceeds the number of admissions the department will grant should the program be instituted at Oregon State University.

Addition of the Ph.D. program will be one more factor in enabling the Radiation Health Physics program to qualify to receive students funded under the U.S. DOE Fellowship program administered by Oak Ridge Associated Universities.

b. *What is the estimated enrollment and the estimated number of graduates of the proposed program over the next five years? If the proposed program is an expansion of an existing one, give the enrollment in the existing program over the past five years.*

After five years, the enrollment is expected to be between 5 to 10 students. At this enrollment level, 2 to 4 graduates are anticipated each year. This is consistent with the enrollment and graduation trends of Ph.D. candidates in the Nuclear Engineering program.

Is the proposed program intended primarily to provide another program option to students who are already being attracted to the institution, or is it anticipated that the proposed program would draw its clientele primarily from students who would not otherwise come to the institution were the proposed program not available there?

It is anticipated that the proposed program would draw students who would not otherwise attend the institution.

It is important to note that many students attracted to the institution for nuclear engineering express strong interest in radiation health physics. Although it is expected that currently enrolled students will remain in their present departmental programs, the proposed program also provides another option to students already attracted to OSU.

c. *Identify statewide and institutional service area manpower needs the proposed program would assist in filling.*

The program will assist in filling manpower needs in Radiation Health Physics in primarily Oregon and eastern Washington.

d. *What evidence is there that there exists a regional or national need for additional qualified persons such as the proposed program would turn out?*

See 9a.

e. *Are there any other compelling reasons for offering the program?*

OSU has the required facilities, courses and faculty to offer a program in this field. In combination with the growing international reputation of the Nuclear Engineering department, an opportunity exists to fill a need for which there is a demand, at no added cost to the University.

f. *Identify any special interest in the program on the part of local or state groups (e.g., business, industry, agriculture, professional groups.)*

The Department of Nuclear Engineering Advisory Board is made up of personnel from private utilities, private industrial firms, and government organizations. The current board consists of five members from Oregon and two from Washington; four of these are from utilities, two from industrial companies, and one from a governmental organization.

The Board commended OSU on the excellence of the Department and further stated that: "We feel that the strong emphasis on Radiation Health Physics within the NE program appropriate and necessary. However, it is recommended that OSU offer a Ph.D. degree in Radiation Health Physics to capitalize on the opportunities which the next decade shall present."

DUPLICATION OF EFFORT

10. SIMILAR PROGRAMS IN THE STATE

a. List any similar programs in the state.

No similar program is offered in the state of Oregon.

b. If similar programs are offered in other institutions in the state, what purpose will the proposed program serve? Is it intended to supplement, complement, or duplicate existing programs?

Not applicable.

c. In what way, if any, will resources of any other institutions be utilized in the proposed program?

Not applicable.

RESOURCES

11. FACULTY

a. List any present faculty who would be involved in offering the proposed program, with pertinent information concerning their special qualifications for service in this area.

Faculty Member	Specialization
Stephen E. Binney	application of nuclear instrumentation and nuclear techniques, radiation shielding

Brian Dodd	health physics, radioactive material transportation, emergency response
Jack F. Higginbotham	health physics, nuclear instrumentation, beta particle and gamma-ray spectroscopy
Kathryn A. Higley	human and ecological risk assessment, environmental pathway analysis, environmental radiation monitoring, radionuclide and hazardous chemical transport
Arthur G. Johnson	health physics, radiation safety and nuclear regulations
Andrew C. Klein	reactor materials, fusion engineering and design, space nuclear power, nuclear fuel cycle
Todd S. Palmer	numerical techniques for particle transport and diffusion, computational fluid dynamics, general numerical methods
José N. Reyes, Jr.	thermal hydraulics, reactor system design and analysis, probabilistic risk assessment
John C. Ringle	environmental impact, nuclear waste management
Alan H. Robinson	nuclear fuel management, computational methods, neutron radiography

b. *Estimate the number, rank, and background of new faculty members that would need to be added to initiate the proposed program; that would be required in each of the first four years of the proposed program's operation, assuming the program develops as anticipated in item 8b. What kind of commitment does the institution make to meeting these needs.*

It is anticipated that no new faculty are required. All the courses required for this program are being offered. The growth outlined in item 8b can be accommodated with current faculty.

c. *Estimate the number and type of support staff needed in each of the first four years of the program.*

The support staff presently available is adequate for the next few years.

12. LIBRARY

a. *Describe, in as objective terms as possible, the adequacy of the Library holdings that are relevant to the proposed program (e.g., if there is a recommended list of library materials issued by the American Library Association or some other responsible group, indicate to what extent the institution's library holdings meet the requirements of the recommended list).*

The OSU and Radiation Center libraries contain all of the necessary texts, reports and journals necessary to support this program.

b. *How much, if any, additional library support will be required to bring the Library to an adequate level for support of the program?*

No additional funding is required.

c. *How is it planned to acquire these Library resources?*

Not applicable.

d. *A statement from the Director of Libraries indicating present resources and funding of future needs must be attached to the proposal. (This is an OSU requirement exclusively.)*

See Appendix A.

13. FACILITIES AND EQUIPMENT

a. *What special facilities in terms of buildings, laboratories, equipment, are necessary to the offering of a quality program in the field and at the level of the proposed program?*

See Table 1.

b. *What of these facilities does the institution presently have on hand?*

The Radiation Center currently provides all the required facilities.

c. *What facilities beyond those now on hand would be required in support of the program?*

Presently, no additional facilities are required.

d. *How does the institution propose these additional facilities and equipment shall be provided?*

No additional facilities are required.

14. BUDGETARY IMPACTS

a. *Please indicate the estimated cost of the program for the first four years of its operation, following the format shown following this document.*

The Department of Nuclear Engineering will be responsible for maintenance of the program, monitoring students enrolled in the program, and coordinating course assignments among the departments involved.

The estimated cost of the program is zero over the next five years. All of the courses, faculty, facilities, and equipment are already available at OSU (with the exception of the 600 - level blanket courses). The courses are all being taught. The equipment and facilities are being maintained for the Department of Nuclear Engineering, as well as other OSU departments. This new program is simply an efficient utilization of existing resources.

b. *If a special legislative appropriation is required to launch the program (as shown in item 4b of the estimated budget), please provide a statement of the nature of the special budget request, the amount requested, and the reasons a special appropriation is needed. How does the institution plan to continue the program after the initial biennium?*

Not applicable.

If federal or other grant funds are required to launch the program (items 4c and 4d), what does the institution propose to do with the program upon termination of the grant?

Not applicable.

d. *Will the allocation of going-level budget funds in support of the proposed program have an adverse impact on any other institutional program? If so, which programs and in what ways?*

Not applicable.

e. *If the program will be financed from existing resources, specifically state:*

(1) *what the budgetary unit will be doing as a result of the new program that is not now done, in terms of additional activities;*

None.

(2) *what these new activities will cost and whether financed or staffed shifting of assignments within the budgetary unit or reallocation of resources within the institution.*

The costs for the Ph.D. program are shown on page 13. Funding for the program will be provided by shifting funds from the current M.S. program to the Ph.D. program.

f. *State which resources will be moved and how this will affect those programs losing resources. (This is an OSU requirement exclusively.)*

No resources will be moved.

Summary of Estimated Costs or Savings and Sources of Funds

Program/Unit: Nuclear Engineering Department
Institution: Oregon State University

RESOURCES REQUIRED	First Year	FTE	Second Year	FTE	Third Year	FTE	Fourth Year	FTE
PERSONNEL								
Faculty	10,029	0.17	10,329	0.17	10,639	0.17	10,959	0.17
Graduate Asst.	253	0.17	260	0.17	268	0.17	276	0.17
Support Personnel	1,310	0.17	1,349	0.17	1,389	0.17	1,431	0.17
Fellowships & Scholarships								
Total								
Percentage Total from State Funds	100		100		100		100	
OTHER RESOURCES								
Library (1)	0							
Supplies & Services	543	0.17	559	0.17	576	0.17	594	0.17
Movable Equipment	0							
Total								
Percentage Total from State Funds	100		100		100		100	
PHYSICAL FACILITIES								
Construction of New Space or Major Renovation								
Percentage Total from State Funds								
GRAND TOTAL	15,893	0.17	16,369	0.17	16,861	0.17	17,366	0.17
Percentage Total from State Funds	100		100		100		100	
SOURCES OF FUNDS								
State Funds-Level Budget (2)	15,893	0.17	16,369	0.17	16,861	0.17	17,366	0.17
State Funds-Spec. Approp.								
Federal Funds								
Other Grants								
Fees, Sales, Etc.								
Other								

NOTES:

(1) No new resources are needed for this program.

(2) State Funds currently provided for our M.S. program will be re-allocated to the Ph.D. program.

(3) OPE funds are currently assigned to salary dollars and are not included here.

(4) The FTE rate of 17% is based on the current PhD degree offered in nuclear engineering. The NE PhD degree has been offered since 1972. Our experience indicates that each faculty member can supervise up to 5 graduate students. Graduate student supervision constitutes about 15 to 20% of faculty time.

18.

Table 1
LABORATORY FACILITIES
Program: Radiation Health Physics

Physical Facility (Blg. & Rm No.)	Purpose of Laboratory	Condition of Laboratory	Adequacy for Instruction	Area (Sq. ft.)
RC A128	Co-60 irradiator room	Very good	Very good	400
RC A134	Nuclear Engineering Projects	Excellent	Very good	400
RC B100	Radiation measurement laboratory	Excellent	Excellent	400
RC B122	Radioisotope hot laboratory	Excellent	Very good	500
RC B124	Radioisotope hot laboratory	Excellent	Very good	600
RC B136	Radiation measurements lab	Very good	Good	400
RC C118	Radiochemistry instruction	Very good	Good	800
RC C120	Nuclear instrumentation instruction	Excellent	Excellent	800
RC C121	Reactor thermal hydraulics	Excellent	Very good	600
RC C122	12 PCs, LAN, hard copy devices	Excellent	Excellent	40(
RC C123	Low level radiation analyzer/Reg. Guide 1.21 system	Excellent	Very good	120
RC C130	Nuclear engineering projects lab	Excellent	Very good	400
RC 132A	Darkroom	Good	Good	200
RC C134	Radiation measurements	Excellent	Very good	400
RC D100	Neutron radiography	Good	Good	200
RC D102	Neutron activation pneumatic transfer station: for irradiation experiments for instruction and research	Excellent	Excellent	400
RC D104	Research reactor facility (1 MWt) for instruction and research involving reactor use	Excellent	Excellent	3555
RC E102	Computer room/HP workstations	Excellent	Excellent	200
RC E104	Computer room with PCs	Excellent	Excellent	200
				TOTAL Area: 10,9

LIBRARY ASSESSMENT FOR CURRICULUM PROPOSAL

Category I: Phd Program in Radiation Health Physics

Category II:

The subject librarian responsible for collection development in the pertinent curricular area has assessed the ability of library collections and services to support the proposal by examining: shelflist holdings; journal support (including standing orders and memberships); reference support; OASIS for pertinent subject headings, call numbers, authors, titles; existing external sources of support; related services (LIRS; CD-ROM; Documents; Maps; Special Collections; Guin Library; Microforms); comparisons with other library collections via RLIN, OCLC, AMIGOS CD-ROM, Internet (NOTE: The collections and services examined vary with the level of the proposal). Based on the examination, the subject librarian concludes that present collections and services are:

( ) inadequate to support the proposal (see budget needs below)
( ) marginally adequate to support the proposal
(✓) adequate to support the proposal

Estimated funding needed to upgrade collections and services to support the proposal (details are attached):

Year 1: $ -0-
Ongoing: $ -0-

Comments and Recommendations:

See Attached

Date Received: _____ Date Completed: 12/7/95

Subject Librarian: D. E. Mathews

AUL Collection Development: [signature]

University Librarian: [signature]

Distribution: white (Curriculum Council)
green (Dean, College)
canary (Department Chair)
pink (AUL for Collection Development)
goldenrod (Subject Librarian)

Comments and Recommendations for Information Services Support:

The strategy used to assess the Kerr Library collection strengths in this subject area at this level included the examination of subject areas covered by the degree, new courses offered by the program and their support by the collections of books, journals, proceedings, government documents and access methods.

Note: *This is only a estimation of the relative strength of the radiation physics and health literature at Kerr. There are minor headings containing titles that are not reflected here.*

Subject	Strength (titles or headings)	Comment
sw=nuclear health physics	35	many minor headings with at least one title.
tw=nuclear instrumentation	25	many over ten years old.
a=environmental radiological monitoring	18 titles	more currency needed
w=radioactive waste management	402 titles	37 published within last five years.
w=transportation	14	Associated closely with regulation
w=regulations radiation	28	CFR, DOE and US Nucl. Reg
w=emergency planning	62	
w=nonionizing	16	
w=nonreactor	1	Associated with nuclear medicine?
s=radiation safety measures	110	20 published within last five years.

Journals

The most relevant journals in Kerr's collection include:

Radiation research
Applied Physics B.
Journal of environmental radioactivity (canceled after 1992)
Advances in Radiation biology
International Journal of radiation applications and research (canceled after 1992)
International journal of radiation biology
Radiation and Environmental Biophysics
Radiation Physics and Chemistry
Radiation Research
Annals of the ICRP

Proceedings

tw=proceeding or conference and radiation	366 titles	67 published within last five years.

Indexes and Network resources

Inspec via Firstsearch, EI-Page One, General Science Index, Applied Science and Technology Index, Science Citation Index, Marcive, Government Announcements Index, Chemical abstracts, INIS Atomicindex, Physics Abstracts are all sources of bibilographic information for nuclear safety and health issues.

Recommendations

As stated in the curriculum proposal, this program would be the only program of its kind offered in the Pacific Northwest. This places a special responsibility in making sure the collection is adequate. Especially at the doctoral research level. Fortunately, Kerr has been supporting the the B.S. and M.S. in Health Radiation Physics. This incremental approach to building collections is both logical and conducive to creating good support of programs. Core materials in this subject area are available at Kerr. Whatever journals or books we do not have can be ordered through interlibrary loan and through the article/document delivery policy being developed. This may be especially important for two journals in this area the were canceled in previous cuts. Concentrating on speedy access of materials and educating researchers to network table of contents browsers, and indexes should more than provide for the program's information needs.

John Matylonek

COMMITTEE ON ACADEMIC STANDING

The Committee on Academic Standing is charged with the enforcement of the regulations on Satisfactory Academic Standing. In this regard the Committee has developed guidelines for the administration of these regulations. Guidelines are reviewed annually to ensure that they continue to serve the interests of the University community and that they reflect current University policies and procedures. The Committee has discretionary authority to grant exceptions to the regulations on Academic Standing. The Committee hears all requests for reinstatement exceptions following academic suspension. Upon request of the student, the Committee conducts a personal interview to determine the causes of unsatisfactory performance and possible remedies. The Committee meets to consider such requests, as needed, each term prior to the last day to register. The Committee consists of ~~five~~ seven faculty and two student members, and the Registrar (or representative), Ex-Officio.

INSTRUCTIONAL ~~MEDIA~~ DEVELOPMENT AND TECHNOLOGY COMMITTEE

The Instructional ~~Media~~ Development and Technology Committee reviews and recommends policy concerning ~~centralized~~ instructional ~~audiovisual materials and equipment, instructional development services, operation of campus television services, utilization of community cable television, and participation in interinstitutional televised teaching~~ technology resources and their application to the teaching/learning process and curriculum change. It assists in planning and advocating for the necessary technology to maximize student learning. Included within technology resources are instructional services, training, and distance and extended campus learning opportunities. The Committee shall consists of six Faculty and two Student members, and, ex-officio, the Director or Associate Director of the Communication Media Center~~, Ex-Officio~~.

~~The Committee may appoint technical advisory personnel as needed. These persons will aid the Committee in its work, but will not vote on policy decisions.~~

Beavers™ OREGON STATE UNIVERSITY
DEPARTMENT OF INTERCOLLEGIATE ATHLETICS

"SERVING STUDENT ATHLETES AS A PROUD MEMBER OF THE PAC-10 CONFERENCE"

May 8, 1996

TO: Ken Krane, President
Faculty Senate

FROM: Mary Alice Stander, Chair
Academic Advising Council

SUBJECT: 1995-96 Annual Report -- Academic Advising Council

The Academic Advising Council meets monthly throughout the academic year. It provides support and information to units that provide academic advising for students and makes recommendations for changes in policy and procedures. The Council is composed of the head advisor from each college and a representative from each service unit. (Academic Affairs, Admissions & Orientation, Continuing Education, Dean of Student's Office, Defense Education, EOP, Intercollegiate Athletics, International Education/ELI, Multicultural Affairs/Indian Education , Retention Services, UESP, Honor's College and the Registrar's Office)

Among topics discussed:

* Concerns about staffing post-SOAP advising due to the large number of "drop-ins."

* The AAC worked with Admissions and Orientation to solve the problem of colleges being overwhelmed by the mailing requirements caused by Viewbook information requests that are returned by prospective students.

* Assessment of academic advising is in a holding pattern. There was some discussion of "benchmarking" the advising process to measure how well students are advised.

* A sub-committee worked with the Health Center to make recommendations on timely interventions for students who are unable to continue school for medical reasons.

* Worked with Admissions and Orientation and Housing to work out fall term orientation scheduling problems and conflicts with the opening of residence halls and rush.

* Transcripting overseas programs.

* Transcript visible minors paperwork.

* Proposal for a Career Services Advisor Council.

* Update of OSU's Academic Advising Manual.

24.

DEPARTMENT OF SPEECH
COMMUNICATION

TO: Faculty Senate

FROM: Academic Regulations Committee
Nancy Wendt, Chair
Barbara Balz, Ex-Officio
Peter Nelson
Janet Nishihara
Debra Rose
Ray Verzasconi

DATE: May 15, 1996

SUBJECT: Annual Report

OREGON
STATE
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The Academic Regulations Committee was asked to review and make recommendations on three issues this year: AR 20. Repeated Courses, AR 25.g Restrictions on Institutional Requirements for Baccalaureate Degrees, and AR 11. b Dropping Courses (for Summer term short courses only).

The Committee reviewed the issue of the repeat course regulation. We decided that since the Faculty Senate had in recent years voted against any change to the regulation there was no need to propose the change again so soon. We expect that there will be requests to change the regulation again nest year.

The University Curriculum Committee requested we restrict the new Academic Learning Services (ALS) courses to a maximum of twelve credits for graduation. Our committee met with the Chair of Curriculum Council to better understand what type of courses would fall under the new designator. We agreed and have proposed the twelve credit limitation in ALS courses. The Executive Committee (EC) is currently reviewing the issue.

The last issue our committee dealt with this year was not a request to change an Academic Regulation, but rather asking that one be implemented differently for short term courses during the summer session. The Academic Requirements Committee requested that the add/drop deadline be lengthened to four days to allow one more day for students to determine whether or not they want to drop short term summer courses. Our committee agreed it should be implemented. We are waiting for a ruling from the EC on our request.

Administrative Appointments Committee
Annual Report
1995-96

Committee Members	Term Expires	Affiliation
John Block (Chair)	1996	College of Pharmacy
Pui Shing Ho	1996	College of Science
Stephen Hobbs	1996	College of Forestry
Bill Lunch	1997	College of Liberal Arts
Bart Thielges	1997	College of Forestry
Clay Torset	1997	Student Services
Carroll DeKock	1998	College of Science
Irma Delson	1998	College of Oceanic & Atmospheric Sciences
Jodi Engel	1998	College of Home Economics & Education

Search Committees that Required Members of the Administrative Appointments Committee

Associate Provost for Academic Affairs
Bart Thielges, Chair (College of Forestry)

Dean of Health and Human Performance
Ann Asbell (Health and Human Performance)

Dean of Veterinary Medicine
Bill Lunch (College of Liberal Arts)
Carroll DeKock (College of Science)

Director of Undergraduate Programs
Jodi Engel (College of Home Economics and Education)
Carroll DeKock (College of Science)

President of Oregon State University
John Block (College of Pharmacy)

Committee Charges and Responses

President Ken Krane asked the Committee to respond to two questions.

Question #1

Should the Director of Undergraduate Programs be added to the list of administrative appointments for which the Administrative Appointments Committee supplies one or more members to the search committees?

This particular position has been a 0.5 FTE appointment and reports to the Associate Provost for Academic Affairs. Therefore, according the Committee's charge search committees for this position would not require participation by a member of the Committee. Committee members generally agree with President Krane that the Director of Undergraduate Programs has great influence on curricular matters and, therefore, should

be added to the list of Administrative Positions whose search committees require representation from the Administrative Appointments Committee.

Question #2

Should the Administrative Appointments Committee be involved in the performance reviews of deans and other administrators similar to its role in the filling of vacancies?

The Committee has mixed feelings on this question. There is real concern about the time commitment. Should the Senate conclude that this duty should be added to the Committee's Charge, the Committee's membership should be enlarged.

Some Committee members have recommended that an observer status to these performance reviews similar to that of the Senate's Promotion and Tenure Committee might meet the Senate's concern on this item. The Senate will need to debate this item fully.

Recommendations

A. Update the list of "30 Positions" found in the Committee's charge by:

   a. Adding the Director of Undergraduate Programs

   b. Adding the Dean of Extended Education

   c. Adding the Director of the Honors College (Committee members did participate in the search for the current director.)

   d. Deleting the Director of Extension Service who now reports to the Dean of Extended Education

   e. Deleting the Director of Continuing Higher Education and Summer Term who now reports to the Dean of Extended Education

   f. Deleting the Director of Computing Services who now reports to the Associate Provost for Information Services

B. Place the item regarding the Committee's participation in performance reviews of individuals occupying the administrative positions found in the Committee's charge on the agenda of a future Senate meeting for an in-depth discussion.

DEPARTMENT OF APPAREL, INTERIORS,
HOUSING AND MERCHANDISING

OREGON STATE UNIVERSITY
Milam Hall 224 · Corvallis, Oregon 97331·5101
Telephone 503·737·3796

May 20, 1996

TO: Ken Krane, President
Faculty Senate

FROM: Cheryl Jordan, Chair
Advancement of Teaching Committee

SUBJECT: Annual Report 1995-96

The Advancement of Teaching Committee consisted of the following members:

Stan Brings	Industrial Engineering
Carl Kocher	Physics
Robin Rose	Forest Science
Lisa Sarasohn	History
Andy Hashimoto	Academic Affairs (ex-officio)

The committee's primary focus this year has been to explore means by which teaching effectiveness and scholarship in teaching might be most effectively documented. The new promotion and tenure guidelines recognize scholarship in teaching, however documentation of this type of scholarship has not been clearly delineated. Currently, the committee is developing voluntary guidelines for faculty use in development of the teaching portfolio. The teaching portfolio is a comprehensive means (includes more than student evaluations) of assessing teaching quality and effectiveness.

To assess how teaching is viewed in the current reward system, the committee met with the Chairs of the Promotion and Tenure Committee and the Promotion and Tenure Guidelines Committee. In addition, committee members conducted an informal survey of colleagues at other institutions about the use of the teaching portfolio on their campuses.

Additional committee activities are summarized below:

- Review of the OSSHE Distance Learning Student Evaluation
- Review of new grade reporting options being considered by the Registrar
- Liaison to the Faculty Awards and Recognitions Committee regarding faculty teaching awards for 1996
- Review of L.L. Stewart Faculty Development Award applications
- Review of proposals submitted for marketing of Class Notes (RFP for the new university processing of copyrighted materials in class packets)
- Review of the Frolander Outstanding Graduate Teaching Assistant candidates

Baccalaureate Core Committee

Oregon State University

Robert C. Sahr, Chair

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E-mail: sahrr@cla.orst.edu

May 15, 1996

Annual Report of the Baccalaureate Core Committee, 1995-96 Academic Year

The Committee conducted two primary kinds of activities during the 1995-96 academic year. First, the Committee considered proposals for new baccalaureate core courses and associated issues. Second, the Committee continued the process of evaluating the baccalaureate core curriculum as a whole, a process begun the 1994-95 academic year. Because the baccalaureate core is now relatively "mature," the members of the Baccalaureate Core Committee have devoted an increasing share of their time during the current year to evaluating the core and a smaller proportion of time to considering individual proposals

Evaluating Course Proposals

The Committee approved the following numbers of courses in various baccalaureate core categories (only categories in which courses were approved are listed):

Skills, Writing II	1
Perspectives, Physical Science	1
Perspectives, Social Processes and Institutions	2
Perspectives, Literature and the Arts	1
Perspectives, Difference, Power, and Discrimination	6
Synthesis, Contemporary Global Issues	2
Synthesis, Science, Technology, and Society	3
Writing Intensive	5

Of 29 course proposals received, 21 (above) were approved, three were denied or withdrawn (one from a prior year), and six are pending, either awaiting additional information or to be considered at the next Baccalaureate Core Committee meeting. (Cross-listed courses are counted as one course here, though more than one course number or tracking number may have been used.) Information about the status of course proposals is available on Gopher.

Clarifying Baccalaureate Core Course Proposal Guidelines and Forms

Many baccalaureate core course proposals have been approved only after revisions to original submissions. The Committee, therefore, decided to clarify the information available to faculty proposing baccalaureate core courses.

The Committee spent a significant part of its time re-wording the descriptions of the various elements of the baccalaureate core in order to enhance the probability that faculty would respond to each component when proposing courses. These changes in every instance remained faithful to the original intent and, as much possible, the original wording of the core categories. A major part of the revision was to list all elements that applied to each core category under that category. Previously, such general criteria as "critical thinking" were placed at the beginning of the descriptions, so that many faculty overlooked them when writing proposals. The Committee also revised the forms for proposing baccalaureate core courses and writing intensive course. As "housekeeping" rather than substantive changes, the Faculty Senate Executive Committee authorized them to be printed in the revised *Curricular Procedures Handbook.*

Advising Students about the Baccalaureate Core

During the previous (1994-95) academic year, the Committee used questionnaires and small group meetings with students (called "Bac Core and Pizza") to evaluate student reactions to the baccalaureate core. A main result of those efforts was the judgment that students have insufficient information on which to evaluate whether specific baccalaureate core courses are appropriate for them.

As a result, the Committee proposed that brief (2- or 3-sentence) descriptions of the course as currently taught be included in the Schedule of Classes each quarter. Faculty would supply two or three sentences for each baccalaureate core course to be taught that quarter describing expected background (even if not formal prerequisites), workload, and what students should expect to get from the course.

The Committee worked with Bruce Shepard to begin implementing that process, but that effort was temporarily suspended with the change of administration. The Committee recommends that brief descriptions of forthcoming-quarter baccalaureate core courses be included in the Schedule of Classes beginning as soon as practical, preferably some time during the 1996-97 academic year.

Helping Faculty Who Teach Baccalaureate Core Courses

The Committee during the past two years has been concerned about the effect of large class sizes on the quality of learning and teaching in baccalaureate core courses. This is most pronounced in courses that are required to be small. This is potentially particularly a difficulty in the writing-intensive curriculum. The Committee has examined enrollments in WIC during the past academic year and found very few difficulties with class size. We are examining further how those with relatively large class sizes in writing-intensive courses manage. We do this primarily as a way of learning from other faculty rather than in any punitive sense of penalizing those whose class sizes are "too large."

The Committee's concern with the effect of class size on baccalaureate core courses is not limited to WIC, however. For example, all faculty who teach baccalaureate core courses are expected to emphasize elements of "critical thinking," though it is not clear how well this can be done in large classes. Similarly, the natural science courses often have very large enrollments, affecting what can be taught and how, and so how well baccalaureate core criteria can be met.

Because of these and related continuing concerns, the Committee proposes that the Faculty Senate provide an on-going mandate, with resources, to support workshops, seminars, and similar teaching-enhancement efforts in relation to the baccalaureate core. The WIC and DPD workshops provide one

model, though other arrangements also are possible. The proposal is not that specific approaches be adopted at this time but that a mandate arise from the Faculty Senate to begin the process by which faculty-enhancement sessions directed at such issues as teaching large-enrollment baccalaureate core courses be addressed.

Continuing Concerns

The Committee has several continuing concerns, both raised in last year's Annual Report but both still current. Neither is directly in the purview of the Baccalaureate Core Committee so we do not have specific proposals. Both, though, affect the context and work of the Committee. We put forward these concerns to stimulate discussion and possibly action by another committee or other committees. Two of these concerns are:

1. Should OSU allow double majors, not just double degrees, that would not require additional credits if it is possible for a student to complete both majors within 180 credits?

2. Should OSU's standard course norm be changed from 3 credits (in which students take 5 or 6 courses per term) to a 4- or 5-credit norm (where students take 3 or 4 courses per term)? Nearly all quarter-system universities use 4- or 5-credit classes instead of 3. This allows students to take only three or four courses a quarter, presumably thereby allowing greater concentration on each of them. This would appear to enhance student learning and so may be a goal worth examining.

Another continuing concern is related to the question of class size and is in the purview of the Committee. We raised this question last year, but it appears it can be answered only in the context of workshops and other sharing of information among faculty who teach relevant courses. That concern is:

3. Should the writing requirement be dropped from synthesis courses with large enrollments, say greater than 100? All synthesis courses are now required to have writing as a core element, but it is not clear that this is feasible in large courses.

Summary of Proposals

The Committee has three specific proposals:

1. As soon as changes within Academic Affairs are complete, implementation be begun of the process to include brief descriptions of forthcoming-quarter baccalaureate core courses in the *Schedule of Classes*, as discussed on page 2 above.

2. The Faculty Senate provide a mandate to establish workshops, seminars, or other appropriate mechanisms to enhance teaching of baccalaureate core courses, for example, the special difficulties of teaching large-enrollment courses and methods to enhance teaching of critical thinking.

3. The Faculty Senate encourage or specifically authorize examination of two concerns identified by the Committee: (A) allowing double majors within the 180-credit requirement, and (B) changing the standard number of course credits to accord with those at most other quarter-system schools, that is, 4 or 5 credits.

The Committee

The Committee met nearly every Thursday morning all three quarters. Faculty members of the Committee for 1995-1996 have been:

Kerry Ahearn, English
C.Y. Hu, Animal Sciences
Bob Lawrence, Geosciences
John Lee, Mathematics
Rob Sahr, Political Science, Chair
Christine Snow, Exercise and Sport Science
Solomon Yim, Civil Engineering

32.

EDUCATIONAL
OPPORTUNITIES PROGRAM

May 1, 1996

TO: Ken Krane
Faculty Senate

FROM: Margaret Fox, Chair mfox
Committee on Academic Standing

SUBJECT: Annual Report: 1995-96

OREGON
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541-737-3998

As requested, the following is submitted to provide a brief overview of the Committee's Activities for Spring '95 through Winter '96.

The current rules on Academic Standing were implemented Spring '94. They establish three levels of academic difficulty: Academic Warning (AW), Academic Probation (PR), and Academic Suspension (AS). They also provide for Academic Reinstatement (AR) to the University. A copy of Academic Regulation 22 is attached.

The Standing Rules for the Committee on Academic Standing were revised and approved by the Faculty Senate. (Copy attached.) They now appropriately reflect the academic regulations and the Committee's mission and procedures. Additional members to serve on the Committee were requested in March '96 (copy attached).

Guidelines implemented by the Committee were reviewed and updated in February 1996 (copy attached). At meetings conducted before the last day to register each term, requests for exceptions to the reinstatement regulations are considered. Such requests have been relatively few and approvals have been restricted to those students who demonstrate verified special circumstances, are strongly supported by advisers, and present a logical and reasonable "action" plan for academic improvement.

The table below lists, by term, the number of students in academic difficulty and those reinstated.

	Sp 95	Su 95	F 95	W 96	Sp 96
AW	721	198	1,249	717	
PR	402	71	289	649	
AS	214	18	116	90	
AR	34 (6)	25 (3)	76 (11)	34 (9)	44 (11)

( ) reinstatement by exception

MEMORANDUM

May 24, 1996

TO: Faculty Senate

CC Doug Derryberry, Janet Leonard, Laurel Maughan, Dick Schori, Gary Tiedeman,

FM: W. Alfred Mukatis, Chair, Committee on Committees W. Alfred Mukatis

RE: ANNUAL REPORT TO SENATE FOR 1995-96

The Committee dealt with the following matters.

1. Changes to the standing rules were proposed and passed by the Senate for:

   a. the Committee on Academic Standing, and
   b. the Undergraduate Admissions Committee.

2. Changes in the name and/or standing rules are proposed at an upcoming meeting for:

   a. the Instructional Media Committee, and
   b. the Committee on Academic Standing.

3. The Committee on Committees has completed a project to determine whether any changes might be appropriate in the Faculty Senate committee structure at this time. This project includes, but is not limited to, the required five-year report from each Senate committee and council chair on the activities of each respective committee. The purpose of the five-year report is to demonstrate activities which enhance the functions and objectives of the Senate, and to possibly abolish committees that no longer enhance the functions and objectives of the Senate. A report on this project has been submitted to the Executive Committee.

4. The Committee on Committees reviewed a request by Provost Roy Arnold to consider establishing a Senate committee to replace the Minority Action Commission. The Committee decided that a Senate committee is not the appropriate vehicle to lead the university toward the laudatory goals of the Minority Action Commission.

Annual Report of the University Curriculum Council (1995-96)

The Curriculum Council reviews the University curricula in an effort to implement the long-range educational mission of the University. After careful study, it recommends the introduction of new programs or changes in existing ones. It makes recommendations regarding major curricular changes proposed by the colleges of the University. It attempts, by coordination, to bring about a suitable and rational balance of programs. It reviews proposed changes in individual course offerings. The Council consists of seven faculty members. A member of the Budgets and Fiscal Planning Committee, appointed by its Chair, serves as a non-voting liaison member. An ex-officio liaison member from Information Services is appointed annually by the Associate Provost for Information Services.

While all actions of the Curriculum Council can be reviewed at any time on the Academic Affairs home page (http://robertsc.ads.orst.edu/aa/curric), a summary of our work during the past year may be useful. The following Category I curricular proposals/pre-proposals were considered and/or approved:

1. Extend the M.Engr. in Manufacturing Engineering to Boeing sites.
2. Establish a new Foreign Study site in Mexico.
3. Rename the undergraduate degree in Manufacturing Engineering (DENIED).
4. Rename the Dept. of Agricultural Communications.
5. Establish M. Engr. degree in Environmental Engineering.
6. Establish B.S. degree in Biological Engineering.
7. Establish Ph.D. degree in Radiation Health Physics.
8. Establish Master's Degree in Physical and Occupational Therapy. (Pre-proposal).

The Council processed 591 Category II requests in 1995, similar to the 590 requests in the previous year.

Certain policy changes regarding curricular matters were implemented by the Curriculum Council and/or Academic Affairs this year. They are:

1. OSSHE implemented a new review process for Category I proposals, effective January, 1996. The new process requires a "planning approval" before the "actual approval," i.e., two submittals to the State Board. Planning approval and actual approval for these proposals is only to be granted at one meeting in the Winter and one meeting in the Fall. The practical effect of this change is to significantly lengthen (~0.5-1.0 years) the time needed to gain approval of such proposals. The Curriculum Council has been designated as the OSU agency responsible for reviewing the pre-proposals prior to submission to the OSSHE Academic Council.

2. Courses eliminated from the catalog due to not being taught for three years can be reinstated automatically upon request to Academic Affairs within six years of the last time they were taught.

3. Due to continuing misuse of the X designator, the procedure for approval of X courses was modified to allow a detailed review of each X course request.

4. A new mechanism for transcripting overseas study credits was added to treat cases where there is no complete equivalence between the OSU course and the course taken abroad.

This year the Council instituted a program of Undergraduate Program Reviews (approved last year), based upon the Graduate Council reviews of graduate programs. Three programs were selected for review, Fisheries and Wildlife, Biology, and History. These reviews are being carried out in the latter part of Spring term (FW) and Fall term (Biology,History). Upon conclusion of these reviews, a full report will be made to the Faculty Senate regarding this effort.

A joint Graduate Council-Curriculum Council electronic delivery task force was established to formulate a policy on the electronic delivery of instruction and this effort is underway.

Following actions by the College of Liberal Arts and subsequently, the School of

Education to eliminate certain courses (~40-50) taught by EOP, University Counseling and Psychological Services, Admission and Orientation, Intercollegiate Athletics, etc. as not being an essential part of their curriculum, the Curriculum Council was asked to find an academic home for these courses. (These courses generally involve the teaching of rudimentary academic and personal skills, but are considered supportive of the educational mission of the University). Noting that other OSSHE institutions have handled this problem using the ALS (Academic Learning Services) designator, the Council requested the Provost approve the use of this designator at OSU. The Provost approved this request and directed the Curriculum Council to conduct a normal category II review of courses using the ALS designator (since almost all these classes had been offered previously as blanket-numbered courses without this review taking place.) Subsequently, approximately 30 category II requests for ALS courses have been submitted.

The Curriculum Council, noting that the other OSSHE institutions either do not allow credit for these courses (EOSC, PSU) or restrict their use to 12 credits in an undergraduate degree program (UO), formulated a set of policies for approving these courses. This policy, shown below, is based upon the skill-building nature of these courses and the desire not to have these courses be a significant part of any degree program. The policies are as follows:

1. All ALS courses will be P/N graded (AR18).
2. Blanket-numbered courses will not be approved.
3. The Curriculum Council proposed (to the Academic Regulations Committee) an addition to AR25 that specifies that a maximum of 12 credits of ALS courses can apply to any undergraduate degree program. (The Academic Regulations Committee approved this requested change and forwarded it to the Faculty Senate Executive Committee (FSEC).)

The Curriculum Council has approved six ALS courses and denied two requests. The Council has suspended action on the ~20 pending requests until the situation regarding the proposed changes in AR25 is resolved. The FSEC has declined to place the proposed change in AR25 on the Senate agenda until an Ad-Hoc Committee is convened to review the situation. The Council has responded with the action to approve selected requests on a one-time only, X-course basis so that affected programs can function next year.

The Curriculum Council recommends that:

1. Consideration be given to having the Faculty Senate delegate its authority to approve minor changes in the names of departments, programs, etc. to either its Executive Committee or the Curriculum Council. While this same request fell on deaf ears in the FSEC last year, the Council feels that having the full Senate consider these relatively trivial Category I requests is a waste of time and resources.

2. Given the expenditure of hundreds of person-hours spent on the consideration of OSU's first "entrepreneurial education" request (the proposal to offer a degree program in response to competitive bidding by the Boeing Company), a new abbreviated mechanism must be found to consider such requests. Since the likelihood of success may be 10-30% in such efforts, the possibility for waste of faculty time is disturbing. Either (a)people should be allowed to "bid" using their approved pre-proposals or (b) a "generic" Category I proposal for each college expected to participate in these efforts should be generated.

Annual Report, July 1, 1995–June 30, 1996
Faculty Grievance Committee
Submitted by Alice Mills Morrow, Chair

Committee Members	End of Term
Alice Mills Morrow, Chair	1996
Jon Lewis	1996
Ataa Akyeampong	1997
John Gillis	1997
Masakazu Matsumoto	1998

Three cases were filed with the committee. Two of these went through the hearing process. One case was ruled ineligible by the OSU Legal Advisor. Four faculty members called asking how they should proceed if they decided to file a formal grievance.

The committee thanks Vickie Nunnemaker, Faculty Senate Office and Caroline Kerl, OSU Legal Advisor for their assistance.

DATE: 15 May 1996

TO: Ken Krane, President
OSU Faculty Senate

FROM: Richard J. Vong, Chair
Graduate Admissions Committee

SUBJECT: Annual Report for 1995-1996

The Graduate Admissions Committee reviews files of Graduate School applicants who do not meet the minimum admission requirements. In the case of domestic applicants, the requirement is a grade point average (GPA) of 3.0 in the last 90 quarter hours or 60 semester hours of the first undergraduate degree. For international students a similar GPA requirement applies plus either a TOEFL score of 550 or a degree completed at an accredited institution that offers all course work in English. The committee considers other predictors of success in graduate programs including standardized test scores, letters of recommendation, and academic performance or work experience since the applicant earned a bachelor's degree. In evaluating such materials the Committee looks for substantive and compelling evidence indicating that the applicant will succeed at the graduate level to justify waiving the admission requirements. The Graduate Admissions Committee operates under the Standing Rules of the Faculty Senate and under the policies and procedures formulated by the Graduate Council. The procedure for graduate admissions is that the committee looks at files put forward with a departmental recommendation for approval. The term "conditional" is used for cases where OSU admits with specified conditions (3.25 gpa or better on the first 18 credits).

The Committee meets weekly throughout the entire year. From July 1, 1995 through May 8, 1996, the Graduate Admissions Committee reviewed 147 files. Of these applicants, 92 were approved for full admission and 48 were approved for conditional admission to the Graduate School. The overall approval rate is 95% with 33% of the applicants approved for admission with conditional status. The committee's acceptance rate presumably reflects the increased quality of the applicants that are actually referred for consideration by the departments.

Respectfully submitted

_____

Richard J. Vong, Chair
Graduate Admissions Committee

cc: Mr. Stephen Massott, Assistant Director
Registrar's Office
Dr. Thomas Maresh, Dean
Graduate School
Dr. Cheryl Jordan, Faculty Senate Executive Committee Liaison
Department of Apparel and Int., Housing & Merchandising
Members of Graduate Admissions Committee

OFFICE
OF
DEAN OF RESEARCH

OREGON
STATE
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312 Administrative Services
Corvallis, Oregon
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May 3, 1996

MEMORANDUM

TO: Executive Committee of the Faculty Senate

FROM: Steve Giovannoni, Chair, Research Council

SUBJECT: Research Council Activities, May 1995 to date

The purpose of the Research Council is to promote, stimulate, and facilitate research activity at Oregon State University. The Council does this by advising the Dean of Research concerning the dissemination of information, by providing advice on research policies, and by reviewing requests for funds from the General Research Fund.

During the period May 10, 1995 to date, the Research Council reviewed 42 requests for support. Of these requests, 25 were approved for funding at a total of $172,082.

In December the Research Council reviewed three National Science Foundation Academic Infrastructure Instrumental Preproposals and selected two proposals to send forward to NSF.

In February the Council met to discuss issues related to the transfer of the Linus Pauling Institute to Oregon State University and to formulate recommendations for fostering faculty involvement in future negotiations with outside institutes. The Council recommends that in future cases involving a substantial commitment of resources by the University, one of more members of the Research Council participate in the negotiation process and report to the Research Council and the Faculty Senate. A copy of a memorandum from the Chair of the Research Council to the President of the Faculty Senate is attached.

The Research Council members and year of termination are listed below:

Steve Giovannoni, Microbiology (Chair)1996
Sheila Cordray, Sociology 1996
Robert Mason, Zoology 1996
Douglas Keszler, Chemistry 1997
David Robinson, English 1997
Tim Schowalter, Entomology 1997
David Brauner, Anthropology 1998
Steve Davis, Animal Sciences 1998
Victor Hsu, Biochemistry/Biophysics1998

bh

FACULTY SENATE RETIREMENT COMMITTEE
ANNUAL REPORT - 1995-96

There were two major developments in the area of retirement plans which were of interest and concern to the Retirement Committee this academic year - the OSSHE Early Retirement/Phased Retirement Plan and the Optional Retirement Plan.

The Committee was invited to review early drafts of the Early Retirement/Phased Retirement Plan. We made suggestions and recommendations, which were forwarded to Staff Benefits. Some of our concerns and suggestions were reflected in subsequent drafts of the plan. Public meetings presenting information about the plans were conducted by Staff Benefits, rather than the Committee.

Information was communicated to the Committee by Lois deGeus about the Optional Retirement Plan as it was being developed. Once the plan had been finalized, the Retirement Committee was invited to meet with Lois deGeus and Cindy Jenkins for a presentation on the ORP, which also served as a "dress rehearsal" for the open faculty presentations made at a later date. This meeting allowed the Committee to ask questions about the ORP, to anticipate the questions and concerns the faculty at large might have, and to provide suggestions for the open presentations.

Another issue which is of serious concern to future retirees is the consideration by PERS of changes in the actuarial factors on which benefits are calculated. A sub-committee will report to the PERS Board on May 14 with recommendations for changes and time lines for implementation of these changes, so this issue is not resolved yet. This committee will continue to stay informed of progress on this matter through the PERSpectives newsletter and conversations with PERS staff.

Although it has not been discussed by this year's committee, it was the recommendation of last year's Retirement Committee that the Retirement Committee and Faculty Economic Welfare Committee be combined. The issues under review this year were considered by both groups, so it is the recommendation of this Chair that the merger be seriously considered.

Mariol R. Wogaman
May 10, 1996

To: Faculty Senate

From: Mary Burke, Chair of Undergraduate Admissions Committee Mary Burke

The Undergraduate Admission Committee is a very active committee. We met 39 times last year. 25 of the meetings were with the full committee and 14 were EOP Special Admit Meetings with the chair and admissions office liaison. The rapid changeover in admissions personnel has left the committee wondering who would be our liaison next. The following are the statistics from these meetings:

Freshman		Transfers		Totals	
5% Admits	96	Accepted	42	Admits	192
Regular Admits	54	Deferred	8	Deferred	84
Deferred	76	Denied	45	Denied	121
Denied	76				
				Totals	397

University Honors College Council
1995-96 Final Report

The members of the University Honors College Council for 1995-96 were:

Dan Arp	Botany and Plant Pathology
Vreneli Farber	Foreign Languages and Literatures
Kate Hunter-Zaworski	Civil Engineering
Ken Krane	Physics (chair)
Jim Krueger	Chemistry
Mary Jo Nye	History
Bryce Payne	Computer Science & Business (student)
Alan Sugawara	Human Development and Family Sciences
Eileen Wilbur	Pharmacy (student)

During 1995-96, the UHC Council continued to work on the areas of admission, curriculum, and staffing. Since 1995-96 was the first year of operation of the Honors College, frequent liaison with UHC Director Jon Hendricks was required.

Because no senior students were admitted to the UHC for 1995-96, the 1994-95 Council deferred action on policies concerning the senior thesis requirement. The 1995-96 Council developed and approved the following guidelines for the senior thesis/project requirement:

- a one-credit "Introduction to Thesis" course;
- 3 to 6 credits for the thesis or project work in the department of the student's major;
- coordination with departments that already require a senior thesis or project;
- strong encouragement of group projects and interdisciplinary projects;
- final grade determined by an oral presentation and examination by a faculty committee.

The Council reviewed the UHC applications for 1996-97 and recommended admission of approximately 150 students, thereby bringing the anticipated fall 1996 enrollment in the UHC to the original target of 400 students.

The Council also considered course and instructor evaluation procedures, student retention, selection and duties of the UHC adviser and the part-time UHC faculty, and support staff needs.

We recommend that the 1996-97 UHC Council take a more active role in curriculum development and evaluation. One of the principal attributes of the UHC is its openness to students of any major; this requires additional UHC courses in colleges that are well represented among current UHC students but that don't yet have a sufficient curriculum of UHC courses to support their students. With the experience of one year of UHC courses, the 1996-97 Council should begin an active program of evaluating the present course offerings and reviewing proposals for new courses.

REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

541/737-4344

FACULTY SENATE OFFICE
107 Social Science Hall

Thursday, October 3, 1996; 3:00-5:00 pm
Construction & Engineering Hall
LaSells Stewart Center

AGENDA

The agenda for the February Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the June Senate meeting, as published and distributed to Senators.

A. SPECIAL REPORTS

Provost and Executive Vice President Roy Arnold

"Looking Ahead"

B. COMMITTEE REPORTS

In an attempt to keep Senators better informed about business brought before Faculty Senate committees, the Executive Committee will periodically schedule committee chairs to report to the Senate.

1. Instructional Development and Technology Committee

   Zoe Ann Holmes, Chair

2. Promotion & Tenure Committee

   Duane Johnson, Chair

C. ANNUAL REPORTS

All Senate committees and councils are to report to the Senate and describe their work for the year. In most instances, the reports are for the information of the Senate, and committee chairs may not be present at the Senate meeting. These reports may contain specific recommendations and express views upon which further consideration could be taken. Questions regarding a report should be directed to the chair (prior to the meeting, through the departmental affiliation), or the Senate president, if appropriate.

Academic Requirements Committee, Steve Rubert, Chair (pp. 1–2)
Committee on Bylaws and Nominations, Michael Oriard, Chair (p. 3)
Faculty Mediation Committee, Christine Sproul, Chair (p. 4)
Faculty Recognition and Awards Committee, Patricia Lindsey, Chair (p. 5)
Graduate Council, John A. Drexler, Jr., Chair (p. 6)
Library Committee, Tom Murray, Chair (p. 7) *The memo referring to the Library Liaison System can be viewed in the Faculty Senate Office.*
Promotion & Tenure Committee, Leslie Davis Burns, Chair (pp. 8–13)

D. INFORMATION ITEMS

1. Faculty Senate Elections

Sally Francis, Committee on Bylaws and Nominations Chair, is accepting recommendations for 1) President-elect, 2) Executive Committee members, and 3) Interinstitutional Faculty Senate representative. There will be nomination forms on the table outside the Senate meeting if you wish to make a nomination. Nominations can also be forwarded to Sally Francis in the Department of Apparel, Interiors, Housing and Merchandising (AIHM) or via electronic mail at franciss@ccmail.orst.edu. Deadline for nominations is October 8.

2. Faculty Senate Calendar

Please reserve the following dates for Faculty Senate meetings. All meetings have been scheduled in the LaSells Stewart Center Construction and Engineering Hall.

November 7, 1996	March 6, 1997
December 5, 1996	April 3, 1997
January 9, 1997	May 1, 1997
February 6, 1997	June 5, 1997

3. "Faculty" Electronic Mail List

In an attempt to more quickly distribute information to faculty, and rely less on departments forwarding electronic mail to faculty, the Faculty Senate Office has created a Majordomo "Faculty" mailing list. This list is being originated for Faculty Senate use only.

To subscribe to the list, send an electronic mail message to: majordomo@mail.orst.edu
In the body of the message type ONLY: subscribe faculty

To unsubscribe to the list, send an electronic mail message to: majordomo@mail.orst.edu
In the body of the message type ONLY: unsubscribe faculty

E. REPORTS FROM THE FACULTY SENATE PRESIDENT

Ken Krane

F. NEW BUSINESS

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR SENATE AFFILIATION WHEN RISING TO SPEAK.

OREGON STATE UNIVERSITY
102 Kerr Administration · Corvallis, Oregon 97331 ·2130
Telephone 541 ·737 ·4331

July 15, 1996

TO: Dr. Kenneth Krane, President
Faculty Senate

FROM: Russell G. Dix
Associate Registrar

SUBJECT: Academic Requirements Committee Annual Report

Attached is the Final Report of Academic Requirements Committee Actions for Academic Year 1995-1996 to be filed with Faculty Senate documents. If there are any questions about this report, please direct them either to myself or to the Committee Secretary, Renee Rissell at 7-4048.

cc: Steve Rubert, Past Chair
Academic Requirements Committee

Cheryl Kolbe, Current Chair
Academic Requirements Committee

ACADEMIC REQUIREMENTS COMMITTEE

Final Report for the Year - July 1, 1995 to June 30, 1996

	APPROVED		DENIED		TOTAL		(PETITIONS ONLY)	
	Number	*%*	*Number*	*%*	*Number*	*%*	*Number*	*%*
I CHANGE OF GRADES	1418	100%	0	0	1418	49%	(1418)	0%
PETITION FIGURES	-----	-----	-----	-----	-----	-----	-----	-----
BY PETITION	17	19%	73	81%	90	3%	90	6%
II REMOVAL OF E GRADES	7	100%	0	0	7	.2%	7	.5%
III SUBSTITUTION OF COURSE	2	67%	1	33%	3	.1%	3	.2%
IV SPECIAL EXAMINATIONS	41	93%	3	7%	44	1.5%	44	3%
V ADDS AND DROPS	771	80%	196	20%	967	33%	967	65%
VI LATE WITHDRAWALS	126	56%	100	44%	226	7%	226	15%
VII MISCELLANEOUS	92	94%	6	6%	98	3%	98	7%
VIII REPEAT COURSES	0	0	0	0	0	0	0	0
IX OTHER MISCELLANEOUS	43	78%	12	22%	55	2%	55	4%
Total Number	**2517**	**87%**	**391**	**13%**	**2909**	**98.8%**	**1491**	**100%**

English Department

OREGON STATE UNIVERSITY
238 Moreland Hall Corvallis OR 97331-5302
(541) 737-3244 fax (541) 737-3589

May 7, 1996

To: Ken Krane, President, Faculty Senate
From: Michael Oriard, Chair, Committee on Bylaws and Nominations (John Block, Ray Tricker, Lita Verts)
Re: Final Report

In addition to the annual responsibility of presenting a slate of candidates for Faculty Senate officers, the Committee on Bylaws and Nominations took up three issues referred to us by the Executive Committee.

The first followed a motion approved by the Faculty Senate to require that ROTC comply with the Oregon Administrative Rule banning discimination in employment based on sexual orientation. The Committee revised the bylaws accordingly and presented the revision to the Senate for its action.

The second was a response to a request by Extension Faculty to maintain their own apportionment unit, rather than be included in academic colleges for the purposes of Senate representation. No revision of the bylaws was necessary in this case.

The third was a response to a request from two Faculty Research Assistants that FRA's be included among represented faculty for the election of senators. The Committee recognized competing needs here: for representation of all who have faculty status on issues affecting their positions, but also for decisions on academic matters to be made by those who properly bear responsibility for the university's academic programs. The Committee could find no solution to this dilemma through a simple revision of the Bylaws, and referred the matter back to the Executive Committee with a recommendation that a committee be appointed to address these issues.

cc. Committee on Bylaws and Nominations

FACULTY MEDIATION COMMITTEE

Annual Report: July 1, 1995 - June 30, 1996

Committee Members:

Christine Sproul '96	International Education
Steve Daniels '97	Forest Resources
Jan Hare '98	Extension Family Life

The faculty mediation committee responded to two requests for mediation this year. One case concerned a complaint about perceived unfair work assignments; the other case concerned a complaint about reassignment of leadership responsibility. In both cases, a committee member met with all parties to review the situation and attempt to resolve the disputes on an informal basis. Reports were submitted to the committee chair.

A third faculty member complaint involving a departmental conflict was heard. The mediation process was discussed with the faculty member and ideas for solving the problem short of calling for a mediation review were discussed. The faculty member was invited to contact the committee if the steps suggested failed to ameliorate the situation. There was no further contact from the complainant.

Submitted by,

Christine Sproul, chair

OREGON STATE UNIVERSITY Corvallis, Oregon
Agricultural & Resource Economics Phone: (541) 737-1416
Ballard Extension Hall 213 FAX: (541) 737-2563

July 18, 1996

MEMORANDUM

TO: Ken Krane, President
Faculty Senate

FROM: Patricia Lindsey, Chair
Faculty Recognition and Awards Committee

SUBJECT: Annual Report 1995-96

- In the Fall of 1995, the Committee proposed wording changes for two awards which were ratified by the Senate. The Committee also advised the E.C. regarding modifications to the D. Curtis Mumford Award and ultimately accepted responsbility for solicitation and screening of nominations for this award.

- In an attempt to remedy a persistent shortage of nominations, and in recognition of its fundamentally different nature, solicitation for the OSU Distinguished Service Award (which is not a faculty award) was separated from the faculty award solicitation and the nomination process was streamlined. This year an adequate number of quality nominations were received by the Committee.

- The number of nomination packets for faculty awards was up substantially this year and competition was keen for nearly every award. The Committee selected recipients for seven faculty awards and made recommendations for the D. Curtis Mumford and the OSU Distinguished Service awards which were later ratified by the Senate.

- A number of suggested wording changes for the faculty award criteria and soliciations were agreed by the Committee. The intent is to eliminate superfluous documentation, clarify meaning, ensure that the stated and *de facto* selection criteria are synonymous, and achieve greater wording and documentation consistency across awards. These suggested changes will be sent to the E.C. in the Fall of 1996.

- As the first stage of an effort to redress the absence of potential recognition on University Day for a significant subset of OSU faculty, proposed wording for a prospective new award has been drafted. This award would recognize outstanding contributions from faculty with nontraditional job descriptions whose primary responsibility is service (to students and/or other faculty members). The draft will be submitted to the E.C. Fall Term 1996.

6.

COLLEGE OF BUSINESS

OREGON
STATE
UNIVERSITY

200 Bexell Hall
Corvallis, Oregon
97331-2603

Telephone
541-737-2551

Fax
541-737-4890

DATE: June 28, 1996

TO: Ken Krane
President, Faculty Senate

FROM: John A. Drexler, Jr.
Chair, Graduate Council

SUBJECT: The Graduate Council's 1995-1996 Activities

The Graduate Council's 1995-1996 activities are summarized below.

Regular Graduate Council Business

1. The Graduate Council approved graduate program review reports for the following:
   Family Resource Management
   Food Science and Technology
   Masters of Agriculture
   Oceanography
   Horticulture
   Veterinary Medicine

2. The Graduate Council approved follow-up graduate program review reports for the following:
   Agricultural and Resource Economics
   Crop and Soil Science
   Pharmacy
   Toxicology

3. The Graduate Council approved the following Category I proposals:

   MA, MS, PhD in Environmental Science
   MEng in Environmental Engineering
   MEng in Manufacturing Engineering [approve delivery in new location]
   MS in Nutrition and Food Management [approve delivery in new location]
   PhD in Radiation Health Physics

4. The Graduate Council Category II subcommittee reviewed 34 proposals and approved 33 of them. In addition, 143 changes in existing courses were approved.

5. Three Graduate Council subcommittees reviewed applications for university-wide graduate scholarships.

Ad hoc Graduate Council Business

1. Established with the Curriculum Council a task force to consider policies related to the delivery of instruction through electronic media. The task force will make recommendations to the respective councils.

2. Reaffirmed the policy on resident credit.

3. Reaffirmed the policy on physical presence at graduate examinations.

COLLEGE OF PHARMACY

OREGON
STATE
UNIVERSITY

203 Pharmacy Building
Corvallis, Oregon
97331-3507

Dean's Office
541-737-3424

Fax
541-737-3999

June 20, 1996

TO: Ken Krane
President, OSU Faculty Senate

FROM: Tom Murray, Chair TM
Faculty Senate Library Committee

SUBJECT: Annual Report for 1995-1996

The Faculty Senate Library Committee (FSLC) advises the Director of Libraries in (1) meeting the needs of the students and the instructional and research staff; (2) formulating library policies in relation to circulation, budgets, services and development of resources for instruction and research; and (3) interpreting the needs and policies of the library to the university.

During the period of July 1, 1995–June 30, 1996, the committee addressed the issue of faculty involvement in collection development inasmuch as it was felt that involvement of some departments and individuals was lacking. To improve involvement across campus, the FSLC issued a communication to all faculty and staff explaining the library liaison system. The response to this memo was gratifying and led to many corrections in the liaison database maintained by the Library.

Although the library expansion project is impressive, the FSLC is concerned that support services not be neglected or further compromised. As an example, concerns regarding the efficacy of the Interlibrary Loan Department of the Library were raised. Whether or not these concerns result in an enhancement of interlibrary loan delivery in the future remains to be established.

An additional task in which the FSLC participated was the process of journal cancellations. The rising cost of journal subscriptions coupled with a fixed serials budget necessitated a total reduction of $130,000 in serials expenditures for the 1996-97 fiscal year. In collaboration with the Collection Services staff of the Library, and following input from the faculty at large, the FSLC approved cancellations of just over $120,000. It was further agreed that this would be the extent of the cut for the next fiscal year. The FSLC questions whether the current serials collection can withstand any additional cuts in future years. Any further reductions in the journals collection should be preceded by an evaluation of the nature of the future collection, and the role of document retrieval mechanisms in collection development.

A copy of the memo from the FSLC to faculty and staff regarding the library liaison system is attached.

8.

DEPARTMENT OF APPAREL, INTERIORS,
HOUSING AND MERCHANDISING

OREGON STATE UNIVERSITY
Milam Hall 224 · Corvallis, Oregon 97331-5101
Telephone 503-737-3796
Fax 503-737-0993

FINAL REPORT TO THE FACULTY SENATE OF THE 1995-96 PROMOTION AND TENURE COMMITTEE

Members of the 1995-96 Faculty Senate Promotion and Tenure Committee were:
Bess Beatty, History
Leslie Davis Burns, Apparel, Interiors, Housing, & Merchandising (chair)
Everett Hansen, Botany & Plant Pathology
Duane P. Johnson, 4-H Youth Development
Ed Piepmeier, Chemistry
Sandra Woods, Civil Engineering

The Faculty Senate Promotion and Tenure Committee reviews statements of policy, advises on matters pertaining to promotion and tenure of faculty, and makes recommendations to the Faculty Senate Executive Committee. During the annual promotion and tenure review process, Committee members have access to all dossiers under consideration and observe deliberations/discussions of the University Administrative Promotion and Tenure Committee, to ensure an equitable process for all faculty. The Administrative Promotion and Tenure Committee includes the Provost and Executive Vice President, the Vice Provost for Research and International Programs, the Dean of the Graduate School, the Associate Provost for Academic Affairs, and the Dean of Extended Education.

When the University Promotion and Tenure Committee does not reach consensus on their recommendation, or when circumstances warrant discussion of a particular case, the candidate's dean or supervisor meets with the committee. In these instances, one member of the Faculty Senate Promotion and Tenure Committee is present as an observer at the meeting to represent the Faculty Senate. This observer notes adherence to the Promotion and Tenure Guidelines and the nature of the decision-making process, but does not evaluate the merits of the particular case.

In 1995-96, 108 dossiers were forwarded to the University Administrative Promotion and Tenure Committee. A summary of the disposition of these 108 cases was prepared by Andrew G. Hashimoto, Associate Provost for Academic Affairs, and is appended to this report.

The Committee submits the following remarks and recommendations, based on our reading of dossiers and observations during the University Promotion and Tenure process.

1. The Faculty Senate (and its committees) should work with the Associate Provost for Academic Affairs in sponsoring campus-wide workshops that focus on the development of candidates' Position Descriptions, conducting and documenting peer review of teaching, conducting and documenting review of advising responsibilities, and other areas relevant to dossier preparation and candidate review.

2. We reiterate the importance of a candidate's Position Description as an important document used as the basis for evaluation. Position Descriptions should be developed as part of the hiring process and must address all areas of faculty responsibility (Teaching, Advising, and Other Assignments; Scholarship and Creative Activity; Service). Position Descriptions should be periodically reviewed and updated for all faculty.

3. As indicated in the Promotion and Tenure Guidelines, "scholarship and creative activity are understood to be intellectual work whose significance is validated by peers and which is communicated." Other definitions of scholarship should **not** be used as a basis in the evaluation of candidates' scholarly work.

4. According to the Promotion and Tenure Guidelines, "tenure is granted for achievement, not for years in rank, but under normal circumstances faculty will be considered for tenure in their sixth year of service in professorial rank." Therefore, we reiterate our concern about the relative success rates of "early" promotion/tenure proposals (those submitted before the "normal" six year period has elapsed) and again suggest that the Office of the Associate Provost for Academic Affairs develop a system to track and evaluate early proposals.

5. We support a policy of sending incomplete dossiers back to the unit prior to review at the university level.

6. The Committee continues to be highly supportive of the roles and responsibilities of the Faculty Senate Promotion and Tenure Committee in adherence to the Promotion and Tenure Guidelines. We believe that the University Administrative Promotion and Tenure Committee continues to maintain consistently high standards for faculty review.

EXECUTIVE SUMMARY
1996 PROMOTION AND TENURE REVIEW

The University Promotion and Tenure Committee began its review of 108 dossiers in February and concluded its final meeting on June 17, 1996.

Within this report are tables that summarize requests received and the actions taken. The information presented in Table I analyzes the data for the group as a whole. In Tables II and III summary analyses are presented for female and minority candidates. The others provide information on promotion by rank and granting of indefinite tenure. They also show totals by college, including information on females and minorities.

The level of agreement among department, college, and University Promotion and Tenure Committees is high and consistent with the pattern noted in recent years. Thirty-five (35) individuals were promoted to Professor; 39 to Associate Professor; 3 to Assistant Professor or Senior Instructor; and 14 to Senior Faculty Research Assistant. Forty-three (43) individuals were granted indefinite tenure.

The University Promotion and Tenure Committee consisted of the following individuals:

- Roy Arnold, Provost and Executive Vice President
- Andy Hashimoto, Associate Provost for Academic Affairs
- Lyla Houglum, Dean of Extended Education
- George Keller, Vice Provost for Research and International Programs
- Tom Maresh, Dean of the Graduate School

Faculty Observers to the 1996 University Promotion and Tenure Committee were drawn from the Faculty Senate's Promotion and Tenure Committee. Observers included:

- Bess Beatty, Associate Professor, History
- Leslie Davis Burns, Professor, Apparel, Interiors, Housing and Merchandising
- Everett Hansen, Professor, Botany and Plant Pathology
- Duane Johnson, Extension Specialist, 4-H Youth
- Ed Piepmeier, Professor, Chemistry
- Sandra Woods, Associate Professor, Civil Engineering

8/5/96
gab

ANALYSIS BY RANK AND TENURE

REQUEST BY RANK	PROMOTION YES	PROMOTION NO	TENURE YES	TENURE NO
Senior Faculty Research Assistant	14	0	0	0
Senior Instructor	3	0	1	0
Assistant Professor	0	0	0	0
Associate Professor	39	8	32	4
Professor	35	4	4	0
No Change in Rank	0	0	6	1
TOTAL	**91**	**12**	**43**	**5**

SUMMARY OBSERVATIONS:

14 faculty were promoted to the rank of Senior Faculty Research Assistant
3 faculty were promoted to Senior Instructor, 1 with indefinite tenure
0 faculty were promoted to the rank of Assistant Professor
39 faculty were promoted to the rank of Associate Professor; 32 with indefinite tenure
35 faculty were promoted to the rank of Professor; 4 with indefinite tenure
43 faculty were granted indefinite tenure

ANALYSIS FOR WOMEN

REQUEST BY RANK	PROMOTION YES	PROMOTION NO	TENURE YES	TENURE NO
Senior Faculty Research Assistant	6	0	0	0
Senior Instructor	1	0	1	0
Assistant Professor	0	0	0	0
Associate Professor	9	3	10	1
Professor	7	0	1	0
No Change in Rank	0	0	1	0
TOTAL	**23**	**3**	**13**	**1**

ANALYSIS FOR MINORITIES

	PROMOTION		TENURE	
REQUEST BY RANK	**YES**	**NO**	**YES**	**NO**
Senior Faculty Research Assistant	2	0	0	0
Senior Instructor	0	0	0	0
Assistant Professor	0	0	0	0
Associate Professor	4	1	3	1
Professor	3	1	0	0
No Change	0	0	0	0
TOTAL	**9**	**2**	**3**	**1**

GRANTED INDEFINITE TENURE

	Total Males and Females	Total Females	Minorities
Agricultural Sciences	10	0	0
Business	1	0	0
Engineering	7	1	2
Forestry	2	0	0
Health & Human Perf	4	3	0
Home Economics & Ed	6	4	0
Information Services	2	1	0
Liberal Arts	1	1	0
Oceanic & Atmospheric Sci	4	1	0
Pharmacy	1	1	0
Science	5	1	1
TOTALS	**43**	**13**	**3**

PROMOTION TO SENIOR FACULTY RESEARCH ASSISTANT

	Total Males and Females	Total Females	Minorities
Agricultural Sciences	5	3	0
Forestry	3	2	1
Oceanic & Atmospheric Sci	6	1	1
TOTALS	**14**	**6**	**2**

PROMOTION TO ASSISTANT PROFESSOR/SENIOR INSTRUCTOR

	Total Males and Females	Total Females	Minorities
Agricultural Sciences	1	0	0
Liberal Arts	2	1	0
TOTALS	**3**	**1**	**0**

PROMOTION TO ASSOCIATE PROFESSOR

	Total Males and Females	Total Females	Minorities
Agricultural Sciences	11	0	0
Business	1	0	0
Engineering	7	2	2
Forestry	4	0	0
Health & Human Perf	3	2	0
Home Economics & Ed	4	2	0
Information Services	1	1	0
Liberal Arts	0	0	0
Oceanic & Atmospheric Sci	2	0	1
Pharmacy	1	1	0
Science	5	1	1
TOTALS	**39**	**9**	**4**

PROMOTION TO PROFESSOR

	Total Males and Females	Total Females	Minorities
Agricultural Sciences	12	2	0
Business	1	0	0
Engineering	4	0	2
Forestry	2	0	0
Home Economics & Ed	2	1	0
Liberal Arts	6	2	0
Oceanic & Atmospheric Sci	4	1	0
Science	4	0	1
TOTALS	**35**	**6**	**3**

REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

541/737-4344

FACULTY SENATE OFFICE
107 Social Science Hall

Thursday, November 7, 1996; 3:00–5:00 PM
Construction & Engineering Hall
LaSells Stewart Center

AGENDA

The agenda for the November Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the October Senate meeting, as published and distributed to Senators.

A. COMMITTEE REPORTS

1. Salary Equity Study

   Kathy Heath, Chair

2. Faculty Economic Welfare Committee

   Jim Herzog, Chair

B. ACTION ITEMS

1. Approval of the 1997 Apportionment Table (p. 1)

   The 1997 Apportionment Table (consisting of OSU FTE in the ranks of Instructor or above, including No Rank faculty and Senior Faculty Research Assistants, but excluding all other Faculty Research Assistants) is attached for Senate approval.

2. Faculty Senate Nominations/Elections (p. 2)

   Sally Francis, Committee on Bylaws and Nominations Chair, will present the Committee report which includes nominees for the 1997 Senate President-Elect, three new members of the Executive Committee, and an Interinstitutional Faculty Senate (IFS) representative. The President-Elect serves for one year, then automatically assumes the presidency of the Senate; Executive Committee members serve two-year terms; and IFS terms are three years.

As provided in the Senate Bylaws, (Article VI, Section 3) and amended on October 6, 1977, "additional nominations may be made from the floor and the nominations shall be closed." The Executive Committee recommends that if such nominations from the floor are made, the nominator must obtain, in advance, the nominee's willingness to serve if elected. The names of all nominees will be submitted to be published in the November 14 issue of *OSU THIS WEEK*.

The University-wide election of the President-Elect and IFS representative will be conducted between November 13 and December 2. Ballots are to be distributed simultaneously to all members of the OSU faculty included in the apportionment table, in accordance with current Faculty Senate Bylaws. Signed ballots received in the Faculty Senate Office, no later than 5:00 PM on December 2 will be counted by the Counting Committee prior to the December 5 Faculty Senate meeting. The individual receiving the highest number of votes will be declared the winner in each of the elections.

Election of new Executive Committee members will will be conducted by written ballot at the December 5 Faculty Senate meeting. Those candidates receiving the highest number of votes shall be elected. Tie votes shall be resolved by written ballot in a run-off election.

C. ANNUAL REPORTS

All Senate committees and councils are to report to the Senate and describe their work for the year. In most instances, the reports are for the information of the Senate, and committee chairs may not be present at the Senate meeting. These reports may contain specific recommendations and express views upon which further consideration could be taken. Questions regarding a report should be directed to the chair (prior to the meeting, through the departmental affiliation), or the Senate president, if appropriate.

Instructional Media Committee, ZoeAnn Holmes, Chair (p. 3)
Student Recognition and Awards Committee, Karrie George, Chair (pp. 4–5)

D. INFORMATION ITEMS

1. Senator Attendance Summary for 1995/96 (p. 6)

Attached is a summary of Senator attendance by apportionment unit for academic year 1995/96. In addition to the attached report, each Dean or head of an apportionment unit will also receive an attendance report by individual Senator for their unit. If an individual is eligible to be re-elected to the Faculty Senate, faculty members may view this report to determine the representation received from each Senator during the past year. This report may also be viewed in the Faculty Senate Office or in the Valley Library Reserve Book Room (ask for Faculty Senate materials).

2. Instructions for Nomination and Election of Faculty Senators (p. 7)

Upon receipt of all materials, the Faculty Senate Office annually transmits Senatorial nomination and election instructions to heads of all voting units; a sample letter is attached.

3. ROTC Representation Status (p. 8)

Attached is a memo from President Krane responding to inquiries regarding the status of ROTC representation in the Faculty Senate.

4. 1996 OSU Distinguished Professor Award Deadline

Nominations for the 1997 OSU Distinguished Professor Award are due December 2, 1996. This award recognizes individuals who have achieved national/international stature as a result of their contribution to scholarship and research and whose work has been notably influential in their fields of specialization. If you need additional information, contact George Bailey, Screening Committee Chair, Department of Food Science & Technology, at 737-3164.

5. Interinstitutional Faculty Senate Meeting Recap

A recap of the October IFS meeting was sent via e-mail to Senators.

E. REPORTS FROM THE PROVOST

Roy Arnold, Provost & Executive Vice President for Academic Affairs

F. REPORTS FROM THE FACULTY SENATE PRESIDENT

President Ken Krane

G. NEW BUSINESS

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR UNIT AFFILIATION WHEN RISING TO SPEAK.

Please recycle this agenda

1997 FACULTY SENATE APPORTIONMENT

Apportionment Unit	1996 Total FTE	1996 Senators	1997 Total FTE	1997 Senators	Gain or Loss
Agricultural Sciences	334.19	24	338.285	24	--
Associated Faculty	200.889	14	221.257	16	+2
Business	45.413	3	49.318	4	+1
Engineering	127.485	9	129.105	9	--
Extension (off-campus)	142.33	10	141.620	10	--
Forestry	106.976	8	109.165	8	--
Health & Human Performance	39.890	3	44.464	3	--
Home Economics & Education	71.165	5	75.289	5	--
Information Services	60.500	4	70.007	5	+1
Liberal Arts	190.164	14	189.478	14	--
Oceanic & Atmospheric Sciences	87.610	6	95.49	7	+1
Pharmacy	29.990	2	33.003	2	--
ROTC	28.000	2	--	--	-2
Science	214.803	15	227.997	16	+1
Student Affairs	61.165	4	57.300	4	--
Veterinary Medicine	34.770	2	34.670	2	--
TOTAL	1775.34	125	1816.448	129	+4

11/01/96

14 FTE = 1 Senator

Head Count: 1996 – 1,978; 1997 – 2,050

October 15, 1996

MEMORANDUM

TO: Executive Committee of the Faculty Senate
Ken Krane, Senate President

FROM: Faculty Senate Bylaws & Nominations Committee
Sally Francis, Chair Sally Francis
Lita Verts
Ray Tricker
Jo-Ann Leong

RE: Faculty Senate Nominations

The Faculty Senate Committee on Bylaws & Nominations recommends the following nominees for this fall's elections:

Faculty Senate President-Elect

1. Maggie Niess, Professor and Department Chair, Science & Math Education
2. Sandra Woods, Associate Professor, Civil, Construction & Environmental Engineering

Faculty Senate Executive Committee

1. Judy Burridge, Professor & Staff Chair, Linn County Extension
2. Bruce Coblentz, Professor, Fisheries & Wildlife
3. Steve Davis, Professor, Animal Sciences
4. Irma Delson, No Rank, Oceanic & Atmospheric Sciences
5. Larry Griggs, Associate Professor & Director, Educational Opportunities Program
6. Barbara McEwan, Assistant Professor, Education
7. Loretta Rielly, Associate Professor, Information Services (Library)

Interinstitutional Faculty Senate

1. Carroll DeKock, Professor and Chair, Chemistry
2. Henry Sayre, Professor, Art

Faculty Senate - Oregon State University

INSTRUCTIONAL MEDIA COMMITTEE

IMC Activities

The Committee reviewed 56 proposals with plans to incorporate technology into instruction. From the requests, nine awards totalling approximately $45,000 were funded. The Committee also reviewed and revised the standing rules under which they operate tomore accurately reflect the various activities. A name change from Instructional Media Committee to Instructional Technology and Development Committee was also recommended. These were adopted at the June, 1996 Faculty Senate meeting.

IMC Recommendations for 1995-96

The Committee made no specific recommendations for Instructional Technology at OSU as many of the Committee were on the Planning for Instructional Technology (**PIT**) which met for a good part of the year and came up with both recommendations and a plan of action for the years to 2000.

More details of the Committee are available on the World Wide Web (http://www.orst.edu/Dept/eco_edu/fs/index.html).

Last Updated 10/15/96 by holmesz@ucs.orst.edu

TO: Kenneth Krane, President
OSU Faculty Senate

FROM: Karrie George, Chair
Student Recognition and Awards Committee

DATE: October 24, 1996

RE: Annual Report of Student Recognition and Awards Committee (SR&A)

The first meeting of the SR&A Committee was held on Wednesday, February 21, 1996 to initiate plans for selecting the Waldo-Cummings Award recipients and coordinating the All-University Awards Banquet set for Wednesday, May 22, 1996. Subcommittees were established as follows: Banquet Arrangements, Applications & Awards, Program, Invitations & Entertainment, Publicity, and Class Subcommittees (4). A timetable was followed to direct the SR&A Committee and the respective subcommittees in their tasks.

- The committee chose to replace the traditional keynote speaker with a gospel performance by Reverend Isaiah Jones.

- The Waldo-Cummings Award application forms were revised and distributed at the end of Winter Term to over 1,500 OSU undergraduate maintaining an OSU GPA of at least 3.50 after a minimum of 24 credit hours at the end of Winter Term 1996. Approximately 270 applications were submitted by eligible students.

- 71 freshmen, sophomores, juniors and seniors who maintained a 4.0 GPA after a minimum of 24 credit hours were awarded the Drucilla Shepard Smith Award.

- Applications for the Waldo-Cummings Outstanding Student Awards were solicited via *The Daily Barometer* and nominations by faculty members were solicited via *OSU This Week* in April.

- Representatives of the organizations which sponsored awards presented at the Awards Banquet were contacted in March 1996. Names of award recipients and presenters were secured by May 6 to facilitate program printing.

- Interviews of Waldo-Cummings award finalists were completed by May 3.

- Banquet arrangements were finalized at the final meeting of the full committee on May 15, 1996.

- Student participation in the committee was exceptional this year. The student committee members played an integral role in the award selection process and served a presenters during the banquet.

- Funding for the banquet and awards was secured from several sources:
  Office of the Vice Provost for Student Affairs — $2,000.00
  Office of the President — Cost of certificate signatures and a floral centerpiece (approximately $150.00)
  OSU Student Foundation — $300.00
  1996 Senior Class — $150.00
  Endowment Funds — $2,500.00
  Ticket Sales — Approximately $1,000.00
  Expenditures for the 1996 banquet should be used as a budgeting guideline for next year.

Committee members suggested the following changes for next year:

- Clarify protocol and procedure for distributing complimentary banquet tickets.
- Develop a clear, concise description of the nature and background of the Waldo-Cummings Outstanding Student Awards.
- Continue to implement strategies that will minimize the length of the banquet program.
- Identify additional funding sources.

It is recommended that the work of this committee to recognize student achievement through awards and the award banquet be continued in the 1996-97 academic year.

SENATOR ATTENDANCE BY APPORTIONMENT UNIT											
FY 95/96	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Oct-Jun Average	94/95 Average
Agricultural Sciences	56%	60%	44%	79%	58%	67%	67%	63%	63%	61.9%	61.6%
Associated	73%	80%	87%	67%	77%	92%	69%	77%	69%	76.8%	81.9%
Business	67%	33%	100%	67%	67%	67%	67%	33%	67%	63.1%	85.2%
Engineering	67%	67%	67%	56%	67%	44%	100%	89%	78%	70.6%	71.9%
Extension	25%	78%	27%	30%	80%	20%	70%	40%	70%	48.9%	60.7%
Forestry	50%	38%	38%	38%	38%	25%	25%	25%	25%	33.6%	64.1%
Health & Human Performance	67%	100%	100%	67%	67%	100%	100%	100%	67%	85.3%	85.3%
Home Economics & Education	60%	100%	100%	60%	60%	80%	100%	60%	80%	77.8%	93.3%
Liberal Arts	77%	77%	57%	77%	62%	69%	77%	54%	69%	68.8%	78.3%
Library/Information Services	100%	100%	100%	100%	75%	50%	50%	100%	75%	83.3%	94.4%
Oceanic & Atmospheric Sciences	17%	67%	50%	50%	17%	67%	50%	50%	67%	48.3%	61.6%
Pharmacy	0%	50%	50%	50%	100%	100%	100%	100%	50%	66.7%	100%
ROTC	100%	100%	100%	100%	50%	50%	100%	50%	100%	83.3%	61.1%
Science	57%	43%	71%	80%	73%	53%	73%	80%	67%	66.3%	64.4%
Student Affairs	100%	75%	100%	100%	100%	100%	100%	100%	100%	97.2%	97.2%
Veterinary Medicine	100%	100%	100%	100%	100%	50%	100%	100%	100%	94.4%	77.8%

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OREGON STATE UNIVERSITY
Corvallis OR 97331-6203 (737-4344)
Faculty Senate Office
Social Science 107
November 8, 1996

MEMORANDUM

TO:
Dean Dutson – Agricultural Sciences
Dr. Hashimoto – Associated
Dean Parker – Business
Dean Owen – Engineering
Dean Houglum – Extension
Dean Brown – Forestry
Dean White – Health & Human Performance
Dean Green – Home Economics & Education
Dean Schaffer – Liberal Arts
Dr. Hughes – Information Services
Dean Dalrymple – Oceanic & Atmospheric Sciences
Dean Ohvall – Pharmacy
Dean Horne – Science
Dr. Roper – Student Affairs
Dean Wilson – Veterinary Medicine

FROM: Executive Committee of the Faculty Senate
Ken Krane, President, Faculty Senate

RE: Faculty Senate Elections, Fall 1996

Please commence your normal procedures for the nomination and election of new Faculty Senate members to represent the unit for which you are responsible. Enclosed please find: (1) a roster of current Faculty Senate membership (terms expire for all those appearing in the column headed '1996' — those with asterisks preceding their name are ineligible for Senate reelection this year since they have already served two consecutive terms); (2) a table depicting Faculty Senate apportionment by unit; (3) an updated list of individuals eligible to vote in your unit; and (4) two sets of mailing labels for your use.

Your unit is to elect ___ Senate representative(s) at this time to three-year terms ending December 31, 1999. Faculty Senate Bylaws specify that there be at least two nominees for each position to be filled. **The number of Senators elected is based on total apportionment within the voting unit, not within individual departments.**

All academic staff members with the rank of Senior Faculty Research Assistant or higher, including No Rank faculty, who were included in the figures used for apportionment (those whose names appear on the enclosed computer-generated report), and who are in Oregon at the time of the election, shall be eligible to vote in the nomination and election of Senators. There are no provisions for proxy or absentee ballots.

Please activate and complete your election process as soon as possible, concluding by **no later than December 6,** and forward the names of the individuals elected to the Faculty Senate Office by **no later than December 9** so elected individuals can be informed of the New Senator Orientation prior to the Christmas break.

Also enclosed are attendance summaries for your unit for the period October 1995–June 1996. Although these have no direct bearing upon the current election, we believe you may find the information to be of interest. Faculty have been informed that this information is available to determine representation of Senators who are eligible for reelection.

If you have questions about materials or procedure, contact Vickie Nunnemaker immediately at 737-4344. Thank you very much for your cooperation and assistance.

8.

October 29, 1996

To: OSU Faculty Senators

From: Ken Krane, President

Subj: ROTC

There have been several recent inquiries about the status of the ROTC representation in the Senate and about the steps that would be necessary to reverse the Senate's previous action. The following comments are offered in the interest of clarifying the situation.

At its meeting on December 7, 1995, the Senate passed the following change to the bylaws, which now appears as Article III, Section 2:

> Apportionment units represented in the Senate must comply with Board of Higher Education Oregon Administrative Rule (OAR 580-15-005), banning discrimination on the basis of age, disability, national origin, race, marital status, religion, sex or sexual orientation.

A companion motion passed at the November 2, 1995 meeting required that, effective September 16, 1996, apportionment units failing to comply with this rule would no longer be represented in the Senate.

The Executive Committee has chosen to interpret this action, in the case of ROTC, as subject to the same procedures that would apply in the case of an academic unit that was closed or transferred to another apportionment unit: the senators elected by that unit can continue to serve until the end of the current Senate year, at which time the representation of the affected apportionment units is adjusted appropriately. So, effective September 16, 1996, the list of apportionment units being prepared by the Senate Office for this fall's election of new senators does not include ROTC, but the previously elected ROTC senators are continuing to serve through December.

Those who wish to reverse the Senate's action concerning ROTC have two options:

(1) Revise the bylaws to delete Article III, Section 2. Senators may find the procedure for amending the bylaws in their handbooks in Article XVI, Section 1. A motion from the floor to change the bylaws is automatically referred to the Bylaws Committee. The earliest meeting at which a vote on any proposed change to the Bylaws could be taken would be at the December meeting. A 2/3 vote of the Senate is required for a bylaws change.

(2) An amendment may be proposed to the motion of November 2, 1995 (NOT an amendment to the bylaws change). This amendment could alter the original motion, for example, to change the date at which it would become effective. An amendment to a previously approved motion requires a 2/3 vote, or a majority vote if notice is given in advance of the meeting.

REPORTS TO THE FACULTY SENATE

OREGON STATE UNIVERSITY
Corvallis, Oregon 97331-6203

541/737-4344

FACULTY SENATE OFFICE
107 Social Science Hall

Thursday, December 5, 1996; 3:00–5:00 PM
Construction & Engineering Hall
LaSells Stewart Center

AGENDA

The agenda for the December Senate meeting will include the reports and other items of business listed below. To be approved are the minutes of the November Senate meeting, as published and distributed to Senators.

A. COMMITTEE REPORTS

1. Faculty Recognition & Awards Committee (p. 1)

   Jon Olson, Chair — A draft copy of a proposed new award is attached for discussion.

2. Curriculum Council

   Bob Burton, Chair

3. Faculty Senate Election Results

   Sally Francis, Ballot Counting Committee Chair, will report on the outcome of the election for Faculty Senate President-elect and Interinstitutional Faculty Senate Representative.

B. ACTION ITEMS

1. Executive Committee Election (pp. 2–5)

   See attached biographical sketches. Voting will take place during the meeting by Senators or their proxies and ex-officio members only. Three people will be elected for two-year terms beginning January 1997.

2. Proposed Revision to Academic Regulation 25 (p. 6)

   Nancy Wendt, Academic Regulations Chair, will present a proposed revision to AR 25.

3. Proposed Bylaws Change (p. 7)

   Sally Francis, Committee on Bylaws and Nominations Chair, will present the attached proposal to change the Bylaws.

4. Category I Proposals (pp. 8–68 and 69–90)

Bob Burton, Curriculum Council Chair, will present two Category I proposals, "A Graduate Degree Program in Environmental Sciences: The Oregon State Contribution to a Joint-Campus Graduate Degree Program in Environmental Sciences, Studies, and Policy" and the "Joint-Campus Graduate Program for Environmental Sciences, Studies, and Policy." Both proposals have been approved by the Curriculum Council, Graduate Council, and Budgets & Fiscal Planning Committee.

The first proposal establishes the Joint-campus Graduate Program at OSU, UO, and PSU. The second proposal deals with OSU's part of the joint-campus program and seeks to establish M.S., M.A., and Ph.D. degrees in environmental sciences. The Executive Committee also recognizes that there are considerable strengths at OSU in areas of research and instruction related to environmental sciences and that such interdisciplinary programs can often be of great interest and benefit to students. Discussion in Executive Committee also concerned the cumbersome local and statewide administrative structures established by these programs, the lack of a clear sharing of programs and resources among the three campuses, and the nature of certain of the proposed new courses which appear to be nonblanket-numbered seminar courses, among other issues. The Executive Committee recommends approval of the two proposals, with the awareness that in a complex program of this type it is nearly impossible to get all the details sorted out in advance and that many of the defects will be self-correcting by students and faculty once the program begins to operate.

C. INFORMATION ITEMS

1. New Senator Orientation

New Senator Orientation will be held January 9, 1997, preceding the regular Senate meeting, in the LaSells Stewart Center Agricultural Leaders Room. The January Faculty Senate meeting will be held in the LSC Construction and Engineering Hall.

2. Faculty Senate Handbook Return

If your term as a Senator will be completed on December 31, 1996, and you were not reelected from your unit, please return your grey Faculty Senate Handbook to the Faculty Senate Office as soon as possible so it can be updated and redistributed to new Senators. It would be helpful if you would include a note indicating who is returning the Handbook so it will not be listed as outstanding.

3. University Awards (pp. 91–92)

Materials have been sent to Deans, Directors, and Department Heads containing information for the OSU Distinguished Service Award and the following awards:

OSU Alumni Association Distinguished Professor Award
Elizabeth P. Ritchie Distinguished Professor Award
Dar Reese Excellence in Advising Award
Richard M. Bressler Senior Faculty Teaching Award
OSU Outstanding Faculty Research Assistant Award
OSU Faculty Teaching Excellence Award
Extended Education Faculty Achievement Award
D. Curtis Mumford Faculty Service Award

A summary of these awards is included in this agenda. All nomination materials for the above awards must be submitted to the Faculty Recognition and Awards Committee Chair, c/o Faculty Senate Office, 107 Social Science Hall, by February 14, 1997; February 7 for the OSU Distinguished Service Award. If you have questions, contact committee chair Jon Olson at 737-3712 or *olsonj@cla.orst.edu*.

In recent years, there have been an insufficient number of nominations submitted for some categories. OSU has a highly qualified faculty and few opportunities to recognize their contributions — we depend on you to facilitate nominations for these awards.

D. REPORTS FROM THE PROVOST

Roy Arnold, Provost & Executive Vice President for Academic Affairs

E. REPORTS FROM THE FACULTY SENATE PRESIDENT

President Ken Krane

F. NEW BUSINESS

IN ORDER TO PROPERLY RECORD MINUTES OF THE SENATE MEETING, ALL SENATORS ARE REMINDED TO IDENTIFY THEMSELVES AND THEIR UNIT AFFILIATION WHEN RISING TO SPEAK.

Please recycle this agenda

OSU SERVICE FACULTY AWARD

The OSU Service Faculty Award recognizes exceptional service to the university community by faculty who serve in non-academic units or whose service in an academic unit is not defined as teaching or research. These faculty may in fact be scholars who teach, do research, and publish as do academic faculty, but such activities are not central to their job descriptions. All faculty are eligible for nomination. Nominations may be submitted by any faculty, staff, or student member of the university community.

The Faculty Recognition and Awards Committee will consider the following evaluation criteria:

- exceptional job performance
- direct and significant impact upon and involvement with students, faculty, staff, or other clientele
- innovation or creativity in work
- wide recognition by peers and colleagues of the quality of the nominee's work and service
- professional achievement or activities
- participation in University and community affairs
- evidence of continued professional growth

Nominations should include the following supporting documents: (1) a nomination letter summarizing the major contributions of the nominee; (2) an updated position description; (3) a complete professional vita; and (4) 3-4 letters of support from students, faculty, alumni, classified personnel, or others who can comment on the nominee's qualifications. The selection committee's evaluation will be based only on the above mentioned supporting documents; the committee does not solicit additional information. **Please be certain that the nomination materials, particularly the 3-4 letters, address the criteria.**

The recipient will receive a plaque and $2,000 with an additional $500 allocated for faculty development within the department.

Seven double-sided copies of each nomination packet must be submitted by **February 15, 1998** to: Faculty Recognition and Awards Committee, c/o Faculty Senate Office, 107 Social Science Hall.

DRAFT --- DRAFT --- DRAFT

OREGON STATE UNIVERSITY
Corvallis OR 97331-6203 (737-4344)
Faculty Senate Office
107 Social Science
November 21, 1996

MEMORANDUM

TO: Members of the OSU Faculty Senate

FROM: Executive Committee of the Faculty Senate
Ken Krane, President, OSU Faculty Senate

RE: Biographical Sketches of Candidates for Executive Committee of the Faculty Senate

Voting will take place during the December Faculty Senate meeting by Senators or their proxies only. Three of the following people will be elected for two-year terms beginning January 1997 and will join the following continuing members on the Executive Committee: Cheryl Jordan (Apparel, Interiors, Housing and Merchandising), Don Reed (Biochemistry & Biophysics), and Ken Williamson, (Civil Engineering). The 1997 Faculty Senate President, Tony Wilcox, (Exercise & Sport Science), the President-Elect (not elected prior to agenda publication), and the Immediate Past President, Ken Krane (Physics), also serve on the Executive Committee.

* * * * * * * * * *

JUDITH STEELE BURRIDGE (at OSU from 1960–62 and again since 1971); Professor; County Extension Agent in Washington, Benton, Yamhill, and Linn Counties; Linn County Staff chair; Academic Home – College of Home Economics and Education.

FACULTY SENATE: Extension Senator, 1994-present.

EXTENSION SERVICE: Promotion and Tenure Committee, 1991, 1989 & 1988; Chair, Extension Futuring Committee, 1990–91; and Marketing Task Force, 1985–90.

OTHER UNIVERSITY SERVICE: College of Home Economics Centennial Celebration, 1987–88.

SEARCH COMMITTEES: Associate Dean and Program Leader for Extension, College of Forestry, 1990; Director of Continuing Education, 1987; and Assistant Director of Extension for Home Economics Programs, 1978.

I would like to serve on the Executive Committee of the Faculty Senate because I believe the perspective of Extension faculty needs to be represented in the executive council as well as the total governing body of the Faculty Senate.

BRUCE COBLENTZ (at OSU since 1975), Professor of Wildlife Ecology, College of Agricultural Sciences.

FACULTY SENATE: Agricultural Sciences Senator, 1986-91 & 1996–present and Bylaws Committee 1986–87.

COLLEGE OF AGRICULTURAL SCIENCES: Excellence in Teaching Award Committee, 1990; Curriculum Committee, 1988–89; and Classified Employee Awards Committee, 1985.

OTHER UNIVERSITY SERVICE: OSU Press Editorial Board, 1994–present; Jackson-Frazier Wetlands Committee, 1985–86; Animal Welfare Committee, 1979–80; and Museum Committee, 1978–79.

I now have more than 20 years of service to Oregon State University. Although mostly engaged in teaching and research during this period, I've quietly (and not so quietly) observed the workings of the University and all of the internal and external special interests associated with it. I believe I'm now sufficiently experienced and mellowed to be able to positively contribute as a member of the Faculty Senate Executive Committee, and work for the betterment of our faculty. I welcome the opportunity to contribute.

* * * * * * * * * *

STEVE DAVIS (at OSU since 1983), Professor, Department of Animal Sciences, College of Agricultural Sciences.

FACULTY SENATE: Agricultural Sciences Senator, 1992–present; Research Council, 1995–present; and Budgets & Fiscal Planning Committee, 1989-90.

COLLEGE OF AGRICULTURAL SCIENCES: Task Force on Budget Priorities and Core Curriculum Planning, 1989–91; Acting Director, Oregon Agricultural Experiment Station, 1987; Co-chair, Tactical Priorities and Plans Committee, 1985–86; and Department Head, Animal Sciences, 1983–91.

OTHER UNIVERSITY SERVICE: Institutional Animal Care and Use Committee (IACUC), 1991–96.

SEARCH COMMITTEES: Associate Dean and Director of Academic Programs, 1984.

I'm probably not helping my chances of being elected by saying this, but, realistically I'm not sure I do want to serve on this committee. I am honored, however, to be nominated for this service and, if elected, would be doubly honored to serve the faculty in whatever way I can. I do think it would be an interesting experience to serve on this important committee and I know I would learn a lot by the experience. If elected, I would work to help the committee reflect the interests of the faculty.

IRMA DELSON (at OSU from 1980–87 and again since 1990), Assistant Director of Student Services and Head Advisor, College of Oceanic and Atmospheric Sciences.

FACULTY SENATE: College of Oceanic & Atmospheric Sciences Senator, 1996–present; Academic Advising Council, 1995–present; Administrative Appointments Committee, 1995–present; and Undergraduate Admissions Committee 1995.

COLLEGE OF OCEANIC AND ATMOSPHERIC SCIENCES: InterDiscipline Committee, 1996–present, and Information and Public Education Committee, 1995–present.

OTHER UNIVERSITY SERVICE: Faculty Advisor, Indonesian Students Association, 1994–95; President's Commission on the Status of Women, 1993–95; OSU Fulbright Campus Representative, 1990–92; and OSU Representative to OSSHE Scholarship Committee, 1986 & 1990–91.

SEARCH COMMITTEES: Chair, Associate Director of Admission and Orientation, 1996.

The Executive Committee of the Faculty Senate is the locus of much fundamental institutional reflection, policy shaping, and decision making for OSU. The Committee, on behalf of all faculty, conscientiously reviews complex issues of critical importance to the integrity of the institution. With the experience I have gained through the variety of roles and responsibilities I have enjoyed here, I can contribute a seasoned and creative perspective to the Committee. I am committed to the welfare of OSU as an institution and as a community.

* * * * * * * * * *

LAWRENCE GRIGGS (at OSU since 1972), Associate Professor and Director, Educational Opportunities Program.

FACULTY SENATE: Unassociated Senator, 1984–90 and Associated Senator, 1995–present; Faculty Grievance Committee, 1988–91, Chair, 1992-94; Faculty Consultative Group, 1991; Executive Committee, 1990–92; Administrative Appointments Committee, 1990–93; Academic Deficiencies Committee, 1987–90; and Graduate Admissions Committee, 1984–86.

OTHER UNIVERSITY SERVICE: Undergraduate Education Council, 1994–present; President's Commission of Hate Crimes and Hate Related Activities, 1994–95; Minority Affairs Commission, 1988–94; Athletic Advisory Board, 1988–present; and Selection Committee Underrepresented Minority Achievement Scholarship: Freshman and Junior, 1984–present.

SEARCH COMMITTEES: Assistant Director of Admissions and Orientation, 1996; Dean, College of Liberal Arts, 1994; Women's Senior Administrator, Athletic Department, 1994; and Vice President for University Relations, 1989.

I am pleased to be considered for the Faculty Senate Executive Committee. I am seeking this position because I feel I can make a contribution to the Senate. As you can see from my OSU Biographical Sketch, I have been at OSU for over 20 years. I have served on many faculty senate committees, and have served the university community in a number of ways. Some of the critical issues facing the university are inclusiveness in faculty governance and enrollment and retention of students. I believe that the Faculty Senate has a responsibility to represent all faculty at the university and to address and find solutions to low enrollment and low retention. I think I will bring a different perspective and a new way of addressing critical issues facing the university today.

BARBARA McEWAN (at OSU since 1990), Associate Professor, School of Education, College of Home Economics and Education.

FACULTY SENATE: Home Economics and Education Senator, 1996–present and Academic Requirements Committee 1991–93.

COLLEGE OF HOME ECONOMICS AND EDUCATION: Integrated Early Childhood Education/Elementary Education Program Committee, 1996–present; Kappa Delta Pi Advisor, 1996–present; Teacher Education Committee, 1995–present; Coordinator for the Elementary Education Master of Arts in Teaching program 1994–present; and Teacher Licensure Committee, 1991–present.

I have decided to put my name in nomination for the Executive Committee for two reasons. One is that I am very interested in becoming more actively involved in the Faculty Senate and learning more about programs and activities across campus. The other reason has to do with the contribution I feel I can make. I have been conducting research and writing in the area of equity in education for nearly ten years. As this campus seeks to increase its representation of membership from diverse cultural backgrounds, I believe my input to committees and processes could prove to be very useful.

* * * * * * * * * *

LORETTA RIELLY (at OSU since 1990), Librarian and Associate Professor, University Libraries, Information Services.

FACULTY SENATE: Information Services Senator, 1996–present and Committee on Committees, 1992–95.

INFORMATION SERVICES: Public Relations Committee, 1996–present; User Services Transition Team, 1994–95; Strategic Reorganization Team, 1994; FrontLine Support Hot Issues Team, 1994; and Instruction and Training Hot Issues Team, 1994.

OTHER UNIVERSITY SERVICE: Instructional Technology Innovation Consortium Advisory Board, 1992–93; and Instructional Computing Sub-Committee of University Computing Steering Committee, 1991–92.

OSU LIBRARIES: Online Public Access Catalog Sub-Committee of Library Administration, Management, and Planning Committee, 1991–95; Public Relations Committee, 1990–95; and Human Resources Committee, 1991–93, chair 1991.

SEARCH COMMITTEES: Chair, Access Services Librarian, 1995.

I am among OSU's "non traditional" faculty. I am, however, an educator whether I'm working with students at a CD-ROM terminal or giving a 50-minute class on Research Strategies. I value the campus environment and the dynamics of the faculty-student exchange but also recognize that we must develop alternative learning environments to meet the needs of students across Oregon. As a member of the Information Services faculty, I participate in the development of new methods of teaching and learning. I would bring a unique perspective to the Executive Committee at a time of significant change in higher education.

6.

TO: Ken Krane
Executive Committee

FROM: Nancy Wendt
Chair, Academic Regulations Committee

DATE: November 20, 1996

SUBJ: Academic Regulation 25.g. change

The University Curriculum Committee has requested a change to AR25. They want there to be a limit on the number of Academic Learning Service courses that can be applied to the baccalaureate degree. The Academic Regulations Committee agrees with their request. We also thought the wording of AR25.g. could be clarified, so we propose the following change (highlighted sections indicate proposals):

AR25.g. Restrictions: maximum credits applicable toward degree.

We then propose the following addition:

AR25.g.

6) Academic Learning Service courses: maximum 15 credits.

Thank you for your consideration.

Date: November 8, 1996

To: Ken Krane, President
Faculty Senate

From: Sally Francis, Chair Sally Francis
Committee on Bylaws and Nominations

The Committee on Bylaws and Nominations recommends the following changes to the Faculty Senate Bylaws. Proposed additions are shown in the highlighted sections.

ARTICLE VII: EXECUTIVE COMMITTEE

Sec. 1. Membership: The Executive Committee shall consist of the Senate President, the Senate President-Elect, the Provost and Executive Vice President, or that person's designee, the Immediate Past President as Ex-Officio, and six others elected from the membership of the Faculty Senate. The elected Executive Committee members shall retain their seats for the remainder of their Senate terms.

ARTICLE IV: MEMBERS

Sec. 3. Ex-Officio Members. The President of the University, the Provost and Executive Vice President, Interinstitutional Faculty Senators, immediate past president, and any Executive Committee member whose term in the Senate has expired shall be Ex-Officio voting members of the Faculty Senate.

8.

Robert M. Burton, Professor
MATHEMATICS DEPARTMENT

OREGON STATE UNIVERSITY
113T Kidder Hall • Corvallis, Oregon 97331·4605
Telephone 541·737·3073 Email: burton@math.orst.edu/ Fax 541·737·0517

17 October, 1996

Professor Ken Krane
Faculty Senate Office
Oregon State University

Dear Professor Krane,

I am pleased to report to you that the Curriculum Council approved the Category I proposal to establish a Graduate Degree Program in Environmental Sciences. This action was taken at the Council's regular meeting on 3 October 1996. The preproposal has been approved by the Academic Council and this proposal has been approved by the Graduate Council and the Budgets and Fiscal Planning Committee. We are transmitting this proposal to you so that the Faculty Senate can act in a timely matter.

Thank you.

Sincerely,

Bob Burton
Professor of Mathematics
Chair, Curriculum Council



October 31, 1996

CATEGORY I PROPOSAL

A GRADUATE DEGREE PROGRAM IN ENVIRONMENTAL SCIENCES:
The Oregon State University Contribution to
A Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy

Submitted by
The Environmental Sciences Interdisciplinary Degrees Committee

CIP #300101

OVERVIEW

The Environmental Sciences Interdisciplinary Degrees (ESID) Committee proposes that the M.S., M.A. and Ph.D. in General Science-Environmental Biology/Science Concentration be replaced by an M.S. Degree, an M.A. Degree, and a Ph.D. Degree in Environmental Sciences. The graduate degrees will be offered through the Oregon State University Graduate School. The proposed Environmental Sciences Graduate Program involves the establishment of a multi-college graduate faculty committee with curricular oversight responsibility at Oregon State University, and the establishment of a Joint-Campus Program for Environmental Sciences, Studies, and Policy at the level of the Oregon State System of Higher Education.

Within Oregon State University, the proposed degrees and minor would form the graduate component of an Environmental Sciences Program with the following degree elements:

1. A curriculum leading to a B.S. degree in Environmental Sciences (approved and operating);

2. A curriculum leading to an undergraduate minor in Environmental Sciences (approved and operating);

3. A curriculum leading to an M.S. or M.A. in Environmental Sciences;

4. A curriculum leading to a Ph.D. in Environmental Sciences.

This document describes only the graduate component of the Environmental Sciences Program at Oregon State University and how it is linked to the Joint-Campus Program in Environmental Sciences, Studies, and Policy. The proposal for the undergraduate component of the Oregon State University Environmental Sciences Program was approved in 1992 in a separate Category I Proposal. Although closely related and mutually supportive, the undergraduate and graduate components of the OSU program are sufficiently independent from an administrative and curricular standpoint to be considered and implemented separately.

RATIONALE

Environmental sciences are central to the mission of Oregon State University - a university distinguished by extensive programs related to the environment and use of natural resources. Recognized as a Land, Sea, and Space Grant institution, Oregon State University has exceptional strength in many of the disciplines that are required to provide a high-quality interdisciplinary education for future environmental scientists, or to provide continuing post-graduate education to scientists who are already active in the field. The proposed ES Graduate Program builds on these institutional strengths and makes it possible for graduate students to take better advantage of the expertise, equipment, and resources at Oregon's other major research universities.

Environmental sciences involve the synthesis of life, physical, and social sciences explored within the context of natural processes and their alteration by human activity. Environmental sciences transcend levels of scale ranging from molecular biology to global climate, and periods of time ranging from fragments of seconds to units of geological time. The Environmental Sciences Graduate Program at OSU will provide a curricula that will expose each student to course work involving life, physical, and social sciences and that will develop their capacity to scale thinking and research in these academic areas across units of space and time.

The ES Graduate Program responds to the demonstrated academic interests of students and to society's crucial need for scientists having the ability to analyze, model and participate in managing environmental systems. The program is designed to improve the ability of the participating institutions to attract outstanding graduate students and match them with graduate faculty members who are actively involved in environmental research and in the instruction and advising of graduate students.

BACKGROUND

Recognizing the growing interest of students and the crucial need for scientists who can analyze and understand environmental systems, the Dean of the College of Science formed the ESID Committee (APPENDIX 1) in September, 1991. The ESID Committee was charged with strengthening and broadening interdisciplinary degree programs in environmental sciences.

The need is for environmental scientists who are trained across the disciplines of life, physical, and social sciences and who are educated in focused interdisciplinary tracks such as ecology, biogeochemistry, social science, and quantitative analysis. Students therefore will have interdisciplinary training and an area of academic identity. Those from the proposed program will be well equipped for careers in the private and public sectors that will unravel interactions between the natural systems and the social systems of the earth. Careers in the environmental area are documented and described in several texts (e.g., Warner, D.J., 1992, Environmental Careers: A Practical Guide to Opportunities in the '90s. Lewis Pub., Boca Raton, FL, 249 pp.; The CEIP Fund, 1989, The Complete Guide to Environmental Careers. Island Press, Wash., D.C., 328 pp.). The environmental field accounted for $120 billion in business services in 1994 and is expected to grow to $200 billion by 2000. The Oregon Environmental Technology Association estimates that $600 billion of environmental service work is available in the countries of the Pacific Rim.

A strong environmental sciences program must cross disciplinary boundaries not only between the traditional physical and biological sciences within the College of Science, but across a wide range of disciplines throughout the University. The ESID Committee consists of faculty members from the Colleges of Science, Agricultural Sciences, Engineering, Forestry, Health and Human Performance, Liberal Arts, and Oceanic and Atmospheric Sciences, and represents a broad range of perspectives on environmental studies.

Graduate degrees with an emphasis on environmental biology have been offered by the General Science Department at Oregon State University since the 1988-89 academic year. This Department was eliminated on June 30, 1992 as part of a major reorganization of the instructional programs in the College of Science. Many of the General Science Department's instructional activities were transferred to appropriate disciplinary units within the College of Science. The College of Science is committed to continuing the existing graduate degrees in environmental sciences until they can be replaced by the proposed degrees and curricula.

The proposed ES Graduate Program consists of graduate curricula, an Environmental Sciences Graduate Faculty, an ES Graduate Steering Committee, and an Environmental Sciences Graduate Program Director. The ES Graduate Program is the result of the efforts of the ESID Committee and interested faculty members across the campus. The process has been open to all (APPENDIX 2). A preliminary design of the program and a draft of the revised curriculum were widely circulated on campus, and all suggestions have been carefully considered. The ESID Committee believes that the participating faculty members have designed a program that has the rigor, breadth and the flexibility that is required to develop outstanding environmental scientists.

DESCRIPTION OF PROPOSED PROGRAM

1. DEFINITION OF ACADEMIC AREA

a. Define or describe the academic area or field of specialization within which the proposed program would be concerned.

The purpose of the ES Graduate Program is to provide a curriculum leading to M.S., M.A., and Ph. D. degrees in Environmental Sciences that will develop scientists who will be able to analyze and understand environmental systems, predict environmental change, and participate in the management of the environment. Each student completing a major in the ES Graduate Program will perform research and complete a thesis, dissertation, or research project. Each student will complete a core of new ES graduate courses that will develop breadth with content in the life science, physical science, and social science. Each student will also develop depth in a carefully designed, interdisciplinary area of concentration.

b. What subspecialties or areas of concentration would be emphasized during the initial years of the program?

Graduate students who major in Environmental Sciences will all take a core of ES courses. In addition, graduate students will choose an Area of Concentration, or track, that will add focus and ensure academic rigor. Examples of academic tracks that have been developed include:

Ecology
Biogeochemistry
Social Science
Quantitative Analysis.

Responsibility for managing and maintaining integrity of each track will be assigned to a member of the ES Graduate Faculty.

c. Are there other subspecialties the institution would anticipate adding or emphasizing as the program develops?

Yes. The proposed list of tracks will be important as the ES Graduate Program begins to function. As the ES Graduate Faculty develops, and as student interest expands, other tracks in areas such as environmental chemistry and risk assessment can be added.

d. Are there other subspecialties that the institution intends to avoid in developing the program?

No. As an interdisciplinary program, the ES Graduate Program provides appropriate mechanisms to allow students to take advantage of opportunities in any specialty or subspecialty in the environmental sciences or closely related fields.

The distinguishing features of the proposed degree are:

1. An emphasis on basic scientific analysis of environmental problems;

2. A breadth requirement that includes a new set of life, physical, and social sciences courses;

3. A requirement to develop depth in an interdisciplinary area of concentration or track;

4. A research requirement.

The proposed ES Graduate Program complements existing programs in the broad area of environmental and natural resource studies, environmental policy and ethics, environmental engineering, and a large number of resource management programs in the Colleges of Agricultural Sciences, Engineering, Forestry, Health and Human Performance, Liberal Arts, Oceanic and Atmospheric Sciences, and Science. The proposed curricula for the graduate degrees and minor in Environmental Sciences have been coordinated with existing and emerging programs through joint membership on curriculum planning committees.

e. When will the program be operational, if approved?

The new program can be implemented upon approval, and will replace the existing graduate program in General Science-Environmental Biology/Science.

2. DEPARTMENT OR COLLEGE RESPONSIBLE

a. What college or academic unit would offer the proposed program?

The Graduate School will be the academic unit for the ES Graduate Program.

b. Will the program involve a new or reorganized administrative unit within the institution?

No.

Council of Deans. The dean from each college with participating faculty will be a member of the ES Graduate Program Council of Deans. The deans from the Colleges of Agricultural Sciences, Engineering, Forestry, Health and Human Performance, Liberal Arts, Oceanic and Atmospheric Sciences, Science, and the Graduate School are expected to participate. The dean providing FTE for the Program Director will be the lead dean. The Council of Deans will meet annually with the Program Director to evaluate the status of the Program.

The ES Graduate Faculty. The proposed program will be operated as an interdisciplinary program that is constituted, and administered by the ES Graduate Faculty (Figure 1). The ES Graduate Faculty members will teach, advise graduate students, participate in recruiting activities, and participate in the development of Joint-Campus Environmental Sciences

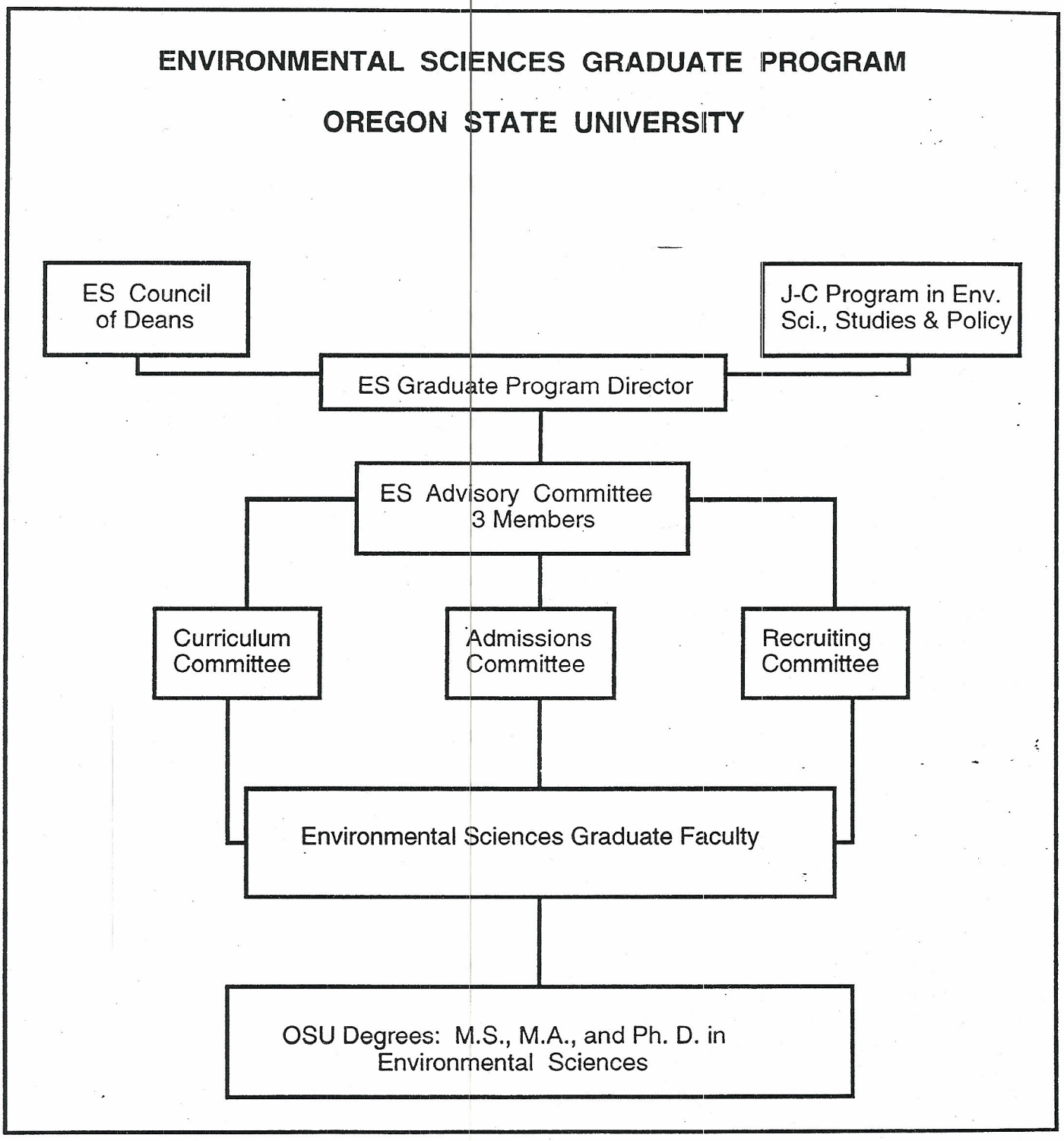

Figure 1. Organization of the proposed Environmental Sciences Graduate Program at Oregon State University.

activities. Administrative support for the Program will come from Deans from all participating colleges and the Graduate School.

The ES Graduate Program Director. The ES Program Director will be appointed by the participating Deans following a selection process. The ES Graduate Program Director will be reviewed, with options for reappointment, at 3-year intervals. The primary responsibility for the promotion and administration of the instructional and advising activities of the program will rest with the ES Graduate Program Director. The ES Graduate Program Director will:

1. Work with ES Curriculum Committee and Graduate Faculty to improve relevant course offerings;

2. Work with the ES Curriculum Committee to develop advising materials to assist the faculty and students in identifying useful courses and faculty assistance for their research;

3. Work with the ES Recruiting Committee to recruit outstanding graduate students;

4. Work with the faculty to provide graduate assistantships to as many outstanding prospective students as possible;

5. Assist the ES Admissions Committee in making decisions concerning graduate admissions and assistantships;

6. Convene and respond to the ES Graduate Program Advisory Committee;

7. Manage the ES Graduate Program Office, maintain academic records of students;

8. Represent the ES Program in the formal approval of graduate committees, masters and doctoral study programs and theses, and ES Graduate Faculty appointments;

9. Serve as the Program Coordinator for the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy on a rotating basis;

10. Serve as the ES Graduate Program spokesperson.

ES Graduate Program Committees. The ES Graduate Program will initially consist of three committees that will facilitate recruiting graduate students and graduate faculty members, make admissions recommendations, and develop the curriculum. The ES Graduate Program Committees will have membership that reflects the interdisciplinary breadth of the ES Graduate Program. Colleges currently participating include Agricultural Sciences, Engineering, Forestry, Health and Human Performance, Liberal Arts, Oceanic and Atmospheric Sciences, and Science. Guidelines for the Committees are as follow:

1. The Recruiting Committee. The Recruiting Committee will be responsible for recruiting graduate student applications. Work will involve publicizing the program in many ways, including working with the ES Graduate Program Director and other ES Graduate Faculty members to develop pamphlets and other informative materials. Work will also involve writing proposals to secure training grants and fellowships in areas of environmental science. Recruitment activities will also extend to publicizing the program at OSU in order to recruit members to the ES Graduate Faculty.

2. The Admissions Committee. The Admissions Committee will review applications for admission from prospective graduate students as well as applications for membership to the ES Graduate Faculty. The Committee will include a representative from each participating college.

Applications for admissions from prospective graduate students will typically be evaluated during winter quarter, however applications may be reviewed at any time. The basis for admission will be academic merit which is further described in Section 6 of this document. Evidence of a major professor willing to serve as advisor and of a financial support mechanism will generally be required before admission. Recommendations for graduate student admissions will be forwarded to the ES Program Director and to the Graduate School for approval.

The Admissions Committee will receive applications and nominations for membership in the ES Graduate Faculty from those who already hold appointments in existing academic units at OSU and who are interested in participating. The initial members of the ES Graduate Faculty will be screened by the ESID Committee until the ES Admissions Committee is established. The ES Admissions Committee will explicitly identify the rights and responsibilities as a member of the ES Graduate Faculty for each applicant.

3. The Curriculum Committee. The Curriculum Committee will aid the Program Director in appointing faculty to coordinate and participate in the ES Core Courses and Seminars. The Curriculum Committee will also help organize working groups interested in developing new Areas of Concentration within the ES Major. Recommendations to approve new Areas of Concentration will come from the Curriculum Committee and will go the ES Graduate Program Director and to the Graduate School for approval. The Curriculum Committee will also propose a mechanism for Ph. D. student Preliminary Examinations that will include an oral and written component. The Preliminary Examination will be administered by the student's major professor and graduate committee. Composition of the Curriculum Committee will include a spokesperson for each Area of Concentration, plus other members as needed.

ES Advisory Committee. The Chairs of each of the three ES Graduate Program Committees will constitute the ES Advisory Committee. The ES Advisory Committee will assist the Program Director on matters of policy and direction for the ES Graduate Program including:

1. Advising the ES Graduate Program Director, the OSU Joint-Campus Graduate Program representatives and participating Deans;

2. Assisting the ES Program Director in preparing an annual report describing the status of the Program;

3. Identifying new areas for curricular development;

4. Identifying potential problems for students and faculty members, and their solutions;

5. Facilitating communication between the three Program Committees and other elements of the ES Graduate Program.

Fate of the General Science-Environmental Biology/Science Program and the ESID Committee. The existing M.A., M.S. and Ph.D. degrees in General Science with the Environmental Biology/Science Area of Concentration are currently being offered by the College of Science with administrative responsibility being assigned to the ESID committee. Students currently enrolled in the General Science Program will be encouraged to enroll in the new, proposed ES Graduate Program, but must meet the requirements of the new program. GS graduate students will also have the option of completing their GS degrees in a timely manner. Those graduate students who drop from the GS Graduate Program and who wish to re-enroll must apply to the ES Graduate Program within a reasonable period. Readmission and other administrative aspects of the GS/Environmental Graduate Program will be the responsibility of the proposed ES Graduate Program.

All newly enrolled students would be required to complete the new ES curriculum and the existing General Science/Environmental Science Graduate Program will be discontinued. Responsibility for the new ES Graduate Program, and remaining GS graduate students, will be transferred by the ESID Committee to the ES Advisory Committee upon its formation. When the ES Advisory Committee is formed, the ESID Committee will cease to exist having carried out its charge with respect to both the undergraduate and graduate components of the OSU Environmental Sciences Program.

3. OBJECTIVES OF THE PROGRAM

a. What are the objectives of the program?

The purpose of the ES Graduate Program is to provide a curriculum leading to M.S., M.A., and Ph. D. degrees that will develop scientists who will analyze and understand environmental systems, predict environmental change and participate in the management of the environment. Each student majoring in the ES Graduate Program will conduct research and will complete a thesis, dissertation, or project; each student will develop depth in a specific academic area through the completion of an approved minor; and each student will develop breadth through a set of core courses that include concepts in life science, physical science, social science.

b. How will the institution determine how well the program meets these objectives? Identify specific post-approval monitoring procedures and outcome indicators to be used if the program is approved.

The ES Graduate Program Director and the ES Graduate Advisory Committee will be responsible for measuring the success of the program. Success will be measured by analysis of:

1. Quality and number of entering graduate students;

2. Quality of graduate study programs;

3. Timely completion of academic programs;

4. Publication and communication of research findings;

5. Job placement, career development and comments from employers.

In addition to the normal academic program reviews at Oregon State University, the ES Graduate Program Director will prepare an annual report on the status of the program. The report will be distributed to all participating units at OSU and to the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy. The Graduate School normally reviews programs 5 years after the first student enrolls.

c. How is the proposed program related to the mission and academic plan of the institution?

Environmental sciences are central to the mission of Oregon State University - a university distinguished by extensive programs related to the environment and wise use of natural resources (Creating the Future, 1990). Recognized as a Land, Sea, and Space Grant institution, Oregon State University has exceptional strength in all of the disciplines that are needed for the scientific analysis of the environment.

The proposed ES Graduate Program contributes directly and indirectly to many of the objectives in the strategic plan for Oregon State University (Creating the Future, 1990). It directly contributes through strengthening interdisciplinary studies among students and faculty (Objective 3.3) and improves the quality and rigor of an existing academic program (Objective 6.1). It contributes to the general goals of increasing enrollment of outstanding students (Goal 6) and improves the University's relations with its many constituencies (Goal 10) by increasing the visibility of programs in which OSU has exceptional strength. It supports and strengthens the University's international focus through the interdisciplinary study of global environmental problems. Specifically, the program has the following qualities:

1. It adds to the construction of a comprehensive and coordinated set of programs in environmental studies from existing and emerging programs in many colleges;

2. It is a unique program at Oregon State University and is part of the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy in the Oregon State System of Higher Education. As such, the proposed program at OSU will lead to a greater integration of activity and resources within OSSHE;

3. It builds on the existing General Science graduate degrees with Areas of Concentration in Environmental Biology/Science, and would replace them with graduate degrees in a new Environmental Sciences Graduate Program;

4. It stimulates the creation of new courses, and provides opportunities for students to select existing courses in new combinations;

5. It encourages interaction among environmental sciences faculty members through the joint supervision and advising of graduate students and development and improvement of relevant courses;

6. It complements the development of an undergraduate degree program in environmental sciences.

d. What are the employment opportunities for persons who have been educated in the proposed program?

Students completing graduate degrees in environmental sciences will have excellent employment opportunities. Graduates will take careers in federal, state, and local government agencies that are charged with managing natural resources. Such federal agencies include the U.S. EPA, the U.S. Forest Service, NASA, NOAA, and the U.S. Department of Energy. All states and many local governments hire those necessary to develop and to enforce compliance with environmental legislation including the Clean Air Act, the Endangered Species Act, the Clean Water Act, and Superfund programs.

Students completing the ES Graduate Program will also find employment in the private sector. Industry is complying with legislation designed to protect the environment and to manage natural resources by hiring those who can conduct research to define and predict environmental impacts of industry and to identify mitigation protocols. Consulting firms regularly hire environmental scientists.

Upon completing their degrees, environmental sciences graduate students will be prepared to conduct research in national research laboratories, field stations, universities, as well as institutes and corporations in the private sector. Some students will go on to become prominently known scientists and faculty members at institutions throughout the world.

4. RELATIONSHIP OF PROPOSED PROGRAM TO OTHER PROGRAMS IN THE INSTITUTION

List the closely related programs and areas of strength currently available in the institution which would give important support to the proposed program.

CLOSELY RELATED PROGRAMS

The M.S., M.A., and Ph.D. degrees in Environmental Sciences are designed to complement disciplinary degree programs in the life, physical, and social sciences as well as interdisciplinary degrees and minors in the broad area of environmental studies. The proposed curricula have been coordinated with existing and emerging programs through joint membership on curriculum planning committees.

Each closely-related program is focused on a different part of the spectrum of environmental and natural resource studies. The important features of the proposed Environmental Sciences degree are:

1. A focus on basic scientific analysis of environmental problems;

2. A breadth requirement that includes a core of new courses that includes material from physical, life, and social sciences;

3. A focus on an interdisciplinary area of concentration;

4. A research emphasis.

The proposed M.S., M.A., and Ph.D. degrees in Environmental Sciences are related to existing traditional graduate degree programs found in the Colleges of Agricultural Sciences, Engineering, Forestry, Health and Human Performance, Liberal Arts, Oceanic and Atmospheric Sciences, and Science. The proposed graduate program is complementary to, but does not duplicate, existing interdisciplinary programs in the broad area of environmental and natural resource studies, including:

1. Undergraduate Environmental Sciences Program: The B.S. degree in Environmental Sciences is designed to prepare students for analyzing and managing environmental systems. This degree is a rigorous science degree that requires students to develop both a broad base of knowledge in basic science and social science, and an academic area of focus or specialization. The breadth and focus of the degree ensures students are well prepared for challenging careers or graduate school.

2. Environmental Engineering Programs: The Environmental Engineering B.S. degree was developed to prepare students for environmental engineering careers and for future graduate education in environmental engineering. The undergraduate environmental engineering curriculum is broadly based. Students take environmental engineering course work ranging from mass transfer to ecology. Course work includes environmental health, air pollution control, hazardous substance management, water and waste water treatment, plus engineering design and engineering science course work to meet accreditation requirements and to prepare them for the Fundamentals of Engineering examination and for registration as a Professional Engineer.

A Category I proposal to establish a MEngr degree in Environmental Engineering was prepared by the Department of Civil Engineering and is currently in the approval process. At the graduate level, students commonly specialize in one or two areas of

environmental engineering which include: water and waste water treatment, hazardous waste remediation, hazardous substance management, groundwater hydraulics and groundwater quality modeling, surface hydrodynamics and water quality modeling, natural systems modeling, and water resources engineering.

3. Marine Resource Management: The MRM program is responsible for offering Master's degrees allowing students to develop professional careers in the use of marine and coastal resources. A core of basic courses in biological, chemical, geological, and physical oceanography is complemented with courses in such fields as management, economics, policy, communications, and resource use. Areas of focus include ocean and coastal resources, ocean fisheries resources, marine pollution, ports and marine transportation, and marine recreation and tourism.

4. M.A.I.S.: The Master of Arts in Interdisciplinary Studies is granted for attainment of broad, advanced knowledge and achievement integrated from three fields of study, including areas relevant to environmental economics, science, and policy.

5. Toxicology: The Graduate Program in Toxicology is designed to prepare individuals for positions as toxicologists in industry, government, and academic institutions. Biochemical, pathological, and pharmacological approaches are emphasized in several areas including analytical toxicology, aquatic toxicology, and the analysis of toxins in the environment and food.

6. Environmental Health Management: Master of Science degrees are awarded in Environmental Health Management with an emphasis in several areas including Environmental Health, Environmental Epidemiology, and Occupational Safety. Students enrolling in this program normally have an undergraduate degree in basic sciences or environmental health, with course work in biology, chemistry, physics, and mathematics. The program offers a wide range of professional courses in Environmental Health, including public health toxicology, solid and hazardous waste management, environmental sampling and analysis, air quality and public health, general environmental health, occupational health, and environmental health policy and regulations. Graduates from this program are prepared to assume professional Environmental Health Management positions in both the private and public sectors. The Department of Public Health also offers a Ph. D. program in Public Health, with areas of study that include Environmental Health.

INSTITUTIONAL STRENGTH

Strong academic units that are closely related to environmental sciences span the university. Oregon State University offers comprehensive instructional programs in agriculture, engineering, public health, forestry, biology and the oceanic, atmospheric and earth sciences. Research centers and institutes have also been established to provide focal points for those faculty members and students interested in interdisciplinary topics. Several of these centers have environmental themes or projects, including the Center for Analysis of Environmental Change, the Environmental Health Sciences Center, the Water Resources Research Institute, the Environmental Remote Sensing Applications Laboratory, the Forest

Research Laboratory, the International Plant Protection Center, the Radiation Center, and the Center for Gene Research and Biotechnology.

Graduate students enrolled in the proposed ES Graduate Program would be able to participate in the activities of these centers and institutes at OSU and to use activities in these programs to develop their graduate studies. The presence of related state and federal agencies with research mandates, such as the Corvallis Environmental Protection Agency Laboratory, the U.S. Department of Agriculture, and the U.S. Department of the Interior, provides unique opportunities for developing graduate research partnerships benefiting graduate students participating in the ES Graduate Program.

A companion Category I Proposal for the undergraduate component of the Environmental Sciences Program was approved by the Oregon State Board of Higher Education in 1992. Although closely related and mutually supportive, the undergraduate and graduate components at Oregon State University are independent from an administrative and curricular standpoint. The undergraduate ES Program has been highly successful. The undergraduate ES Program quickly grew to about 250 undergraduate majors by the 1995-6 academic year, and the number of majors continues to grow. Success of the undergraduate ES Program demonstrates that undergraduate students seek rigorous, academic programs in environmental sciences, and suggests that the same is true for graduate students.

5. COURSE OF STUDY

a. Describe the proposed course of study.

M.S. AND M.A. DEGREE REQUIREMENTS

Requirements and policies related to committee structure, advising, and examinations are consistent with those in the University Graduate Catalog. The ES Graduate Program is developed through discussions involving the graduate student, the student's advisor, and the student's Graduate Committee. The requirements outlined below are for the M.S. and M.A. degrees. The M.A. degree also requires foreign language proficiency equivalent to that attained at the end of a second-year university course in that language with a grade of C or better. English is not considered a foreign language for the purposes of this requirement.

The M.S. and M.A. Graduate Committee consists of at least three members including: the Major Professor, the Minor Professor, and a representative of the OSU Graduate School. The Major and Minor Professors must be members of the ES Graduate Faculty, each from a different academic unit. The intent of these requirements is to provide disciplinary breadth on the Committee. The M.S. and M.A. Graduate Committee must be approved by the ES Graduate Program Director.

To encourage the development of interdisciplinary ES Graduate Programs, guidelines for course selection are flexible. Students must complete at least 45 graduate credits. A program of study must include a set of ES Graduate Core courses totaling 9 Cr for M.S. and M.A. students. In addition to the ES Graduate Core courses, students must complete courses that constitute an

area of concentration (or track). Upon completion of course work and thesis requirements, M.S and M.A. students will graduate with a major and minor, both from concentrations within Environmental Sciences. Students pursuing an M.S. or M.A. degree may also have the option to pursue additional, existing minors relevant to environmental sciences. The ES Graduate Program would therefore consist of the following minimum credits in five programmatic areas that are described in detail in APPENDIX 3:

1. ES Graduate Core Courses: 9 Cr
2. Methods and Numerical Skills 6 Cr
3. ES Area of Concentration (Track): 15 Cr
4. Elective Courses: 3-9 Cr
5. Thesis: 6-12 Cr

Total 45 Cr

M.S. AND M.A. DEGREE PROGRAM ELEMENTS

The ES Graduate Core. the ES Graduate Core will consist of four new courses, totaling 9 Cr. The purpose of the Core is to give students a sense of programmatic identity, to foster interdisciplinary thinking among students and faculty members, to expose students to the breadth of existing environmental science courses, to expose students to specific areas in environmental science, to give students the opportunity for academic exploration, to teach research skills, and to introduce new students to the faculty. Core courses may be taken for credit more than one time. The four new courses are:

1. Environmental Perspectives and Methods: ENSC 515 (3 Cr, fall quarter). The course will focus on a unique perspective or method each academic quarter it is offered. Examples of themes which could be used include remote sensing; modeling over a range of scales in time, space, and levels of system organization; and risk analysis. The theme chosen will reflect the interest of the student population, the expertise of participating faculty members, and the emergence of new perspectives and methods. ES Graduate Faculty members teaching the course will be from life science, physical science, and social science disciplines. The course will consist of two presentations and one discussion each week. Invitations to participate will come from the ES Graduate Program Curriculum committee which will also establish the schedule for participating faculty members.

2. Environmental Analysis: ENSC 520 (3 Cr, winter quarter). Students will work with faculty members to prepare a thesis proposal and to present a seminar on an environmental topic of the student's choosing. The purpose of the course is to develop analytical thinking, to explore analytical approaches, to enhance writing skills, and to gain experience in oral communication. Faculty members will be invited to participate in the course by the ES Graduate Program Curriculum Committee which will also establish the schedule for participating faculty members.

3. Research Profiles: ENSC 530/630 (1, 2 Cr, spring quarter). Masters students must earn a minimum of 2 Cr. Seminars will be given by graduate students and visiting faculty members. M.S. and M.A. students will typically earn one Cr for one quarter of attendance in their first year and either one Cr for one quarter of attendance or two Cr for presenting a seminar in their second year. Faculty members and students from the other universities participating in the Joint-Campus Program in Environmental Sciences, Studies, and Policy will be encouraged to participate. The ES Graduate Program Curriculum Committee will be responsible for organizing the schedule of speakers.

4. Joint-Campus Environmental Sciences, Studies, and Policy Workshop: ENSC 508 (1 Cr, spring quarter). Graduate students and ES Graduate Faculty may participate in the Joint-Campus Environmental Sciences, Studies, and Policy Workshop. The annual Workshop will be a forum for both posters and oral papers presented by graduate students and faculty members from OSU, U of O, and PSU. The Workshop may be held in conjunction with other workshops and will be organized by the Joint-Campus ES Graduate Program Coordinator.

Methods and Numerical Skills Courses. Courses in research methods, experimental design, statistical analysis, and modeling are required to ensure students have sufficient skills for environmental research. Six Cr of course work is required for the M.S. and the M.A. degree.

ES Areas of Concentration (Tracks). Sets of courses that constitute an Area of Concentration have been established within the ES Graduate Program to give focus to study and research. Four Areas of Concentration have been defined. Mechanisms to ensure academic depth and a coherent program of study within tracks include: recognition of prerequisite courses needed to enroll in track courses; careful planning between the graduate student, advisor, and graduate committee; and encouraging graduate students to take appropriate courses at other universities participating in the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy. Enrolling in classes offered at other campuses participating in the Joint-Campus program can help solve scheduling problems and provide added depth to tracks. New Areas of Concentration can be developed by groups of faculty members and students. Areas of Concentration consist of at least 15 Cr for M.S. and M.A. students, and are fully described in APPENDIX 3. The Areas of Concentration that have been developed include:

1. Ecology
2. Biogeochemistry
3. Social Science
4. Quantitative Analysis

Other tracks may be proposed by faculty members and once approved will be added to the ES Graduate Program curriculum. The mechanism for adding new tracks will be defined once the ES Graduate Program is approved. Examples of other tracks that may be planned include environmental chemistry and environmental risk assessment. Responsibility for managing and maintaining integrity of each track will be assigned to a member of the ES Graduate Faculty.

Elective Courses. Elective courses are to be defined in the student's ES Graduate Program, and agreed upon by the student and the Graduate Committee. Elective courses sre selected to provide additional background, to explore new areas, and to add depth to a scholastic program.

Thesis. A central purpose of the M.S. and M.A. degree is to teach students the process of environmental research. A minimum of 6 Cr are required for original research leading to a thesis, or project, that complies with standards established by the Graduate School.

PH. D. DEGREE REQUIREMENTS

Requirements and policies related to committee structure, advising, and examinations are consistent with those in the University Graduate Catalog. The student's doctoral study program is developed in the usual way by the student and their Ph.D. Graduate Committee.

The Ph.D. Graduate Committee consists of at least five members, including the Major Professor and a Graduate School Representative. The Major Professor must be a member of the ES Graduate Faculty. At least three members must be from the ES Graduate Faculty and three different academic disciplines should be represented, excluding the Graduate School Representative. This requirement is intended to provide disciplinary breadth on the committee. The Ph.D. Graduate Committee must be approved by the ES Graduate Program Director.

To encourage the development of interdisciplinary ES Graduate Programs, guidelines for course selection are flexible. Ph. D. students must complete 108 graduate credits beyond the Bachelor's degree. A program of study must include a set of ES Graduate Core courses totaling 10 Cr for Ph. D. students. In addition to the ES Graduate Core courses, students must complete courses that constitute an ES Area of Concentration (or track). Upon completion of course work and dissertation requirements, Ph. D. students will graduate with a major in Environmental Sciences. Typically, research and preparing the dissertation will take at least two additional years. The ES Graduate Program therefore consists of the following minimum credits in five programmatic areas:

1. ES Graduate Core Courses: 10 Cr
2. Methods and Numerical Skills: 9 Cr
3. ES Area of Concentration (Track): 30 Cr
4. Elective Courses: 3-23 Cr
5. Dissertation: 36-56 Cr

Total 108 Cr

PH. D. DEGREE PROGRAM ELEMENTS

The ES Graduate Core. The ES Graduate Core will consist of four new courses, totaling 10 Cr for Ph. D. students: The purpose of the core is to introduce new students to faculty members, to give students a sense of programmatic identity, to foster interdisciplinary thinking among students and faculty, to expose students to the breadth of existing environmental science courses, to expose students to a focused area of environmental science, to give students the opportunity for academic exploration, and to teach research skills. Core courses may be taken for credit more than one time. The four new courses are:

1. Environmental Perspectives and Methods: ENSC 515 (3 Cr, fall quarter). The course will focus on a unique perspective or method each academic quarter it is offered. Examples of themes which could be used include remote sensing, modeling, and risk analysis. The theme chosen will reflect the interest of the student population, the expertise of participating faculty members, and the emergence of new perspectives and methods. ES Graduate Faculty members teaching the course will be from life science, physical science, and social science disciplines. The course will consist of two presentations and one discussion each week. Invitations to participate will come from the ES Graduate Program Curriculum Committee which will also establish the schedule for participating faculty members.

2. Environmental Analysis: ENSC 520 (3 Cr, winter quarter). Students will work with faculty members to prepare a dissertation proposal and to present a seminar on an environmental topic of the student's choosing. The purpose of the course is to develop analytical thinking, to explore analytical approaches, to enhance writing skills, and to gain experience in oral communication. Faculty members will be invited to participate in the course by the ES Graduate Program Curriculum Committee which will also establish the schedule for participating faculty members.

3. Research Profiles: ENSC 530/630 (1,2 Cr, spring quarter). Ph. D. students must earn a minimum of 3 Cr. Seminars will be given by graduate students and visiting scientists. Ph. D. students will typically earn one credit for attendance in their first year and two credits for presenting a seminar in their second year. Faculty members and students from universities participating in the Joint-Campus Program in Environmental Sciences, Studies, and Policy will be encouraged to participate. The ES Graduate Program Curriculum Committee will be responsible for organizing the schedule of speakers.

4. Joint-Campus Environmental Sciences, Studies, and Policy Workshop: ENSC 508 (1 Cr, spring quarter). Graduate students and the ES Graduate Faculty will have the opportunity to participate in the Joint-Campus Environmental Sciences, Studies, and Policy Workshop. The annual Workshop will be a forum for both posters and oral papers presented by participants from OSU, U of O, and PSU. The Workshop may be held in conjunction with other workshops and will be organized by the Joint-Campus ES Graduate Program Coordinator.

Methods and Numerical Skills Courses. Courses in research methods, experimental design, statistical analysis, and modeling are required to ensure students have sufficient skills for environmental research. 9 Cr of course work are required for the Ph. D. degree.

ES Areas of Concentration (Tracks). Sets of courses that constitute an Area of Concentration have been established within the ES Graduate Program to give focus to study and research. Four Areas of Concentration have been defined. Mechanisms to ensure academic depth and a coherent program of study within tracks include: recognition of prerequisite courses needed to enroll in track courses; careful planning between the graduate student, advisor, and graduate committee; and encouraging graduate students to take appropriate courses at other universities participating in the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy. Enrolling in classes offered at other campuses participating in the Joint-Campus program can help solve scheduling problems and provide added depth to tracks. New Areas of Concentration can be developed by groups of faculty members and students. Areas of Concentration consist of at least 30 Cr for Ph. D. students, and are described in APPENDIX 3.

The Areas of Concentration that have been developed include:

1. Ecology
2. Biogeochemistry
3. Social Science
4. Quantitative Analysis

Other tracks may be proposed by faculty members and once approved will be added to the ES Graduate Program curriculum. The mechanism for adding new tracks will be defined once the ES Graduate Program is approved. Examples of other tracks that may be planned could include environmental chemistry and environmental risk assessment. Responsibility for managing and maintaining integrity of each track will be assigned to a member of the ES Graduate Faculty.

Elective Courses. Elective courses are to be defined in the student's ES Graduate Program, and agreed upon by the student and the Graduate Committee. Courses may be selected to provide additional background, to explore new areas, and to add depth to a scholastic program.

Dissertation. A central purpose of the Ph. D. degree is to teach students the process of environmental research. A minimum of 36 Cr are required for original research leading to a dissertation that complies with standards established by the Graduate School.

Preliminary Examination. Each Ph. D. student must pass the Preliminary Examination in order to qualify for the Ph. D. degree. The Preliminary Examination will include both a written and oral section with the detail of the examination mechanism to be established by the ES Curriculum Committee. The Preliminary Examination will be administered by the student's major professor and the student's graduate committee.

b. What elements of this course of study are presently in operation in the institution?

None of the proposed ENSC Graduate Core Courses are currently in operation. The proposal creates tracks and other elements by drawing from exsting course offerings to create

new, interdisciplinary units of study. The tracks, and components of other programmatic elements are described in APPENDIX 3.

c. How many and which courses will need to be added to institutional offerings in support of the proposed program?

New courses required for the proposed program will be designated "Environmental Sciences" with the course designator ENSC. New courses for the proposed graduate degrees will be designated at the 500-level and 600-level. New courses will include:

ENSC 501, 601	Research
ENSC 503, 603	Thesis
ENSC 505, 605	Reading and Conference
ENSC 506, 606	Projects
ENSC 507, 607	Seminar
ENSC 508	Joint-Campus Environ. Sci., Studies, and Policy Workshop
ENSC 515	Environmental Perspectives and Methods
ENSC 520	Environmental Analysis
ENSC 530, 630	Research Profiles
ENSC 580, 680	Selected Topics in Environmental Sciences

6. ADMISSION REQUIREMENTS

a. Please list any requirements for admission to the program that are in addition to admission to the institution.

Students admitted to the ES Graduate Program will have undergraduate degrees in many disciplines such as environmental science, biology, chemistry, oceanography, forestry, engineering, and environmental health. An ES Graduate Program Admissions Committee will review all admissions materials including transcripts, GRE test scores, TOEFL test scores, and reference letters supplied by the applicant. The Admissions Committee will consist of faculty members from all participating colleges. Admission will be carefully regulated so that those admitted will have academic records that contain strong backgrounds in the sciences normally including biological, earth, physical, relevant social science, and mathematic/statistics. Applications for admissions from prospective graduate students will typically be evaluated during winter quarter, however student admission applications may be reviewed at any time. The basis for admission will be academic merit. Evidence of a major professor willing to serve as advisor and of a financial support mechanism will generally be required before admission. The ES Admissions Committee will be responsible for making official admissions recommendations ES Graduate Program Director who reports decisions to the Graduate School.

Prospective M.S., M.A., and Ph.D. students may be admitted directly to the ES Graduate Program, or may transfer into the program after having been accepted into another graduate degree program. A student entering the program must be sponsored by one or more members of the ES Graduate Faculty who have indicated in writing their willingness to serve as the student's Major Professor. The ES Graduate Steering Committee will match prospective students with

Environmental Sciences faculty members offering graduate assistantships. The primary academic unit of the Major Professor will generally supply some elements of support for M.S., M.A., and Ph.D. Environmental Sciences graduate students including mail delivery and appropriate desk/office space.

b. Will any enrollment limitation be imposed? Please indicate the limitation and rationale therefore. How will those to be enrolled be selected if there are enrollment limitations?

No.

7. RELATIONSHIP OF PROPOSED PROGRAM TO FUTURE PLANS

a. Is the proposed program the first of several steps the institution has in mind in reaching a long-term goal in this or a related field?

The proposed program will be one of a number of steps taken to reorganize and strengthen instructional activities in the area of environmental sciences, which is a major area of academic strength for Oregon State University. This document describes the graduate component of the Environmental Sciences Program. The proposal for the undergraduate component of the program was contained in a companion Category I Proposal approved in 1992. In addition, the proposed ES Graduate Program begins the process of formalizing linkages between environmentally oriented academic programs within OSSHE.

b. If so, what are the next steps to be if the Board approves the program presently being proposed?

Work will begin to establish the ES Graduate Program Office, to appoint a Director, to staff ES Program Committees, to recruit ES Graduate Faculty members, to recruit students, and to develop the Joint-Campus connections.

8. ACCREDITATION OF THE PROGRAM

a. Is there an accrediting agency or professional society which has established standards in the area in which the proposed program lies?

No.

b. If so, does the proposed program meet the accreditation standards? If it does not, in what particulars does it appear to be deficient? What steps would be required to qualify the program for accreditation? By what date is it anticipated that the program will be fully accredited?

Not applicable.

c. If the proposed program is a graduate program in which the institution offers an undergraduate program, is the undergraduate program fully

accredited? If not, what would be required to qualify it for accreditation? What steps are being taken to achieve accreditation?

Not applicable.

NEED

9. EVIDENCE OF NEED

a. What evidence does the institution have of need for the program? Please be explicit.

Understanding and managing environmental systems is one of the major challenges facing the world in the 1990s. Scientific analysis is needed to understand the complex issues related to biodiversity, climate change, management of sustainable systems in agriculture and forestry, air quality, water quality and availability, solid waste management, toxic waste management, and energy, transportation, and social policies.

Evidence for the proposed program exists in the success of the current graduate program offered as a General Science degree. The General Science department offered a graduate curriculum in environmental biology/science that drew immediate statewide and national attention. The proposed program extends the base of support for this program across the OSU campus, links environmental sciences between the major research universities in the Oregon State System of Higher Education, and allows the new program to meet the needs of students and faculty members. The new ES Graduate Program meets needs that are identified in OSU planning documents. See Section 3c above.

Evidence of need also exists from the rapid rate of enrollment in the undergraduate ES Program which started in 1992 and now has about 250 majors. The success of the undergraduate ES Program shows students have strong interest and need for rigorous undergraduate environmental science programs. The need for such programs also extends to graduate students.

Finally, the synchronous development of ES Graduate Programs at OSU, U of O, and PSU is indicative of the broadly recognized need for graduate training in environmental sciences across the Oregon State System of Higher Education.

b. What is the estimated enrollment and the estimated number of graduates of the proposed program over the next five years? If the proposed program is an expansion of an existing one, give the enrollment in the existing program over the past five years.

The General Science Graduate Program in Environmental Biology/Science began actively recruiting in the fall of 1990 and is therefore relatively new on campus. In the short span of two years, the GS Graduate Program, with the participation of only a small group of faculty in

the General Science Department, grew to eventually include nine graduate students, with enrollment stabilizing at about that number. In addition to the students currently enrolled, about twelve students have already completed their degrees.

We expect that the new program will involve about 100 graduate faculty members and that there will be a core of 10 students immediately in the program with an estimated 10 new students added each year for the next four years. Graduate student enrollment is expected to plateau at about 40-50 students.

c. Is the proposed program intended primarily to provide another program option to students who are already being attracted to the institution, or is it anticipated that the proposed program will draw its clientele primarily from students who would not otherwise come to the institution were the proposed program not available here?

The program is a reorganization and strengthening of an existing program. It is anticipated that the program and the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy, of which it is a part, will enable Oregon State University to more effectively recruit the best students at the state, national, and international levels.

d. Identify statewide and institutional service area manpower needs the proposed program would assist in filling.

The State of Oregon has a need for a steady supply of scientifically trained individuals in its environmental regulatory and resource agencies. In addition the state hosts numerous corporations in the private sector that demand personnel trained in environmental sciences. The shortage of well-educated environmental scientists has the potential to delay or prevent economic development throughout the state.

e. What evidence is there that there exists a regional or national need for additional qualified persons such as the proposed program would turn out?

Rational management of the human environment requires scientific data and analysis to understand and model the behavior of environmental systems. There are many critical environmental issues in the Northwest and the nation at the present time, such as hazardous waste, sustainable yields in agriculture, management of salmon fishing, logging practices, water availability and quality, climate change, and field burning. Addressing these issues will require well-educated scientists who are willing and able to work at the interfaces between traditional disciplines. Employment opportunities in the environmental area are well documented (e.g., Warner, D.J., 1992: Environmental Careers: A Practical Guide to Opportunities in the '90s. Lewis Publishers, Boca Raton, Fl, 249pp.)

f. Are there any other compelling reasons for offering the program?

In addition to preparing students for career development, this program prepares students for thinking critically about contemporary issues such as the carrying capacity of the earth, environmental risk assessment, and sustainable environmental systems. The program

involves the integration of ideas from an array of disciplines and fosters the development of valuable new perspectives.

g. Identify any special interest in the program on the part of local or state groups (e.g., business, industry, agriculture, professional groups.)

Much of the identity of the State of Oregon is concerned with its image as a state that has done a good job of managing its environment. In addition to the obvious concerns in agriculture, fisheries, forestry and the daily quality of life for Oregonians, the economic development goals of Oregon depend on developing the work force and attracting business investment. A well-managed environment creates a stable foundation for economic prosperity and contributes to the well-being of its citizens. The ES Graduate Program will educate the scientists who participate in developing the basic understanding of environmental systems. Knowledge and understanding stemming from the ES Graduate Program will, in turn, contribute to the economic and social progress of the society at large.

h. Have any special provisions been made for making the complete program available for part-time or evening students?

No.

DUPLICATION OF EFFORT

10. SIMILAR PROGRAMS IN THE STATE

a. List any similar programs in the state.

The University of Oregon offers a M.S. Degree in Environmental Studies and Portland State University offers a doctoral degree in Environmental Science and Resources. Both Portland State University and the University of Oregon are expanding efforts in environmental education at the graduate level. The efforts from Portland State University and the University of Oregon, along with those from Oregon State University will constitute the Joint-Campus Program in Environmental Sciences, Studies, and Policy.

b. If similar programs are offered in other institutions in the state, what purpose will the proposed program serve? Is it intended to supplement, complement, or duplicate existing programs?

The ES Graduate Program has been developed as the OSU contribution to the proposed Joint-Campus Graduate Program for Environmental Sciences, Studies, and Policy. The Joint-Campus Graduate Program coordinates and enhances major curricular initiatives in the environmental area at the three universities in the Oregon State System of Higher Education.

c. In what way, if any, will resources of any other institutions be utilized in the proposed program?

In addition to the resources required for the Environmental Sciences graduate degrees described in this Category I proposal, the Joint-Campus Graduate Program requires resources from the participating institutions to fund the administrative activities of the Joint-Campus Graduate Program Coordinator and to fund an annual academic and research workshop.

RESOURCES

11. FACULTY

a. List any present faculty who would be involved in offering the proposed program, with pertinent information concerning their special qualifications for service in this area. Attach an up-to-date resume for each individual.

The ES Graduate Program will be managed initially by current members of the Environmental Sciences Interdisciplinary Degree (ESID) Committee. This arrangement will continue until the ES Graduate Faculty is constituted, and the ES Advisory Committee and Program Director are appointed. See APPENDIX 1 for a list of the current ESID Committee members. Resumes are on file and available on request.

ES Graduate Faculty members will teach the ES Core Courses. It is the intention that such teaching be recognized as part of the assigned teaching load rather than an addition to an existing teaching load. As suggested in the May, 1992, Guidelines for Joint Campus Programs (Section III/F), the teaching of graduate courses in joint-campus programs should be considered part of the in-load teaching activity of regular graduate faculty, rather than developed as over-load instructional activities.

b. Estimate the number, rank, and background of new faculty members that would need to be added to initiate the proposed program; that would be required in each of the first four years of the proposed program's operation, assuming the program develops as anticipated in item 9b. What kind of commitment does the institution make to meeting these needs? What kind of priority does the institution give this program in staff assignment?

No additional faculty members will be required to initiate the program, or to continue to operate it during the next four years. See the appended budget section for a full explanation of faculty resources required.

c. Estimate the number and type of support staff needed in each of the first four years of the program.

The ESID Committee estimates that the Oregon State University ES Graduate Program will require classified staff support of at least 0.25 FTE at the level of an Office Specialist 1. See the appended budget section for a full explanation of support staff resources required.

12. LIBRARY

a. Describe; in as objective terms as possible, the adequacy of the Library holdings that are relevant to the proposed program (e.g., if there is a recommended list of library materials issued by the American Library Association or some other responsible group, indicate to what extent the institution's library holdings meet the requirements of the recommended list).

The Library holdings are adequate for the proposed program (APPENDIX 4). The proposed degree program increases the rigor and breadth of study in environmental sciences at Oregon State University, but does so by taking advantage of existing areas of strength within the University. Current resources are adequate and no new resources are required.

b. How much, if any, additional library support will be required to bring the Library to an adequate level for support of the proposed program?

Not applicable.

c. How is it planned to acquire these Library resources?

Not applicable.

d. Attach a statement from the Director of Libraries indicating present resources and funding of future needs.

13. FACILITIES AND EQUIPMENT

a. What special facilities in terms of buildings, laboratories, equipment are necessary to the offering of a quality program in the field and at the level of the proposed program?

and

b. What of these facilities does the institution presently have on hand?

The ES Graduate Program requires only existing classrooms, instructional and research laboratories, and equipment that are now used to teach students in the environmental and related sciences, and administrative office space. Discussions are now underway to ensure the ES Graduate Program and the ES Undergraduate Program Offices are located in close proximity with each other, and so that links can be made with the Center for Analysis of Environmental Change which is currently located in Weniger Hall. See the appended budget section for a full explanation of the necessary facilities and equipment.

c. What facilities beyond those now on hand would be required in support of the program?

See the appended budget section for a full explanation.

d. How does the institution propose these additional facilities and equipment shall be provided?

See the appended budget section for a full explanation.

14. BUDGETARY IMPACT

a. Please indicate the estimated cost of the program for the first four years of its operation following the format on p. 22 of the Oregon State University Curricular Procedures Handbook (1994).

Costs for the proposed OSU ES Graduate Program are shown in the attached Budget Form (APPENDIX 5). These costs are for the proposed OSU ES Graduate Program only, and do not represent costs for the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy.

b. If a special legislative appropriation is required to launch the program (as shown in item 4b of the estimated budget), please provide a statement of the nature of the special budget request, the amount requested, and the reasons a special appropriation is needed. How does the institution plan to continue the program after the initial biennium?

No special legislative appropriation is required.

c. If federal or other grant funds are required to launch the program (items 4c and 4d), what does the institution propose to do with the program upon termination of the grant?

The program can be started without federal or other grant funds.

d. Will the allocation of the going-level budget funds in support of the program have an adverse impact on any other institutional programs? If so, which programs and in what ways?

See the appended budget section for a full explanation.

e. If the program will be financed from existing resources, specifically state:

(1) what the budgetary unit will be doing as a result of the new program that is not now done in terms of additional activities; and

The Environmental Sciences Graduate Program will take on the following new activities:

1. Contributing OSU's efforts to the Joint-Campus Program for Environmental Sciences, Studies, and Policy;

2. Establishing and maintaining the ES Graduate Faculty;

3. Recruiting ES graduate students;

4. Maintaining a home base for ES graduate students that houses their academic files;

5. Seeking training grants and other funding sources to support graduate students working on Environmental Sciences degrees.

(2) what these new activities will cost and whether financed or staffed by shifting of assignments within the budgetary unit or reallocation of resources within the institution.

See the appended budget section for a full explanation.

f. State which resources will be moved and how this will affect those programs losing resources.

See the appended budget section for a full explanation.

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APPENDIX 1. MEMBERS OF THE ENVIRONMENTAL SCIENCES INTERDISCIPLINARY DEGREES COMMITTEE

Mark L. Abbott, College of Oceanic and Atmospheric Sciences
Larry Boersma, Department of Crop and Soil Science
Jennifer Field, Department of Agricultural Chemistry
Stanley V. Gregory, Department of Fisheries and Wildlife
Julia Jones, Department of GeoSciences
Boone Kauffman, Department of Fisheries and Wildlife
Virginia Lesser, Department of Statistics
Peter C. List, Department of Philosophy
William Lunch, Department of Political Science
Peter B. McEvoy, Department of Entomology
Patricia S. Muir, Department of Botany and Plant Pathology
Paul Murtaugh, Department of Statistics
Steven R. Radosevich, Department of Forest Science
Annette M. Rossignol, Department of Public Health
Courtland L. Smith, Department of Anthropology
Richard W. Thies, Department of Chemistry
Michael H. Unsworth, College of Oceanic and Atmospheric Sciences
Richard J. Vong, College of Oceanic and Atmospheric Sciences
William E. Winner, Department of Botany and Plant Pathology

APPENDIX 2. LIAISON DOCUMENTATION

Comments from U of O and PSU

The OSU contribution to the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy, which is described in the Category I Proposal, was reviewed by faculty members and administrators at the U of O and at PSU. As part of the joint-campus activity, the proposal to establish the Environmental Sciences Graduate Program at OSU could not develop without discussions with those at the other universities.

Dr. Richard Gale, the former Director of Environmental Studies at the U of O headed an existing undergraduate program and an existing master's program. Dr. Gale, has reviewed several drafts of the OSU proposal, shared the contents with other faculty members participating in the Environmental Studies Program at the U of O, and strongly supports adding the program proposed in this Category I proposal to the Joint-Campus Graduate Program. He recognizes that the proposal focuses on OSU's strength in the sciences and that this strength complements the emphasis in environmental studies that has developed at the U of O. Similarly, Dr. Stead Upham, Dean of the Graduate School at the U of O, is very much in favor of the elements in this proposal.

Dr. Dick Pratt is the Director of the Environmental Science and Resources Program at PSU. Dr. Pratt oversees an undergraduate program and a Ph. D. program at PSU. He has read drafts of the OSU proposal, shared it with other faculty members in the PSU program, and strongly supports the addition of this program to the Joint-Campus Graduate Program. In addition, Dr. Roy Koch, Dean of Graduate Studies, has read the proposal, commented about the merits of the Joint-Campus Graduate Program, and acknowledges the contribution to be made in Environmental Sciences by OSU.

Comments from OSU

The proposal to establish the Environmental Sciences Graduate Program at OSU has received considerable discussion on the campus. Much thinking and planning was invested by the nearly 20 faculty members constituting the ESID Committee during the 1994-5 academic year. Thus the thinking in the proposal represents the best efforts of the ESID Committee members. In addition, other faculty members, perhaps 15 in number, served as friends of the ESID Committee and provided input by developing tracks, reviewing earlier proposal drafts, and providing ideas about space, resources and facilities. Finally, the Graduate Council conducted a preliminary review of the document during Spring Quarter, 1995. Comments from ESID Committee members, friends of the Committee, and Graduate Council members were provided as notes, email messages, and ideas penciled on the document, itself. There is consensus from all these readers that the proposal to establish the ES Graduate Program at OSU is well developed, exploits the strengths of OSU, will lead to new scholarly activities about the relations between humans and their environment, and gives the University an important, new tool for developing recognition in the State of Oregon and beyond.

In the Fall of 1995, about 65 copies of the Category I Proposal to establish the Environmental Sciences Graduate Program at OSU were distributed to administrators, deans,

department heads, program heads, and heads of research centers that might be involved with or affected by establishing the proposed program. Many of those who received copies of the proposal have replied and all comments received by email or in writing (excluding marked-up proposals) are attached.

Many of the readers identified strengths of the proposal, thought the new program would add an important new element to OSU, and were positive about the initiative. In addition, convention is that no response is a signal of approval and acceptance. Examples of strengths that were mentioned include:

1. Recognition of the important scholarly contribution to be made by the ES Graduate Program;

2. Recognition that OSU needs the proposed program to contribute to the Joint-Campus efforts involving the U of O and PSU;

3. Recognition of the strength and flexibility of the proposed structure that allows the addition of new tracks and courses (some readers have asked for the opportunity to develop new tracks and to contribute new and existing courses to the current listings);

4. Recognition of the ability to attract better graduate students;

5. Recognition that the proposed graduate program will complement the existing OSU Undergraduate Program in Environmental Sciences;

6. Recognition that the proposed graduate program will complement the Center for Analysis of Environmental Change.

Some readers provided constructive suggestions which ranged from editorial improvements to matters of program administration. In response to reader comments, the proposal was edited to improve accuracy and clarity. Beyond those issues, some readers had reservations about:

1. Concern that students would not be well-informed about the program or interested in applying for admission. (Students will apply for the program. Without advertising, at least 5 prospective students inquire by telephone, mail, email, and office visits about the program each week, and have done so for more than one year.)

2. Concern that faculty will not be able to teach the new courses proposed in the core and that the content of the core is not well developed. (The concern is justified if faculty members must voluntarily teach these courses in addition to their normal teaching loads. However, as described in the proposal, a Curriculum Committee will be established to observe teaching in the core and to make adjustments so that academic standards are high.)

3. Concern that the cost of the proposed program is too high. (Estimates of costs were

made following discussions with directors of similar programs at other universities, directors of interdisciplinary graduate programs at OSU, and administrators at OSU. The ESID Committee is interested in pursuing all avenues to secure funding needed for the program, including writing graduate student training grant proposals.)

42.

From: "James Pratt" <PRATT@sbii.sb2.pdx.edu>
To: winnerw@BCC.ORST.EDU (Bill Winner)
Date: Tue, 5 Dec 1995 10:42:29 PST
Subject: Re: Environmental Science and Joint Campus Proposals
Priority: normal
X-Mailer: Pegasus Mail/Windows (v1.11a)

Dear Bill,

The Environmental Sciences and Resources faculty and coordinating committee at Portland State has reviewed proposals for a graduate program in environmental science and the proposal for a joint campus program.

For the past 25 years, Portland State's ESR program has linked together a number of scientists and graduate students through course work, seminars, and collaborative research. Your proposed program builds on existing strengths at OSU and will be a valuable addition to graduate programs in the state. Additionally, the joint campus program in environmental sciences, studies, and policy will provide an important vehicle to link the complementary programs at PSU, OSU, and UofO. This new program should allow improved access to faculty expertise by allowing both faculty and students to move among campuses.

We look forward to working with you and your colleagues to build strong, comprehensive programs across the university systems.

-=-

J.R. (Dick) Pratt (503-725-8038, Fax 725-3888)
ESR, Portland State University
PO Box 751
Portland, OR 97207-0751
http://clas.www.pdx.edu/~pratt/dick.html

Date: Wed, 06 Dec 1995 07:35:51 -0800 (PST)
From: Dick Gale <RPGALE@OREGON.UOREGON.EDU>
Subject: OSU and JC Proposal
To: winnerw@BCC.ORST.EDU
X-Vms-To: BILL
X-Vms-Cc: RPGALE
Mime-Version: 1.0
Content-Transfer-Encoding: 7BIT

December 6, 1995

To: Bill Winner
From: Dick Gale, Director, Environmental Studies Program, UO

Re: Joint Campus Program Proposal

I want to indicate my support of OSU's willingness to be a key part of the proposed Joint Campus Program in Environmental Sciences, Studies, and Policy.

UO environmental faculty are aware of the JC Program proposal, and are very supportive of it. For some faculty, the JC Program is a strong underlining of relationships that have existed for several years. For these faculty, the JC Program facilitates these existing activities. For most UO environmental faculty, the JC Program opens very new opportunities for inter-campus collaboration across a wide range of activities. That is very positive.

In short, these are very exciting times for environmental faculty and students at OSU, UO, and PSU. Thus, I look forward to continuing our work to move the proposal through our respective institutions.

cc: Stead Upham, Vice Provost for Research and Graduate Education, and Dean of the Graduate School, UO

Date: Wed, 06 Dec 1995 07:27:55 -0800 (PST)
From: Dick Gale <RPGALE@OREGON.UOREGON.EDU>
Subject: OSU ES Graduate Programs
To: winnerw@BCC.ORST.EDU
X-Vms-To: BILL
X-Vms-Cc: RPGALE
Mime-Version: 1.0
Content-Transfer-Encoding: 7BIT

December 6, 1995

To: Bill Winner, OSU
From: Dick Gale, Director, Environmental Studies Program, UO

Re: OSU Environmental Sciences Graduate Program Proposal

As you know, people at the UO have been following the development of your ES graduate program for several years. We are very pleased to see that it is moving along, and I am happy to endorse the proposal.

Each of the three major OSSHE institutions bring special strengths to environmental teaching, research, and service. Your proposal clearly captures the special strengths of OSU, by reaching broadly across campus to include faculty in diverse disciplines.

Please keep me posted as to the future progress of the proposal.

ENVIRONMENTAL
SCIENCE
PROGRAM

OREGON
STATE
UNIVERSITY

Cordley Hall 2088
Corvallis, Oregon
97331-2902

Telephone
503-737-2404

Dr. Bill Winner
Department of Botany and Plant Pathology
Cordley Hall 2082, OSU
Corvallis, OR 97331-2902

November 4, 1995

Dear Bill:

I am writing to express my strong support for the proposed Joint-campus Graduate Program for Environmental Science, Studies and Policy, and for OSU's proposed contribution to the Program. In addition to supporting it from the perspective of the graduate students (for whom it will fill a great need), I support it from the perspective of the undergraduate Environmental Science Program at OSU, which I direct.

The proposed graduate program would complement the undergraduate program in several ways. First, the undergraduates would have increased opportunity for interaction with graduate students pursuing studies in environmental arenas. This contact could be inspirational for undergraduates, in the way that, for example, an undergraduate in Zoology may be inspired by interacting with the graduate students in Zoology. Undergraduates in Environmental Science at OSU presently do not have such clear "role models." In addition, seminars and other activities sponsored by the graduate program would provide excellent opportunities for undergraduate exposure to cutting-edge research and other initiatives.

From a practical perspective, an association between the undergraduate and graduate programs makes programmatic sense. For example, efficiency of administration could be greatly improved if the two programs were to share secretarial support and equipment. Similarly, if the administrative offices of the two programs were co-located (ideally along with a joint conference room), the undergraduates would have a clearer sense of "home" than they do now. Undergraduates majoring in a single discipline have this sense of "home" -- often they even have mailboxes in their home department. Undergraduates majoring in the interdisciplinary Environmental Science Program lack this advantage, but the joint needs of a graduate and undergraduate program would make it possible to have a more clearly identifiable space.

I appreciate the efforts of all who have worked to put the proposed Program together, and look forward to being involved in it in the future.

Sincerely,

Pat Muir

Patricia S. Muir, Associate Professor and Director
Undergraduate Environmental Science Program

46.

DEPARTMENT OF CIVIL ENGINEERING
Environmental & Water Resources Engineering Program

OREGON STATE UNIVERSITY
Apperson Hall 206 · Corvallis, Oregon 97331-2302
Telephone 503-737-2751 Fax 503-737-3462

MAY 1996
Received
Graduate School
O.S.U.

May 1, 1996

MEMO

To: Jack Drexler
Chair, Graduate Council

Tom Marsh
Dean, Graduate School

From: Kenneth J. Williamson

RE: Proposed Environmental Science Degree

This memo is to state that the faculty within the environmental engineering program with the Department of Civil, Environmental, and Construction Engineering are strongly in favor of the proposed environmental science degree program which you are presently considering. The program strongly compliments our present M.S. degree in environmental engineering. Student from the ES program may choose our EE program as a minor. We believe that the program will stimulate and maintain a number of environmentally related courses that our students may choose to take.

We also appreciate the liaison conducted by Bill Winner that allowed our input at all phases of the program development.

APPENDIX 3. ENVIRONMENTAL SCIENCES GRADUATE PROGRAM: AREAS OF CONCENTRATION

The ESID Committee has developed four Areas of Concentration (tracks) in the disciplines of ecology, biogeochemistry, social science, and quantitative analysis. These tracks are designed to add focus and ensure academic rigor for students in the ES Graduate Program. These four tracks are described below and are meant to be examples showing the potential for the ES Graduate Program to develop cohesive, interdisciplinary academic curricula that include elements of life science, physical science, and social science. Responsibility for managing and maintaining integrity of each track will be assigned to a member of the ES Graduate Faculty. Other, new tracks will be developed in response to the interests and needs of the Environmental Sciences Graduate Faculty and students.

The tracks in ecology, biogeochemistry, and social science are described below in some detail. In addition, the ESID Committee has worked hard to identify the courses that would satisfy curricular requirements. However, the courses listed under various headings and categories should be taken as examples of courses satisfying a curricular element. In addition, the course lists provided show that OSU has the depth of graduate course work necessary to support the proposed tracks. Providing prescriptive course lists is not possible due to the evolution of offerings at OSU, the possibility of including offerings from U of O and PSU, and unanticipated academic needs of faculty members and students.

1. ECOLOGY

Purpose. The Area of Concentration in Ecology is developed to unify the science of ecology at Oregon State University and related Institutions of higher learning. Program goals will be to stimulate interdisciplinary ecological research, increase communication among disciplines, and promote responsible application of ecological data and principles to the solutions of environmental problems. Ecology is the scientific discipline that is concerned with the relationships between organisms and their past, present, and future environments. These relationships include biochemical and physiological responses of individuals, structure, and dynamics of populations, interactions among species, organization of biological communities, processing of energy and matter in ecosystems, and interactions between biota and physical, chemical, and climatic features of their environment. Ecology includes elements of life, physical, and social sciences.

The ecology track is designed for students who have a strong natural science background and want to focus in the science of ecology. Students must have the necessary course work background in statistics, mathematics, biology, chemistry to enroll in courses that constitute the Area of Concentration in Ecology.

Program of Study. Course work is divided into 5 categories, including ES Core courses, Methods and Numerical Skills courses, Ecology courses, Elective courses, and Thesis/Dissertation. Total credits required are a minimum of 45 Cr for the M.S. and M.A. degree and 108 Cr for the Ph. D. degree. Typical Programs of Study will include minimum credits as follow:

Subject Area	M.S. & M.A. Degree	Ph. D. Degree
ES Core Courses	9 Cr	10 Cr
Methods and Numerical Skills	6 Cr	9 Cr
Ecology Courses	15 Cr	30 Cr
Electives	3-9 Cr	3-23 Cr
Thesis/Dissertation	6-12 Cr	36-56 Cr
Total	45 Cr	108 Cr

Core Courses: 9 Cr (ENSC 508, 515, 520, and 530/630) for the M.S. and M.A. degree and 10 Cr (ENSC 508, 515, 520, and 530/630) for the Ph. D. degree. These courses include Environmental Perspectives and Methods, Environmental Analysis, Research Profiles, and the Joint-Campus Workshop in Environmental Sciences, Studies, and Policy and are described in the main body of this Category I Proposal.

Methods and Numerical Skill Courses: 6 Cr for the M.S. and M.A. degree and 9 Cr for the Ph. D. degree. These courses are to ensure students have sufficient skills in research methods including mathematics, statistics, and computer science. Courses are to be selected by the student, advisor, and advising committee from the list below and from other offerings.

BI 570/670 Community Structure and Analysis (4)
CSS 555 Biology of Soil Ecosystems (4)
CSS 590 Field-Plot Techniques (3)
ENT 591 Selected Topics in Entomology: Modeling Complex Biol. Systems (x)
FS 523 Natural Resource Data Analysis (4)
FW 661 Analysis of Animal Populations (4)
ST 511, 512, 513 Methods of Data Analysis (4,4,4)
ST 515 Design and Analysis of Planned Experiments (3)
ST 531 Sampling Methods (3)
ST 535 Quantitative Ecology (3)
ST 557 Applied Multivariate Analysis (3)

Ecology Courses: 15 Cr for the M. S. and M.A. degree and 30 Cr for the Ph. D. degree. Students in the Ecological Area of Concentration must build academic depth and breadth in ecology by taking at least one course in each of the following four categories: Biochemical and Physiological Ecology, Population Ecology and Evolution, Community Ecology, and Landscape/Ecosystem/Process Ecology.

The following is a partial listing of currently available classes that would fulfill the requirements for students enrolled in the Area of Concentration in Ecology. The list presented here is by no means a complete catalog of courses available in the track. The thesis advisor and graduate committee will assist the student in identifying other courses that will be considered within the theme areas and will count towards the credits needed to satisfy Ecological Course requirements.

A. Biochemical and Physiological Ecology Courses

BB 653 Plant Biochemistry (3)
BOT 488/588 Environmental Physiology of Plants (3)
BOT 541 Plant Autecology (3)
CSS 615 Plant Nutrient Availability (3)
CSS 645 Soil Biology and Biochemistry (3)
CSS 655 Plant-Water Relations (3)
FS 547 Forest Nutrient Cycling (3)
FS 564 Interactions of Vegetation and the Atmosphere (3)
FW 571 Environmental Physiology of Fishes (4)
OC 645 Marine Phytoplankton Physiology (4)
RNG 643 Arid Land Plant Physiology (4)
Z 523 Environmental Physiology (4)

B. Population Ecology and Evolution Courses

BI 545 Evolution (3)
BOT 521 Advanced Plant Systematics (4)
BOT 542 Plant Population Ecology (3)
BOT 668 Host-Parasite Interactions: Populations (4)
ENT 520 Insect Ecology (3)

FS 548 Weed Ecology and Management (2)
FW 551 Biology of Game Birds (5)
FW 573 Fish Ecology (4)
FW 661 Analysis of Animal Populations (4)
MB 548 Microbial Ecology (3)
OC 644 Marine Phytoplankton Ecology (3)
OC 647 Marine Microbial Processes (4)
Z 527 Paleobiology (3)
Z 591 Population Biology (5)
Z 593 Behavioral Ecology (5)

C. Community Ecology Courses

BI 570/670 Community Structure and Analysis (4)
BOT 543 Plant Community Ecology (3)
FS 545 Advanced Forest Community Ecology (4)
FS 553 Forest Wildlife Habitat Management (4)
RNG 662 Rangeland Ecology (3)
Z 594 Community Ecology (5)

D. Landscape/Ecosystem/Process Ecology Courses

CSS 535 Soil Ecosystem Properties and Processes (4)
CSS 545 Soil Ecosystem Processes (4)
CSS 555 Biology of Soil Ecosystems (4)
FOR 544 Ecological Aspects of Park Management (3)
FW 580 Stream Ecology (3)
FS 546 Ecosystem Analysis and Application (4)
FS 547 Forest Nutrient Cycling (3)
GEO 533 Ecological Biogeography (3)
OC 646 Physical/Biological Interactions in the Upper Ocean (4)
RNG 521 Rangeland Improvements and Restoration Ecology (4)
RNG 550 Landscape Ecology and Analysis (3)
RNG 555 Riparian Ecology and Management (3)

Elective Courses: 3-9 Cr for the M.S. and M.A. degree and 3-23 Cr for the Ph. D. degree. Students will work with their graduate advisor and committee to select elective courses to develop necessary background to add breadth and depth to the student's ES Graduate Program.

Thesis/Dissertation: The thesis/dissertation requirement includes 6-12 Cr (ENSC 503) for the M.S. and the M.A. degree and 36-56 Cr (ENSC 603) for the Ph. D. degree.

2. BIOGEOCHEMISTRY

Purpose. The Area of Concentration in Biogeochemistry is designed for students who have a strong natural science background and want to develop understanding of biogeochemistry. Biogeochemistry is the study of processes that account for the movement of energy and chemicals between components of the earth, including the hydrosphere, lithosphere, and the atmosphere. Examples of biogeochemistry are processes that account for nutrient and water cycling in ecosystems, that control the composition of the earth's atmosphere, and that account for climate change. The biological component of biogeochemistry includes both human and other organisms on earth. Within the Biogeochemistry track, students may choose to focus on integrated aspects of terrestrial, aquatic, atmospheric, and marine systems.

Program of Study. The Biogeochemistry track includes courses in 6 categories: the ES Core courses, Methods and Numerical Skills courses, Basic Earth System courses, Science Focal Area courses, Elective courses, and Thesis/Dissertation. Total credits required are a minimum of 45 Cr for the M.S. and M.A. degree and 108 Cr for the Ph. D. degree. Typical ES Graduate Programs will include minimum credits as follow:

Subject Area	M.S. & M.A. Degree	Ph. D. Degree
ES Core Courses	9 Cr	10 Cr
Methods and Numerical Skills	6 Cr	9 Cr
Basic Earth System Courses	12 Cr	15 Cr
Science Focal Area Courses	9 Cr	24 Cr
Electives	0 Cr	0-14 Cr
Thesis/Dissertation	9 Cr	36-50 Cr
Total	45 Cr	108 Cr

Core Courses: 9 Cr (ENSC 508, 515, 520, and 530/630) for the M.S. & M.A. degree and 10 Cr (ENSC 508, 515, 520, and 530/630) for the Ph. D. degree. These courses include Environmental Perspectives and Methods, Environmental Analysis, Research Profiles, and the Joint-Campus Workshop in Environmental Sciences, Studies, and Policy and are described in the main body of this Category I Proposal.

Methods and Numerical Skills Courses: 6 Cr for the M.S. and M.A. degree and 9 Cr for the Ph. D. degree. These courses are to ensure students have sufficient skills in research methods including mathematics, statistics, and computer science. Courses are to be selected by the student, advisor, and advising committee from the list below and from other offerings.

CS 515 Algorithms and Data Structures (4)
CS 540 Database Management Systems (4)
CS 541 Information-Based Systems (4)
GEO 565 Geographic Information Systems (3)
MTH 581, 582, 583 Math. Methods for Engineers and Scientists (3,3,3)
MTH 587, 588, 589 Num. Methods for Engineers and Scientists (3,3,3)
OC 675 Numerical Modeling in Ocean Circulation (4)

OC 682 Oceanographic and Atmospheric Data Analysis I: Basic Tech. (4)
OC 683 Oceanographic and Atmospheric Data Analysis II: Adv. Tech. (4)
ST 511, 512, 513 Methods of Data Analysis (4,4,4)
ST 515 Design and Analysis of Planned Experiments (3)
ST 522 Introduction to Mathematical Statistics (4)
ST 531 Sampling Methods (3)

Basic Earth System Courses: 12 Cr for the M.S. and M.A. degree and 15 Cr for the Ph. D. degree. Basic Earth System courses are intended to develop basic knowledge in Oceanography, Atmospheric Science, and Geo/Soil Science. The courses below are not a complete list of courses satisfying the Basic Earth System category of courses. Basic Earth System courses are to be selected by consensus of the graduate advisor, advising committee, and student.

ATS 511 Atmospheric Physics (4)
ATS 513 Atmospheric Chemistry (3)
CSS 535 Soil Ecosystem Properties and Processes (4)
CSS 546X Geochemistry of Soil Ecosystems (4)
CSS 555 Biology of Soil Ecosystems (4)
CSS 565 Soil Morphology and Survey (4)
FE 530 Watershed Processes (4)
FW 556 Limnology (5)
FW 580 Stream Ecology (3)
GEO 530 Geochemistry (3)
GEO 587 Hydrogeology (3)
OC 530 Principles of Physical Oceanography (3)
OC 540 Introduction to Biological Oceanography (3)
OC 550 Chemical Oceanography (3)

Science Focal Area Courses: 9 Cr for the M.S. and M.A. degree and 24 Cr for the Ph. D. degree. Science Focal Area Courses are intended to develop depth of student understanding in biogeochemistry. The courses below are only a partial listing and are to be selected by consensus of the graduate advisor, advising committee, and student.

ATS 515 Atmospheric Dynamics I (4)
ATS 546 Geophysical Boundary Layers (3)
ATS 590 Selected Topics: Air-Sea Interactions (x)
ATS 613 Aerosol and Cloud Physics (3)
ATS 630 Climate Dynamics (3)
BRE 525 Stochastic Hydrology (3)
BRE 549 Regional Hydrologic Modeling (3)
BRE 672 Biosystems Modeling Applications (3)
CSS 525 Sustaining Soil Productivity (3)
CSS 555 Biology of Soil Ecosystems (4)
CSS 585 Environmental Applications of Soil Science (4)
CSS 615 Plant Nutrient Availability (3)

CSS 635 Chemical Processes in Soil Systems (3)
CSS 645 Soil Biology and Biochemistry (3)
CSS 655 Plant-Water Relations (3)
CSS 665 Soil Genesis and Classification (3)
FE 531 Forest Engineering Fluid Mechanics and Hydrology (3)
FE 535 Water Quality and Forest Land Use (3)
FE 536 Integrated Forest Engineering and Hydrology (3)
FS 546 Ecosystem Analysis and Application (4)
FW 536 Wildland Fire Science (3)
FW 570 Aquatic Toxicology and Pollution Biology (3)
FW 667 Research Perspectives (4)
GEO 518 Geographic Photo Interpretation (3)
GEO 544 Remote Sensing (3)
GEO 565 Geographic Information Systems (3)
GEO 566 Digital Image Processing (3)
GEO 569 Topics in Geographic Techniques (3)
OC 644 Marine Phytoplankton Ecology (3)
OC 647 Marine Microbial Processes (4)
OC 673 Descriptive Physical Oceanography (4)
OC 674 Turbulence (4)
RNG 555 Riparian Ecology and Management (3)
RNG 662 Range Land Ecology (3)

Elective Courses: 0 Cr for the M.S. and M.A. degree and 0-14 Cr for the Ph. D. degree. Students will work with their graduate advisor and committee to select elective courses to develop necessary background to add breadth and depth to the student's ES Graduate Program.

Thesis/Dissertation: The thesis/dissertation requirement includes 9 Cr (ENSC 503) for the M.S. and the M.A. degree and 36-50 Cr (ENSC 603) for the Ph. D. degree.

3. SOCIAL SCIENCE

Purpose. The Area of Concentration in Social Science is designed for students who have a strong natural science background and want to develop capabilities in social science to go with this background. The Social Science track focuses on merging qualitative methodologies with various types of survey research.

Identification and measurement of people's values are a major area of social science inquiry that integrates across social science disciplines. Environmental decisions require the systematic study of values and preferences from both scientific and applied perspectives. Methods for assessing values are central to the Social Science track.

Program of Study. The Social Science track has five components: ES Core courses, Methods and Numerical Skills courses, Social Environmental Science Topics courses, Scientific Focal Area courses, Elective courses, and Thesis/Dissertation. Total credits required are a minimum of 45 Cr for the M.S. and M.A. degree and 108 Cr for the Ph. D. degree. Typical ES Graduate Programs will include minimum credits as follow:

Subject Area	M.S. & M.A. Degree	Ph. D. Degree
ES Core Courses	9 Cr	10 Cr
Methods and Numerical Skills	6 Cr	9 Cr
Social Science Environ. Topics	12 Cr	18 Cr
Science Focal Area Courses	9 Cr	15 Cr
Electives	0 Cr	0-14 Cr
Thesis/Dissertation	9 Cr	36-50 Cr
Total	45 Cr	108 Cr

Core Courses: 9 Cr (ENSC 508, 515, 520, and 530/630) for the M.S and M.A. degree and 10 Cr (ENSC 508, 515, 520, and 530/630) for the Ph. D. degree. These courses include Environmental Perspectives and Methods, Environmental Analysis, Research Profiles, and the Joint-Campus Workshop in Environmental Sciences, Studies, and Policy and are described in the main body of this Category I Proposal.

Methods and Numerical Skills Courses: 6 Cr for the M.S. and M.A. degree and 9 Cr for the Ph. D. degree. Courses in social science methods are intended to develop student background in either qualitative or quantitative methods and are equivalent to numerical skills courses. The courses below are not a complete list satisfying the Social Science methods category of courses. Quantitative methods, qualitative methods, and statistical methods courses are to be selected by consensus of the graduate advisor, advising committee, and student.

A. Qualitative Methods

ANTH 591 Ethnographic Methods (1-3)
ANTH 598 Oral Traditions (1-3)
COMM 514 Communication Research Methods (3)

PS 5XX Course Under Development
SOC 518 Qualitative Sociology (3)

B. Quantitative Methods

ANTH 593 Statistical Applications in Anthropology (1-3)
EC 525 Econometric Methods (3)
EC 526 Applied Econometrics (3)
HDFS 531 Methods of Behavioral Research (3)
SOC 516 Conducting Social Research (3)

C. Statistical Methods

ST 511, 512, 513 Methods of Data Analysis (4,4,4)
ST 531 Sampling Methods (3)
ST 539 Survey Methods (3)

Social Science Environmental Topics: 12 Cr for the M.S. and M.A. degree and 18 Cr for the Ph. D. degree. Courses in Social Science Environmental Topics are intended to develop student background in human impacts on environmental systems and effects of environmental change on social systems. Social science environmental topics are to be selected by consensus of the graduate advisor, advising committee, and student.

A. PHL 540 Environmental Ethics (3)

B. Environmentally relevant courses from:

Agricultural and Resource Economics
AREC 550 Environmental Economics (3)
AREC 551 Natural Resource Economics (3)
AREC 651 Advanced Natural Resource Economics (3)
AREC 652 Advanced Environmental Economics (3)

Anthropology
ANTH 581 Natural Resources and Community Values (3)
ANTH 582 World Food and Development (3)

Business
BA 532 Environmental Law (4)

Civil Engineering
CE 547 Environmental Resource Systems (3)

Economics
EC 539 Public Policy Analysis (3)

Forest Resources

FOR 530 & 531 Forest Resource Economics I & II (4,4)
FOR 532 Economics of Recreation Resources (4)
FOR 559 Forest Resource Planning and Decision Making (4)

Geoscience

GEO 520 Geography of Resource Use (3)
GEO 522 Ecological Knowledge and Environmental Problems (3)
GEO 524 Water Resources Geography (3)
GEO 526 Third-World Resource Development (3)
GEO 529 Topics in Resource Geography (3)

History

HST 567 & 568 History of the American West (4,4)
HST 569 History of the Pacific Northwest (3)
HST 581 Environmental History of the U. S. (4)

Marine Resource Management

MRM 514 Ocean Resources Management (3)
MRM 515 Coastal Resources Management (3)

Philosophy

PHL 543 World-Views and Environmental Values (3)
PHL 590 Topics in Contemp. Phil., Eth. Issues in Res. Sci. (1-4)

Political Science

PS 574 Bureaucratic Politics and the Policy (4)
PS 575 Politics of Environmental Problems (4)
PS 576 Science and Politics (4)

Sociology

SOC 575 Rural-Urban Sociology (3)
SOC 580 Environmental Sociology (3)
SOC 581 Society and Natural Resources (3)

Speech Communication

COMM 540 Theories of Conflict and Conflict Management (3)
COMM 542 Bargaining and Negotiation Processes (3)
COMM 544 Third Parties in Dispute Resolution: Mediation (3)

Science Focal Area Courses: 9 Cr for the M.S. and M.A. degree and 15 Cr for the Ph. D. degree. Courses in the science focal area are to supplement the natural science background that was the background for entering the program and may be selected from life or physical science disciplines. The combination of courses taken prior to admission to the program and science focal area courses are intended to develop a coherent area of scientific study. Science focal area courses may be selected from the Ecological Area of Concentration, other ES areas of

concentration, or courses from the Colleges of Science, Agricultural Sciences, Oceanic and Atmospheric Sciences, Forestry, or Engineering. Science focal area courses are to be selected by consensus of the graduate advisor, advising committee, and student.

Elective Courses: 0 Cr for the M.S. and M.A. degree and 0-14 Cr for the Ph. D. degree. Students will work with their graduate advisor and committee to select elective courses to develop necessary background to add breadth and depth to the student's ES Graduate Program.

Thesis/Dissertation: The thesis/dissertation requirement includes 9 Cr (ENSC 503) for the M.S. and the M.A. degree and 36-50 Cr (ENSC 603) for the Ph. D. degree.

4. QUANTITATIVE ANALYSIS

Purpose. The Area of Concentration of Quantitative Analysis is designed for students with interests in mathematics, statistics or computing who wish to augment their quantitative skills, study the use of those skills in environmental research, and explore a specific field(s) of application in some depth. The goal is to train environmental scientists who combine conversance in mathematics, statistics and computing with a thorough grounding in the subject matter of a specific area, including an awareness of the strengths and limitations of data collected in that area.

In addition to satisfying a basic requirement in statistics, students select from courses in quantitative analysis, including the planning of experimental and observational studies, the analysis of data accruing from such studies, and the quantitative modeling of natural systems. Courses in a science focal area of their choice are also required. Entering students should have at least one year of college-level calculus, and sufficient background in an environmental science to take graduate courses in their chosen science focal area.

Program of Study. Course work is divided into six categories: ES Core courses, Statistics Core courses, Quantitative Analysis courses, Science Focal Area courses, Elective courses, and Thesis/Dissertation. Total credits required are a minimum of 45 Cr for the M.S. and M.A. degree and 108 Cr for the Ph.D. degree. Typical ES Graduate Programs will include minimum credits as follow:

Subject Area	M.S. & M.A. Degree	Ph.D. Degree
ES Core Courses	9 Cr	10 Cr
Statistics Core Courses	12 Cr	12 Cr
Quant. Analysis Courses	9 Cr	18-32 Cr
Science Focal Area Courses	6-9 Cr	12-18 Cr
Electives	0 Cr	0-20 Cr
Thesis/Dissertation	6-9 Cr	36-56 Cr
Total	45 Cr	108 Cr

ES Core Courses: 9 Cr (ENSC 508, 515, 520, and 530/630) for the M.S. and M.A. degree and 10 Cr (ENSC 508, 515, 520, and 530/630) for the Ph. D. degree. These courses include Environmental Perspectives and Methods, Environmental Analysis, Research Profiles, and the Joint-Campus Workshop in Environmental Sciences, Studies, and Policy and are described in the main body of this Category I Proposal.

Statistics Core Courses: 12 Cr for both the M.S. and M.A. degree and the Ph.D. degree. These courses are to ensure that all students in the Quantitative Analysis track gain a basic familiarity with the theory of probability and statistics and the methodology of data analysis.

ST 511, 512 Methods of Data Analysis (4,4)
ST 521 Introduction to Mathematical Statistics (4)

Quantitative Analysis Courses: 9 Cr for the M.S. and M.A. degree and 18-32 Cr for the Ph.D. degree. Students must build academic depth and breadth in quantitative analysis by selecting from the following courses:

BI 570/670 Community Structure and Analysis (4)
BRE 525 Stochastic Hydrology (3)
BRE 571 Biosystems Modeling Techniques (3)
BRE 672 Biosystems Modeling Applications (3)
CSS 590 Field-Plot Technique (3)
FOR 525 Forest Modeling (3)
FS 523 Natural Resource Data Analysis (4)
FW 661 Analysis of Animal Populations (4)
GEO 541 Spatial Variation in Ecology and Earth Science (3)
H 525 Principles of Epidemiology (3)
H 526 Epidemiologic Methods (3)
MTH 559 Topics in Mathematical Modeling (3)
OC 682 Oceanographic and Atmospheric Data Analysis I: Basic Techniques (4)
OC 683 Oceanographic and Atmospheric Data Analysis II: Adv. Techniques (3)
ST 513 Methods of Data Analysis (4)
ST 515 Design and Analysis of Planned Experiments (3)
ST 522 Introduction to Mathematical Statistics (4)
ST 531 Sampling Methods (3)
ST 535 Quantitative Ecology (3)
ST 541 Probability, Computing and Simulation in Statistics (4)
ST 543 Applied Stochastic Models (3)
ST 557 Applied Multivariate Analysis (3)
ST 565 Time Series Models (3)
ST 623 Generalized Regression Models I (3)
Z 591 Population Biology (5)

Science Focal Area Courses: 6-9 Cr for the M.S. and M.A. degree and 12-18 Cr for the Ph.D. degree. These courses are intended to broaden the ES Graduate Program by acquainting the student with subject matter in areas of environmental science to which quantitative analysis may be applied. The courses are to be selected from the Ecology Courses in the Area of Concentration in Ecology; the Basic Earth System Courses and Science Focal Area Courses in the Area of Concentration in Biogeochemistry; and the Social Science Environmental Topics in the Area of Concentration in Social Science. A single course may not be used to satisfy both the Science Focal Area requirement and the Quantitative Analysis requirement.

Elective Courses: 0 Cr for the M.S. and M.A. degree and 0-20 Cr for the Ph.D. degree. Students will work with their graduate advisor and committee to select elective courses to develop necessary background and to add depth to the student's ES Graduate Program.

Thesis/Dissertation: The thesis/dissertation requirement includes 6-9 Cr (ENSC 503) for the M.S. and the M.A. degree and 36-56 Cr (ENSC 603) for the Ph. D. degree.

APPENDIX 4. LIBRARY EVALUATION.

DEPARTMENT OF BOTANY
AND PLANT PATHOLOGY

Memorandum

To: Holly Potter

From: Bill Winner WEW

Re: Category I Proposal

Date: July 24, 1995

OREGON
STATE
UNIVERSITY

Cordley Hall 2082
Corvallis, Oregon
97331-2902

The Environmental Sciences Interdisciplinary Degree Committee (ESID) has written then enclosed Category I Proposal to establish a Graduate Program in Environmental Science at Oregon State University. The proposal describes the courses and requirements we propose for students earning masters and Ph. D. degrees.

An important part of the Category I proposal is the assessment from Kerr Library. The Director of the Library, Melvin George, suggested I contact Clifford Mead and you in order to proceed with the assessment.

I appreciate your assistance with the assessment. Please contact me if you have questions about the Category I Proposal, or other issues related to the proposed graduate program.

Telephone
503-737-3451

LIBRARY ASSESSMENT FOR CURRICULUM PROPOSAL

Category I: Graduate Program in Environmental Science

Category II:

The subject librarian responsible for collection development in the pertinent curricular area has assessed the ability of library collections and services to support the proposal by examining: shelflist holdings; journal support (including standing orders and memberships); reference support; OASIS for pertinent subject headings, call numbers, authors, titles; existing external sources of support; related services (LIRS; CD-ROM: Documents; Maps; Special Collections; Guin Library; Microforms); comparisons with other library collections via RLIN, OCLC,, AMIGOS CD-ROM, Internet (NOTE: The collections and services examined vary with the level of the proposal). Based on the examination, the subject librarian concludes that present collections and services are:

( ) inadequate to support the proposal (see budget needs below)
( ) marginally adequate to support the proposal
(X) adequate to support the proposal

Estimated funding needed to upgrade collections and services to support the proposal (details are attached):

Year 1: $_____
Ongoing $ _____

Comments and Recommendations:

Environmental Sciences as a program is not new to Oregon State University. An undergraduate program was implemented in 1992. The proposed graduate program is replacing the General Sciences/Environmental Biology Concentration of the past. It will be interdisciplinary with four areas of concentration: ecology, biogeochemistry, social science, and quantitative analysis. Seven colleges presently on campus will provide faculty, advisors and courses for the various areas of concentration although Environmental Sciences faculty will also be recruited if the program is approved and four new courses will be added.

The OSU Libraries have always been fairly strong in the life sciences, agriculture, forestry, engineering and other areas related to environmental studies, but publishing related to the environment has exploded in recent years and limited budgets along with high inflation in serials

pricing has made it difficult to maintain a current and high quality collection. Ongoing support in the form of additions to the materials budget in an amount to at least equal the inflation cost of serials will be needed in the environmental sciences if advanced degrees are to be supported.

Searches of the online catalog, oasis, show a present collection which includes over 100 periodical titles related to the environment, 1500 monograph and government document titles on environmental policy and protection of the environment, 800 titles on human ecology, 650 titles on hazardous waste, and 200 titles on climatic change. Approximately one-third of the monograph and document titles were published in the 1990's. The word sustainable related to future societies, development, agriculture, forest management, and fisheries yield, produced 350 monograph and document titles. Searches on the social aspect of forestry, agriculture, the environment in general resulted in 200 titles. Collections in ecology, statistics and the various aspects of biogeochemistry are adequate.

The major indexes of the pure and applied sciences are available at Kerr Library plus a fairly new online service, First Search, which provides access to an environmental database and a sociological database. Librarians with subject specialties in the sciences are available for reference and research consultation. Interlibrary loan and document delivery services are provided. With active involvement of both the environmental sciences faculty and librarians and with financial support as mentioned above, the Kerr Library collection in the environmental sciences can adequately supported the proposed program.

Date Received: 07/25/95 Date Completed: 08/22/95

Subject Librarian Anne Fox 08/22/95

Head of Collection Services: _____

University Librarian: _____

APPENDIX 5. BUDGET EXPLANATION: OSU ENVIRONMENTAL SCIENCES GRADUATE PROGRAM.

ENVIRONMENTAL SCIENCES GRADUATE PROGRAM[1] OPERATING BUDGET: 1996-2000

			1996-97	1997-98	1998-99	1999-00
PERSONNEL						
Faculty						
Director	0.25 FTE	$69,000/FTE	17,250	17,940	18,658	19,404
Instruction/Committees	1.5 FTE	$40,000/FTE	60,000	62,400	64,896	67,491
Grad. Teach. Assist.	3.0 FTE	$22,000/FTE	66,000	68,640	71,385	74,240
Support Personnel	0.25 FTE	$31,800/FTE	7,950	8,268	8,599	8,943
Fellowships	0	0	0	0	0	0
Student Help, Hourly	Half-time	$5.20/hour	5,000	5,200	5,408	5,624
OPE						
Faculty/Director	@35%		6,038	6,279	6,530	6,791
Faculty/Instruction	@35%		21,000	21,840	22,714	23,622
Grad. Teach. Assist.	@1.2%		792	824	857	891
Support Personnel	@45%		3,578	3,721	3,870	4,024
Student Help, Hourly			0	0	0	0
SUB-TOTAL			187,608	195,112	202,917	211,030
State Funds			187,608	195,112	202,917	211,030
OTHER RESOURCES						
Library			0	0	0	0
Supplies & Services			5,000	5,200	5,408	5,624
Moveable Equipment			7,500	0	0	0
Space Renovation			2,000			
Joint-Campus Activity			3,000	3,120	3,245	3,375
SUB-TOTAL			17,500	8,320	8,653	8,999
State Funds			17,500	8,320	8,653	8,999
GRAND TOTAL			$205,108	$203,432	$211,570	$220,029
State Funds			$205,108	$203,432	$211,570	$220,029

[1]The budget is incremental for the OSU Environmental Sciences Graduate Program which is a contribution to the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy. Budget for the Joint-Campus Program is not presented here.

[2]Approximately 75% of these funds will be obtained by redirecting resources from activities discontinued upon implementation of the proposed program. Approximately 25% of these funds will come from administrative sources in a manner consistent with the support of other interdisciplinary graduate programs at OSU. See the following pages on Budget Justification and on Mechanisms of Support for further explanation.

BUDGET EXPLANATION

1. Faculty.

A. The Director. The Director of the OSU Environmental Sciences Graduate Program will work with ES Curriculum Committee, the ES Recruiting Committee, and the ES Admissions Committee to ensure the academic quality of the program is high and reflects the interest of the students and faculty. The Director will respond to the ES Graduate Program Advisory Committee, manage the ES Graduate Program Office, maintain academic records of the students, and represent the ES Graduate Program in the formal approval of graduate committees, study programs and theses, and ES Graduate Faculty appointments. The Director will serve as the ES Graduate Program spokesperson.

B. Instruction/Committees. The Environmental Sciences Graduate Program Core Courses constitute a full academic year sequence and include Environmental Perspectives and Methods, Environmental Analysis, Research Profiles, the Joint-Campus Environmental Sciences, Studies, and Policy Workshops. Together these courses are 9 Cr for masters students and 10 Cr for Ph. D. students. Faculty members who participate in teaching these courses will change from year to year depending upon the focal themes in the courses, student needs, and availability of personnel. The estimate of 1.5 FTE for instruction is an estimate made by the Faculty Senate Budget and Fiscal Planning Committee. Actual needs may differ. As described in the document, "Guidelines for Establishing Joint-Campus Graduate Programs" (OSSHE, May, 1992), instruction in the ES Graduate Program is intended to count towards the teaching load of faculty members and is not intended to be added to existing teaching loads. Members of the ES Graduate Faculty will also spend time working on committees that will oversee curricular development, recruiting students and faculty members, and admissions of graduate students.

2. Graduate Teaching Assistants. Funds for six GTA's (0.5 FTE) will support ES graduate students. These funds will establish a base of student support and will assure that the very best students are recruited to OSU.

3. Support Personnel. Support personnel will assist in word processing, photocopying, record keeping, admissions files, grades, correspondence regarding the program, and serve as receptionist in the ES Graduate Program Office. Costs for support personnel is minimized because the ES Graduate Program Office can be shared with the Undergraduate Environmental Science Program and operated in conjunction with the Center for Analysis of Environmental Change. Staff in these offices will be able to assist each other.

4. Student Help, Hourly. Student assistance will be hired on an hourly basis to be sure that the ES Graduate Program Office is staffed throughout the day.

OTHER RESOURCES

5. Supplies and Services. Supplies and services expenses include photocopying, printing, telephone, mailing expenses, and office supplies.

6. Moveable Equipment. Moveable equipment includes office furniture for the Director and support personnel, computers, a laser printer, and filing cabinets.

7. Space Renovation. Remodeling costs for the ES Graduate Program Office will depend on the space assigned. Anticipated costs include partitions within the office, installation of computer network lines, and installation/relocation of telephone lines. Costs for space can be minimized because an office can be shared with the Undergraduate Environmental Science Program.

8. Joint-Campus Activity. Participation in the Joint-Campus ESSP Workshop, includes costs for production of posters, other graphic materials, and travel expenses. Other expenses, associated with Joint-Campus effort, include travel to seminars and meetings throughout the year.

MECHANISMS OF SUPPORT

1. Transfer of Programmatic Resources.

Resources to support a major portion of the proposed ES Graduate Program exist in other programs. Transfer of such programmatic resources will account for almost 3/4 of the total funding requested as follows:

Faculty for Instruction/Committees	40% of total request
Graduate Teaching Assistantships	33% of total request
TOTAL	73% of total request.

Instruction in the ES Core Courses/Committee Work. Support for teaching ES core courses will come from faculty members who are allowed to shift part of their existing teaching efforts towards ES core courses. Teaching opportunities will exist for short time commitments, on the order of 1-2 weeks, as well as for longer periods so there will be flexibility in scheduling teaching and the transfer of effort. Some instruction within the ES core will come from those who have no current teaching mission, such as ES Graduate Faculty associated with the US Department of Agriculture, Research Service; the US Department of Agriculture, Forest Service Pacific Northwest Laboratory; and the US Environmental Protection Agency.

The establishment of the proposed ES Graduate Program will result in the termination of the ESID Committee, a group of about 20 faculty members from a wide range of academic units on campus. The efforts of the ESID Committee will be transferred to establish the proposed Admissions, Recruitment, and Curriculum Committees for the ES Graduate Committee.

Instruction Outside of ES Core Courses. Students in the ES Graduate Program will be taking courses outside of the ES Core that currently exist on campus. Expectations are that the ES graduate students will plateau at 40-50 in number and will fit within existing offerings. The 40-50 ES graduate students will be widely distributed across the participating colleges and should not result in either large increases in the total number of graduate students at OSU nor over-enrollment in existing courses. No funds have been requested to support enrollment of ES graduate students in existing courses.

Graduate Teaching Assistants. Support for the six requested GTA positions will come from those earmarked in the College of Science that are currently involved in supporting biology courses. These GTA positions were formerly administered in the General Science Department and are currently administered for the General Science Graduate Program by the Department of Botany and Plant Pathology. Transfer of resources for the GTA positions will constitute about 33% of the total program budget.

2. Transfer of Administrative Resources.

Resources to support the proposed ES Graduate Program will be provided from accounts administered by deans and those in central administration. Transfer of such administrative resources will account for about 1/4 of the total funding requested as follows:

Program Director	11% of total request
Support Personnel	6% of total request
Student Help, Supplies and Services, Moveable Equipment, Space Renovation, and Joint-Campus Activity	10% of total request
TOTAL	27% of total request.

BUDGETARY NOTES

The interdisciplinary nature of the proposed Environmental Science Graduate Program causes some uncertainties in the budget estimates. Although the figures given in the budget are the best approximation, several issues could affect the actual costs. Some of the important factors include:

1. The salary of the Program Director will vary with rank and experience.

2. The salary of the Administrative Support personnel will vary with rank and experience.

3. Teaching in the ES Core Courses will involve many faculty members from many academic units, and contributions from specific individuals may differ from year to year. Consequently, adjustments in teaching loads must be made on an annual basis.

4. The source of the FTE for the Program Director, Administrative Support personnel, student help, supplies, moveable equipment, space renovation, and Joint-Campus activities will depend upon the plan decided upon by administrators at OSU.

Robert M. Burton, Professor
MATHEMATICS DEPARTMENT

OREGON STATE UNIVERSITY
113T Kidder Hall • Corvallis, Oregon 97331-4605
Telephone 541-737-3073 Email: burton@math.orst.edu/ Fax 541-737-0517

17 October, 1996

Professor Ken Krane
Faculty Senate Office
Oregon State University

Dear Professor Krane,

I am pleased to report to you that the Curriculum Council approved the Category I proposal to establish a Joint-Campus Graduate Program for Environmental Sciences, Studies, and Policy. This action was taken at the Council's regular meeting on 3 October 1996. The preproposal has been approved by the Academic Council and this proposal has been approved by the Graduate Council and the Budgets and Fiscal Planning Committee. We are transmitting this proposal to you so that the Faculty Senate can act in a timely matter.

Thank you.

Sincerely,

Bob Burton
Professor of Mathematics
Chair, Curriculum Council



CATEGORY I PROPOSAL

JOINT-CAMPUS GRADUATE PROGRAM
FOR ENVIRONMENTAL SCIENCES, STUDIES, AND POLICY

October 31, 1996

Submitted by
Oregon State University
University of Oregon
Portland State University

OVERVIEW

The Faculty Committee for Environmental Sciences, Studies, and Policy (ESSP) proposes the establishment of a Joint-Campus Environmental Sciences, Studies, and Policy Graduate Program offering Master's degrees and Ph. D. degrees. The key elements of the program are:

1. The establishment of basic graduate degree authority in Environmental Sciences, Studies, and Policy at each participating institution with degrees that reflect the unique strengths of participating institutions, and that extend elements of the program to all interested students.

2. The use of the joint-campus approach to maximize scholastic opportunities for students and faculty members at participating universities.

3. The use of the joint-campus approach to maximize the efficiency by which expertise and resources are used at participating universities.

4. The emphasis on rigorous scholarly activity at both the Master's and Ph.D. level. Either a thesis or the successful completion of a project is required at the Master's level. Ph.D. students must successfully complete a dissertation.

5. The establishment of an annual Workshop on Environmental Sciences, Studies, and Policy for presentation of research and projects by ESSP graduate students and faculty and for the study of major environmental problems and issues.

6. The development of a Graduate Faculty made up of members from participating universities who will participate in the Joint-Campus ESSP Graduate Program.

7. The establishment of a system-wide Seminar on Environmental Sciences, Studies, and Policy delivered through EdNET.

8. The appointment of a Joint-Campus ESSP Graduate Program Coordinator on a rotating basis among participating institutions, with funding and responsibilities to facilitate the inter-campus activities of the program.

RATIONALE

Oregon's environment is one of its greatest resources. The health and sustainability of the human environment is central to nearly all activities, such as agriculture, forestry, industry, transportation, recreation, and tourism and therefore affect the daily quality of life in Oregon. What is good for the environment is good for Oregon.

The Joint-Campus Environmental Sciences, Studies, and Policy Graduate Program is based on the premise that managing and sustaining environmental quality requires the education of a new generation of scholars who can provide scientific understanding of environmental processes as well as an understanding of their cultural and economic setting. Solutions to environmental problems such as pollution, anthropogenic-generated climate change, destruction of natural habitats, loss of sustainability of habitats and ecosystems, availability of water, and loss of property and life from natural hazards will require researchers and managers with the ability to work at the boundaries of traditional disciplines in the physical, biological and social sciences, as well as the humanities.

Fortunately Oregon has another valuable resource — the three major state universities in its system of higher education. It is well known that the combined programs at Oregon State University, the University of Oregon, and Portland State University within the Oregon State System of Higher Education provide exceptional strength in all of the disciplines required for high-quality environmental education and research. The purpose of the Environmental Sciences, Studies, and Policy Program is to take the logical step of enhancing graduate student access to faculty members, classes and facilities, enabling students to take advantage of the best that the State System has to offer.

I. Program Administration

1. Describe the nature of cooperation between the departments/programs on participating campuses.

The Joint-Campus ESSP Graduate Program is a "bottom-up" organization in which home-campus faculty in the ESSP Graduate Program design and administer the major areas of study that are appropriate to the strengths of their institution, while providing opportunities for students to obtain advice, instruction and use of facilities at other participating campuses.

Figure 1 provides an overview of the administrative structure, existing degrees, and proposed degrees. The Program is designed with several advisory group levels. The Board of Joint-Campus Deans is composed of the graduate deans at the participating institutions. The reporting line at each home-campus is to the appropriate academic dean or deans. Administration will generally follow guidelines spelled out in the document prepared for OSSHE, Guidelines for Establishing Joint-Campus Graduate Programs, May, 1992.

The ESSP Graduate Program provides mechanisms for:

- Joint-campus faculty participation on Master's and Ph. D. program planning and thesis committees;

- Joint-campus coordination of curriculum development through a joint-campus Faculty Advisory Committee for ESSP;

- Joint-campus facilitation of student and faculty exchanges between campuses;

- Joint-campus planning of an annual Workshop for Environmental Sciences, Studies, and Policy;

- Joint-campus development and publication of information on ESSP Graduate Program faculty members, students, and curriculum;

- Joint-campus recruitment of students into the ESSP Program.

a) Identify home department(s) or program(s)

OSU, U of O, and PSU will each identify the single, interdisciplinary academic unit responsible for administration of the ESSP Graduate Program. Every ESSP graduate student will be assigned to the academic unit responsible for administration of the ESSP Graduate Program on the home-campus, but the nature of the home academic unit will vary.

The initial structure for the program is as follows:

- Oregon State University. The student's home program is the Environmental Sciences Graduate Program which is administered by the Environmental Sciences Graduate Committee and participating deans.

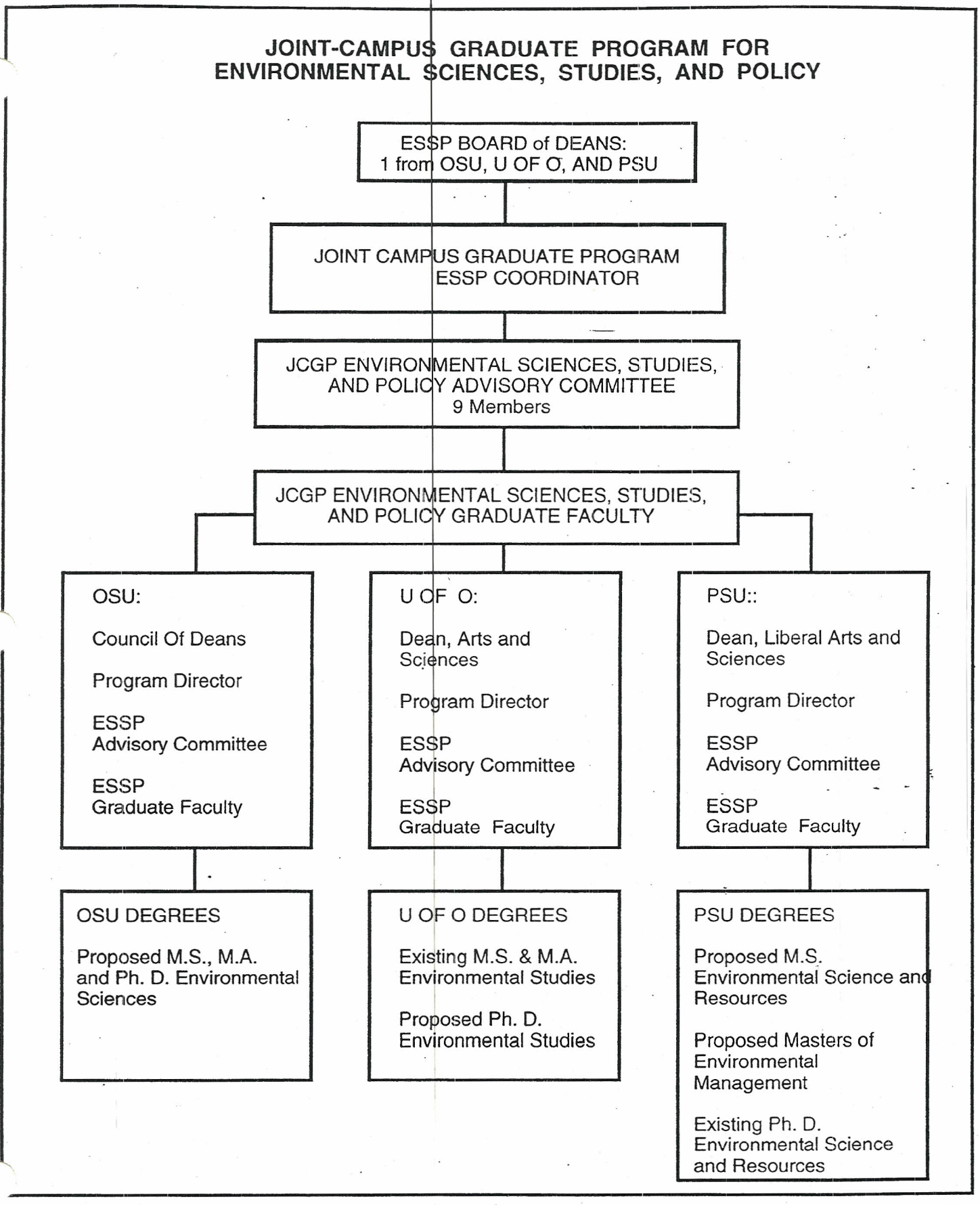

Figure 1. Organization of the proposed Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy.

• University of Oregon. The student's home program is the Environmental Studies Program administered by the Environmental Studies Committee and the Dean of the College of Arts and Sciences.

• Portland State University. The student's home program is the Environmental Sciences and Resources Program within the School of Liberal Arts and Sciences.

Descriptions of the programmatic structure for existing and currently proposed campus-based participating programs are in APPENDICES 1, 2, and 3. Additional existing and proposed programs can be added to the Joint-Campus ESSP Graduate Program. Campuses would initiate proposals for these additions, which would then be reviewed and evaluated by the inter-campus Joint-Campus Advisory Committee and the Joint-Campus ESSP Board of Deans (Fig. 1).

In addition to including other campus-based programs within the Joint-Campus ESSP Graduate Program structure, additional OSSHE campuses, as well as other institutions, may wish to affiliate. The proposal and review process described above would apply. Where appropriate, implications for the Joint-Campus ESSP Graduate Program budget, as well as the hosting of the Joint-Campus Program Director, would also be addressed.

b) Explain how individual students will determine their associated department or campus.

The student applies to the campus of choice. Each participating campus will determine the mechanism by which the applications are reviewed and assignments of home units are made. The mechanisms for the participating campuses and major areas of studies are as follows:

• Oregon State University. Students will apply directly to the Environmental Sciences Graduate Program Office for review and possible acceptance. All students entering the OSU Environmental Sciences (ES) Graduate Program must have a Major Professor from the ES Graduate Faculty at OSU.

• University of Oregon. Students will apply to the Environmental Studies Program. Applications will be reviewed by the Environmental Studies Admissions Committee.

• Portland State University. Students apply to the Environmental Sciences and Resources (ESR) Program, indicating the desired home-department in which the student wishes to obtain advanced training. The ESR Program Director then forwards the application to the participating academic unit for a determination of the person's ability to undertake graduate study with an emphasis on the discipline of that unit.

Additional details describing determination of the home-campus and departments responsible for the ESSP Graduate Program are in APPENDICES 1, 2, and 3.

2. Describe the administrative organization of the proposed joint-campus program activity. Will this involve administrative units beyond the program units (Admissions Offices, Registrars, Financial Aid, etc.) .

Activities at participating campuses.

Each campus must have faculty members who participate in the ESSP Graduate Program and who are members of the Joint-Campus Graduate Faculty for Environmental Sciences, Studies, and Policy. Faculty at OSU, U of O, and PSU will take primary responsibility for the overall promotion and administration of the instructional and advising activities of the home-campus program. Each participating institution must also appoint a Program Director to serve as the single point of contact for the Joint-Campus ESSP Graduate Program. An ESSP Graduate Advisory Committee will be elected at each campus and will assist the home-campus Program Director with curriculum development, program management, and future development. The lines of responsibility for administration of the home-campus program and the relationship between the home-campus ESSP Graduate Program Advisory Committee and the Program Director are as follow:

- OSU. The line of reporting for the Program Director is to the OSU Council of ES Deans, including the Deans of the Colleges of Science, Agricultural Sciences, Forestry, Health and Human Performance, Engineering, Oceanic and Atmospheric Sciences, Liberal Arts, and the Graduate School.

- U of O. The line of reporting is to the Director of the Environmental Studies Program, who, in turn reports to the Dean of the College of Arts and Sciences and the designated Associate Dean.

- PSU. The line of reporting for the program director is to the Dean of the College of Liberal Arts and Sciences.

Each major area of study developed at OSU, U of O, and PSU must have an explicitly identified group of home-campus ESSP Graduate Program faculty members who take primary responsibility for the major area of study. This group will assist the home-campus ES Advisory Committee, the Program Director and cognizant administrators in promoting, guiding, and evaluating each proposed major, minor, or area of concentration. The group of home-campus ESSP Graduate Program faculty members will seek to improve relevant course offerings; develop materials to assist students in identifying useful courses and faculty assistance for their research; work with faculty to expand opportunities for graduate assistantships; assist the faculty in processing and making decisions on graduate student applications; record and maintain information on the home-campus program; and work with the home-campus ESSP Graduate Program Advisory Committee and cognizant administrators to insure the most effective utilization of administrative and instructional resources for the home-campus ESSP Graduate Program.

Joint-campus activities

To minimize administrative effort and promote coordination between campuses, the Joint-Campus ESSP Graduate Program Office will be located at one of the home-campus program offices on a rotating basis. The home-campus Program Director will serve as the Joint-Campus ESSP Graduate Program Coordinator during this period. Appropriate enhancements of FTE for the Program Coordinator and Office Assistant are to be provided through an arrangement with participating institutions. The first term will locate the Joint-

Campus Program Office at one of the three founding campuses for a 2-year period. The Joint-Campus ESSP Graduate Program will rotate from one university to another on 2-year intervals.

The Joint-Campus ESSP Advisory Committee will consist of three ESSP Graduate Faculty Members from each of the participating campuses. The three representatives from each university will be chosen by general election from the home-campus ESSP Graduate Faculty, with appointment by the appropriate home-campus administrator(s).

The Joint-Campus ESSP Advisory Committee will meet at least once per year with the Program Directors and representatives of the graduate deans to evaluate and make improvements in the Joint-Campus ESSP Graduate Program activities.

The Joint-Campus Board, consisting of an appropriate dean from each participating campus, will meet as needed.

3. What are the criteria for admission to the proposed program? What are the conditions and criteria for exceptions or provisional admissions? How is the review of applicants conducted and by whom? Is application review campus-specific or on a joint-campus basis?

There will be common entrance requirements shared at all institutions, and where such may differ between participating universities, the more rigorous requirements will be enforced. Each university will enforce its own admissions. The minimum requirements for admission to the ESSP Graduate Program on a participating campus includes both:

- A four-year baccalaureate degree from an accredited college or university;

- A combined GPA of 3.00 on the last 90 quarter-term hours of graded undergraduate work plus all work completed thereafter.

Those who do not meet all entrance requirements may have provisional admission when a member of the ESSP Graduate Faculty has agreed in writing to be the major adviser for the student on entrance.

Prospective graduate students may only apply to one Joint-Campus ESSP Graduate Program and can not apply simultaneously to ESSP Graduate Programs at OSU, U of O, and PSU. Students admitted to one institution may apply to transfer to another, but must have an admission application approved by the home-campus graduate school and ESSP Graduate Program Admissions Committee. Students not admitted upon initial application are free to reapply to the same institution, or to another participating institution.

Each home-campus ESSP Graduate Program may impose additional requirements, such as GRE test results, TOEFL examination for foreign students, or higher English and academic standards. In the event that the minimum ESSP Graduate Program entrance requirements are higher than the minimum home-campus requirements, it is the responsibility of the home-campus ESSP Graduate Program Office to enforce the joint-campus standards.

4. What funds have been identified for support of graduate students to the new program?

•Oregon State University. Continuing commitment to 6 GTA positions in Environmental Sciences to be provided by the College of Science. GRAs will be offered by members of the Environmental Sciences Graduate Faculty. The College of Science will also provide 0.25 FTE to support administration of the ES Graduate Program. Participating colleges will provide other support to include, as needed, GTA positions, graduate student fellowships, release time for the Program Director, summer salary for the Program Director, and other resources needed to establish and operate the ES Program Office.

•University of Oregon. As indicated above, Joint-Campus Program participation will be coordinated through the existing Environmental Studies Program. Environmental Studies offers an undergraduate minor, major, and an interdisciplinary Master's degree. Graduate student support currently consists of 4 FTE (0.2) academic year Graduate Teaching Fellowships (GTFs) provided by the College of Arts and Sciences. The three-year phase-in of the undergraduate major will provide an additional 6 FTE (0.2) GTFs beginning in the third year of the major (1997-8).

The Environmental Studies Program currently has 1.3 classified employees and an annual service and supplies budget of about $11,000. The Director currently receives two course-releases per academic year for his administrative responsibilities, plus a small administrative stipend. Classified employees, services and supplies, and the Director's course-releases will all increase as a newly approved undergraduate major is phased-in.

•Portland State University. Continuing commitment to 5 GTA/GRA positions for environmental programs will be provided by the College of Liberal Arts and Sciences. Participating colleges, schools, and departments will provide other support as needed, including GTA positions, graduate fellowships, and other resources needed to support students in the program. The College of Liberal Arts and Sciences will also provide 0.5 FTE to support administration of the ESR Graduate Program.

5. What is the recruiting plan proposed for attracting students to the new program?

Graduate student recruiting will be coordinated, but decentralized. Initial inquiries will be directed to the most appropriate individual campus Program Director. Emphasis will be placed on responding quickly and completely, while referring the prospective student to the most logical point of contact for future correspondence. The highest priority will be to attract outstanding students to the Joint-Campus ESSP Graduate Program, then to the individual campus, and, finally, to the major area of study.

The Joint-Campus Program Coordinator will be responsible for the development and publication of recruitment materials describing in broad terms the academic opportunities that are available to faculty and graduate students in the ESSP Graduate Program. The home-campus Program Director will be responsible for supervising the development and publishing of

recruitment materials describing the overall program and the major areas of study at the home-campus.

The home-campus Program Directors will be primarily responsible for tracking graduate student applications. By the end of each calendar year, the home-campus Program Director will forward information on the number of inquiries, applications and disposition of applications for the previous academic year to the Joint-Campus Program Coordinator.

6. What is the number of new students expected in the joint-campus program each year? Explain how this will impact the number of resident campus majors. What is the total number of enrolled students (resident and joint-campus) expected each year over a period of five years? What is the number of degrees expected to be awarded each year? What is the expected attrition level?

•Oregon State University. Expectations are for admitting 16 new students (12 new M.S. students and 4 new Ph.D. students) in the first year. The attrition rate will be about 25%. The new ES Graduate Program is not expected to have a significant impact on the number of resident campus majors. For the first five years we expect an enrollment of 12 (those admitted, minus attrition) in the first year, increasing 12 each year to a stable number of about 40 graduate students. The graduation rate would be approximately 8 M.S. and 2 Ph.D. degrees per year.

•University of Oregon. Expectations are that most students in the existing U of O Environmental Studies Masters Program will also choose to participate in the Joint-Campus Program. Approximately 12 new Masters students are admitted annually. The proposed Ph. D. Program would admit approximately 4 students each year into a post-master's program lasting 3-4 years. When fully implemented, the graduation rate would be 3 students annually with a 25% attrition rate.

•Portland State University. Expectations are to maintain or increase current enrollment of approximately 40 students in the ESR Doctoral Program. Presently, approximately eight new doctoral students enter the Program each year. New masters programs in ESR are expected to enroll ten additional students each year. Enrollment in the Masters Program is expected to rise to approximately 40 students, including a mixture of full-time and part-time students. The graduate rate would be 8 Ph. D. students and 10 Masters students each year with an attrition rate of 20-25%.

7. How will data for the joint-campus program be collected and maintained? Who will record data, what data will be recorded, and in what format?

Responsibility for collecting and maintaining a record for each student, including name, date of enrollment, degrees obtained, area of concentration, thesis advisor and committee members, will be the responsibility of the home-campus Program Director where the student is enrolled. Summaries of these data will be provided to the Joint-Campus ESSP Graduate Program Coordinator.

Home-campus Program Directors will be responsible for recording thesis titles and developing initial job placement information on program alumni. Summaries of these data will be provided to the Joint-Campus ESSP Graduate Program Coordinator.

The Joint-Campus ESSP Graduate Program Coordinator will be responsible for assembling summaries of current student and alumni data. At the end of each calendar year, the home-campus Program Directors will provide updated one-page resumes of participating members of the ESSP Graduate Faculty, including name, phone, e-mail and postal address, departmental or program affiliation, and major focus of research and graduate instruction in environmental sciences, studies, and policy, to the Joint-Campus ESSP Graduate Program Coordinator.

II. Student Programs

1. What are the major requirements and milestones of the degree program?

a) core requirements;
b) elective credit;
c) major and minor requirements;
d) language requirements;
e) research tools;
f) written and/or oral diagnostic, comprehensive, qualifying, and/or preliminary examinations;
g) practica and/or internships;
h) final oral/written examinations.

The proposed program will provide a variety of opportunities for students to engage in study at participating campuses. These include (1) enrolling in courses on other campuses, either as a Joint-Campus course, or through other approved mechanisms, (2) including faculty from other campuses on advisory and thesis/dissertation committees, (3) participating in research projects, and (4) participating in special inter-institutional Joint-Campus classes, seminars, workshops, and conferences. The opportunities include movement of students and faculty between campuses, as well as the use of inter-campus technology such as Ed-Net and computer conferencing. All such student academic activities must be approved by the appropriate faculty, including home-campus advisors. Note that the proposed budget includes funds to facilitate inter-campus student activities.

Graduate residency requirements will accommodate students participating in the Joint-Campus ESSP Graduate Program. A minimum of one-half of the residency requirement shall be met on the home-campus; the remaining half of the residency requirement may be met by approved courses taken at participating institutions. Transfer credits applied in fulfillment of the minimum degree requirements may not exceed the credits earned at the home-institution. It is assumed that most, if not all, of the core coursework in the student's graduate program will be taken on the home-campus.

All Ph. D. students are required to complete a research thesis/dissertation. M.S and M.A. students will either complete a thesis/dissertation, or an internship/project when completing a

non-thesis curriculum. APPENDICES 1, 2, and 3 give details for non-thesis masters degrees; requirments for non-thesis Masters degrees may differ among participating universities.

2. Describe procedures used for annual or periodic evaluation of student progress.

See APPENDICES 1, 2, and 3 for a description of the evaluation process for students.

III. Advising

1. What initial advising is provided to incoming students?

A close relationship between the graduate student and the faculty adviser taking primary responsibility for their academic and thesis or project advising is essential to the success of any graduate degree program. In the case of an interdisciplinary degree program, this relationship is even more important because of the difficulty in selecting appropriate classes across disciplines.

For the participating institutions, advising on entrance is provided as follows:

•Oregon State University. On entrance to the Environmental Sciences Graduate Program, each student must have a Major Professor who will work with the ES Program Director to provide advising and academic support.

•University of Oregon. On acceptance of the offer of admission, students are assigned initial faculty advisors. Additional advising takes place after students arrive on campus, and as part of the Pre-Seminar required of all first-year Environmental Studies graduate students.

•Portland State University. Prior to initial registration, each student obtains information from a participating home-department regarding scheduling of diagnostic examinations and selection of research advisor. Incoming students are advised by the department of their research advisor.

See APPENDICES 1, 2, and 3 for additional information.

2. How and when is the major professor determined?

All major areas of study in the ESSP Graduate Program must have a clear mechanism for early assignment of a faculty adviser.

For the participating institutions, major professors are assigned as follows:

•Oregon State University. All students must have a Major Professor on entrance to the Environmental Sciences Graduate Program. Such assignments may be worked out prior to admission. Graduate students may petition the Program Director to change advisors.

•University of Oregon. As indicated above, all students upon admission are assigned an initial faculty member who will act as advisor. By the end of their second quarter in residence, all students must complete a Final Course Plan. A tentative Course Plan is required as part of the application for admission. The Final Course Plan includes proposed coursework in three areas of concentration. Each area must be approved by an appropriate faculty member, one of whom also serves as the student's advisor. The three faculty members constitute the student's advisory committee. In addition, each student forms a Terminal Project Committee, with a minimum of two faculty members, one of whom serves as chair.

•Portland State University. The major professor is selected according to the procedures of the student's home-department.

See APPENDICES 1, 2, and 3 for additional information.

3. Do all students have an advisory committee? If so, when is it established and what is the committee composition?

All students must have a graduate committee by the beginning of the second term of study for M.A. or M.S. students or by the end of the first year of study of Ph.D. students. The graduate committee for M.S. students must include a home-campus advisor, and a minimum of one other home-campus committee member. The graduate committee for Ph. D. students must include a home-campus advisor, and a minimum of two other home-campus committee members. Joint-Campus ESSP Graduate Faculty members will serve as the members of the student's graduate committee. Program Directors at each campus will work to encourage and facilitate participation on graduate committees by Joint-Campus ESSP Graduate Faculty at other campuses.

4. What is the role of the advisory committee? Does it provide program and research direction, or is it evaluative?

The student's advisory committee provides program and research direction. The student's course of study must be determined within the first six months of work toward either the M.S./M.A. or Ph.D. degree. The course of study should be set at a program planning meeting on the student's home-campus. Attendance of all members of the doctoral advisory committee is required. All advisory committee members must approve the course of study and any modifications.

The student's advisory committee is responsible for supervising any qualifying or final examinations that are specific to the ESSP Graduate Program at each campus.

In addition to its responsibilities for final approval, the student's advisory committee must approve the research thesis topic or internship and major project.

5. Describe the role of the advisory committee and other faculty in the development and evaluation of examinations?

The advisory committee is responsible for supervising any qualifying or final examinations that are specific to the ESSP Graduate Program at each campus.

IV. Graduate Faculty

1. Describe the criteria for faculty eligibility to serve on graduate committees.

The quality of the Joint-Campus ESSP Graduate Program ultimately depends on the quality and dedication of the participating graduate faculty members. As described above, the members of each student's advisory committee must be selected from the Joint-Campus Graduate Faculty for Environmental Sciences, Studies, and Policy. Faculty who are not members of the Joint-Campus ESSP Graduate Faculty may serve on graduate committees according to the usual home-campus rules. Oregon State University utilizes a formal Graduate Faculty designation. U of O and PSU do not.

Criteria for membership on the Joint-Campus ESSP Graduate Faculty:

- An active program of research in environmental sciences, studies, and policy or closely related disciplines;
- Active involvement in the teaching or advising of graduate students at a participating institution;
- Willingness to serve as an outside-campus member of ESSP Program advisory committees for M.S./M.A. and Ph.D. students;
- Professorial-rank, with research, tenure or tenure-track faculty appointment on the home-campus;
- Adjunct or courtesy faculty appointment on one or more of the outside participating campuses;
- Recommendation by the home-campus and joint-campus ESSP Faculty Advisory Committees;
- Approval by the respective participating graduate deans.

The home-campus ESSP Committee will be responsible for nominating new members or recommending removal of existing or inactive members from the home-campus faculty. The nominations or removal recommendations must be approved by both the Joint-Campus ESSP Advisory Committee and the administrators responsible for adjunct or courtesy appointments at the participating institutions. Nominations and removal recommendations may be forwarded to the Joint-Campus ESSP Advisory Committee at any time. The Joint-Campus ESSP Advisory Committee and the appropriate graduate-study administrators will take action to approve or deny the change within one month of receiving the nominations or removal recommendations. Prospective faculty may be nominated more than once.

V. Major and Minor Areas of Study

1. The Major

A major area of study (or major) is a broad area of inquiry in environmental sciences, studies, and policy that is distinguished by the character and emphasis of its scholarly activity. Majors are intended to be interdisciplinary, few in number and specific for each campus reflecting the broad academic strengths of the home-campus offering the major. In addition, there may be Areas of Concentration within a major.

Organizing themes for majors include, but are not limited to:

- A major with emphasis on development of new knowledge about environmental systems through integration of the life, physical, and social sciences;

- A major with emphasis on environmental management and policy through a combination of science and the humanities;

- A major with emphasis on the development of new environmental technologies through the application of science and engineering principles;

- A major with emphasis on contributions of the humanities and arts to an understanding of the environment.

Each major will be associated with a specific degree authority for one or more of the standard graduate degrees — Master of Science, Master of Arts, and Doctor of Philosophy. Included in this proposal are the following majors:

- Oregon State University. Environmental Sciences (M.S., M.A., and Ph.D.) with Areas of Concentration in Ecology, Biogeochemistry, Social Science, and Quantitative Analysis;

- University of Oregon. Environmental Studies (M.S., M.A., and Ph.D.);

- Portland State University. Environmental Science and Resources (M.S., M.E.M, and Ph.D.).

The addition, deletion, or level-of-degree changes for a major will be treated as a major curricular proposal within the Oregon State System of Higher Education. For existing majors, deletion or level-of-degree changes must be proposed by members of the home-campus ESSP Graduate Faculty. In the case of a new major, the addition may be proposed by a combination of current and prospective ESSP Graduate Faculty members. The proposed additions, deletions, or level-of-degree changes must be fully coordinated with existing majors and minors in the ESSP Graduate Program at the home-campus. There must also be a plan for administering the new or revised majors through the home-campus Program Director and the Joint-Campus ESSP Advisory Committee. The proposal must be approved by the home-campus and Joint-Campus

ESSP Advisory Committees before formal submission as a major curricular proposal. Changes in course requirements and structure of interdisciplinary fields of concentration within the major are the responsibility of the home-campus ESSP Graduate Faculty and need not be approved by the Joint-Campus ESSP Advisory Committee.

2. The Minor

Minors may be directly associated with the majors authorized at each participating institution, or may be offered in an interdisciplinary area of environmental sciences, studies, and policy that is not offered as a major. In either case, however, there must be an explicitly identified group of faculty responsible for the minor.

Minors must be interdisciplinary and few in number, but need not reflect the primary academic strengths of the home-campus offering the minor. A minor may be proposed by a combination of current and prospective ESSP Graduate Faculty members. Proposed additions, deletions, or level-of-degree changes must be fully coordinated with existing majors and minors in the ESSP Graduate Program at the home-campus. There must also be a plan for administering the new or revised minors through the home-campus Program Director and the ESSP Advisory Committee. The proposal must be approved by the home-campus and Joint-Campus ESSP Advisory Committees before formal submission as a major curricular proposal.

Changes in the course requirements or structure of the minors are the responsibility of the home-campus ESSP Graduate Faculty and need not be approved by the Joint-Campus ESSP Graduate Faculty Advisory Committee.

Included in this proposal are the following minors:

- Oregon State University. Environmental Sciences will exist as a minor at the M.S./M.A. and Ph. D. levels.

- University of Oregon. NA.

- Portland State University. NA.

VI. Agreement on Sharing of Research and Instructional Facilities

One of the objectives of the Joint-Campus ESSP Graduate Program is to facilitate the sharing of research and instructional facilities by participating students and faculty participating. The purpose of this section is to identify some initial mechanisms and guidelines.

1. Sharing of faculty members

The proposed program envisages many opportunities for the sharing of faculty. The numbers of potential faculty participants are impressive. Over 600 OSU faculty and staff responded to the establishment of a mailing list for OSU's Center for the Analysis of Environmental Change newsletter. PSU's 1995 Environmental Programs Directory lists nearly 100 environmental related faculty and staff. U of O's 1995 OSSHE proposal for its new

undergraduate major listed a similar number of environmental faculty. Both of the latter campuses include additional faculty members with interests in environmental issues.

Thus, exchange of faculty members between participating universities will be an important component of the Joint-Campus ESSP Graduate Program. The intent of the exchange is to bring professors from one, home-campus to another, host-campus for the purposes of teaching courses and participating in research development. Such arrangements (1) provide a broader faculty base for students, (2) maximize effectiveness of faculty within and between cooperating institutions, (3) contribute to faculty development via innovative inter-campus teaching and research opportunities, and (4) allow the host campus to offer courses not normally available. As indicated above (Section II/1), the intent is to have these academic credits fully recognized by the host campus for host campus students, and by the home-campus for students who might travel and participate in the course.

Faculty opportunities could also include offering Joint-Campus courses at off-campus locations. For example, courses involving faculty from the participating institutions could be offered to students at locations throughout Oregon, such as Bend. Instruction could include both electronic and direct classroom teaching.

All universities participating in the Joint-Campus ESSP Graduate Program should encourage faculty members to participate in the exchange program. As suggested in the May, 1992, Guidelines (Section III/F), the teaching of graduate courses in joint-campus programs should be considered part of the in-load teaching activity of regular graduate faculty, rather than developed as out-load (or overload) instructional activities.

Specific arrangements for such faculty participation are the responsibility of the faculty member, and the appropriate department head and academic deans. Arrangements will clearly vary within and between participating institutions. Mechanisms for handling support for faculty participating in the exchange will be worked out by the Joint-Campus Program Coordinator and administrators at participating universities.

2. Sharing of research facilities

Flexibility and sensitivity are the most important elements of programs involving the sharing of research facilities. In some cases, research facilities such as computers and analytical laboratories are already being heavily used by faculty and students and the procedures for obtaining permission and cost reimbursement are well established. In other cases, sharing research instrumentation or a laboratory under the control of an individual faculty member with ESSP Program graduate students would place an unacceptable burden on the research projects for which the facilities were developed. A few common sense guidelines will be used:

- Every effort will be made to treat off-campus graduate students and faculty members participating in the ESSP Graduate Program in the same manner as on-campus graduate students and faculty members in issues related to the sharing of research facilities.

• Any ESSP Program graduate student using research facilities at an off-campus participating institution, must include at least one member of the ESSP Graduate Faculty member from that institution on their graduate advisory committee, preferably a faculty member familiar with the research facilities to be used.

• The ESSP Graduate Program Coordinators and the members of the student's graduate advisory committee will assist the student in identifying and gaining access to appropriate off-campus research facilities.

3. Sharing of instructional facilities

The library is the major focus of facilities sharing in the instructional area. Graduate students and faculty participating in the Joint-Campus ESSP Graduate Program will have full library privileges at all participating campuses. The ESSP Graduate Program Coordinators will assist participating faculty and graduate students in obtaining access to other appropriate instructional facilities. Reimbursement for costs of instructional facilities use will be primarily the responsibility of the home institution of the participating students and faculty members.

VII. The Annual Workshop

A major cooperative initiative of the Joint-Campus ESSP Graduate Program is the establishment of an annual Workshop on Environmental Sciences, Studies, and Policy for presentation of research and projects by ESSP Program graduate students and faculty and for the study of major environmental problems and issues. The workshop will be organized by the Joint-Campus ESSP Advisory Committee and held on the campus of one of the participating institutions. The institution sponsoring the event will provide the space, audio-visual equipment and the logistical support required for the workshop activities; the home-campus ESSP Graduate Program at the sponsoring institution will have overall responsibility for the local arrangements. Each participating institution is responsible for providing appropriate travel-expense support for ESSP faculty members and students to attend the workshop.

VIII. Budget

Estimated costs for the Joint-Campus ESSP Graduate Program are outlined in APPENDIX 4. These costs are for the proposed Joint-Campus Program only, and do not represent costs for the OSU ES Graduate Program. See appended budget section for a full explanation.

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APPENDIX 1.

Oregon State University
Proposal for M.S., M.A., and Ph. D. degrees in Environmental Sciences
See Attached

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APPENDIX 2.

University of Oregon
Proposal for Ph. D. degree, Environmental Studies
Currently Under Review, with the Joint-Campus Proposal, at the U of O

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APPENDIX 3.

Portland State University
Proposal for M.S. and M.E.M. degrees, Environmental Sciences and Resources
Currently Under Review, with the Joint-Campus Proposal, at the PSU

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APPENDIX 4.

Budget Form and Explanation

JOINT-CAMPUS ENVIRONMENTAL SCIENCES, STUDIES, AND POLICY GRADUATE PROGRAM[1] OPERATING BUDGET: 1996-2000

			1996-97	1997-98	1998-99	1999-00
PERSONNEL						
Faculty Director	0.25 FTE	$50,000/FTE	12,500	13,000	13,520	14,061
Grad. Teach. Assist.	0	0	0	0	0	0
Support Personnel	0.25 FTE	$20,000/FTE	5,000	5,200	5,408	5,624
Fellowships		3 @ $10,000	30,000	31,200	32,448	33,746
OPE						
Faculty/Director	@38%		4,750	4,940	5,138	5,343
Support Personnel	@59%		2,950	3,068	3,190	3,318
ESSP Fellows	@1.2%		360	374	389	405
SUB-TOTAL			55,560	57,782	60,093	62,497
State Funds						
OTHER RESOURCES						
Library			0	0	0	0
Supplies & Services			5,000	5,200	5,408	5,624
Moveable Equipment			6,000	0	6,000	0
Joint-Campus Activity			40,500	42,120	43,805	44,558
SUB-TOTAL			51,500	47,320	55,213	50,182
State Funds			51,500	47,320	55,213	50,182
GRAND TOTAL			107,060	105,102	115,306	112,679
State Funds			107,060	105,102	115,306	112,679

[1]The budget is incremental for the OSU Environmental Sciences Graduate Program which is a contribution to the Joint-Campus Graduate Program in Environmental Sciences, Studies, and Policy. Budget for the Joint-Campus Program is not presented here.

EXPLANATION

1. Joint-Campus ESSP Graduate Program Coordinator. The Coordinator will work with the JC ESSP Graduate Program Advisory Committee, comprised of three members from each participating university, to be sure that Joint-Campus activities are developed to the fullest extent possible. The Coordinator will report to the JC ESSP Board of Deans, comprised of one member from each participating university, to be sure that activities reflect institutional goals. The Coordinator will be responsible for implementing exchanges of faculty members and students between participating institutions, and will organize the annual JC ESSP Graduate Program Workshop. The Coordinator will keep records on activities at each campus, will be responsible for recruiting prospective graduate students for the proposed Program, and will be the JC ESSP Graduate Program spokesperson. Costs for the Coordinator are minimized because the JC ESSP Graduate Program Office can be co-located with a home campus office established to operate within the proposed program. Therefore, the JC coordinator can work in association with the Director of a home campus program.

2. Support Personnel. The support personnel will assist in word processing, photocopying, record keeping, correspondence, arranging travel between institutions for faculty members and students, and serve as receptionist for the JC Program. Costs for support personnel are minimized because the JC ESSP Graduate Program Office can be co-located with a home campus office established to operate within the proposed program. Therefore, JC support personnel can work in conjunction with those managing a home campus program.

3. Fellowships. Three JC ESSP Graduate Fellowships will ensure the capacity to recruit the best possible students. The intention is for the Fellows to engage in academic activities at two or more of the universities participating in the JC ESSP Graduate Program. Therefore the JC ESSP Fellows will promote development of Joint-Campus activities.

4. Supplies and Services. Supplies and services include costs of photocopying, printing, telephone, mailing expenses, and office supplies.

5. Moveable Equipment. Moveable equipment incudes office furniture for the Director and support personnel, computers, a laser printer, and filing cabinets. Equipment purchased for the JC Program is portable within a campus, but will not be moved as the JC Program Office rotates between universities on a 2-year cycle. Moving office equipment and supplies as a part of rotating the location of the JC Program Office is not cost effective.

6. Joint-Campus Activity. Joint-Campus activities include the exchange of faculty members and graduate students between universities participating in the JC ESSP Graduate Program. Exchanges may be as short as one day, or as long as an academic year. Additional Joint-Campus activities include hosting the annual JC Workshop, attending meetings and seminars, producing brochures that publicize the program and are used for recruiting, and listing the JC Program in graduate student guides.

BUDGETARY NOTES

1. The Size of the Budget. The costs shown in the budget will support a modest Joint-Campus Graduate Program with adequate resources for management and the development of meaningful joint-campus activities. The joint-campus activities constitute about 70% of the budget and include the Fellowships, student and faculty exchanges, and the annual workshop. Costs will go down if the scope of joint-campus activities is reduced. Costs will go up if the scope of joint-campus activities is increased.

2. The Program Coordinator. The salary of the Program Coordinator will vary with rank, experience, and home institution. The source of the funds will depend upon the person's home institution.

3. The Support Personnel. The salary of the administrative support will vary with rank, experience, and home institution. The source of the funds will depend upon the person's home institution.

4. Rotating the JC Office. The JC ESSP Graduate Program Office is scheduled to rotate between participating universities with location changes occurring at 2-year intervals. Office equipment and supplies can not be efficiently moved between universities so the expense of establishing a new JC Office will occur on alternate years. Costs may be reduced by planning longer residency periods.

5. The Infrastructure. The source of the funds required to pay for supplies and services will depend upon the plan decided upon by the participating universities.

NOMINATION AWARDS

NAME OF AWARD	AWARD PURPOSE	ELIGIBILITY	# AWARDED EACH YEAR	AWARD AMOUNT	CONTACT PERSON AND DUE DATE
OSU Distinguished Professor Award	Recognizes individuals who have achieved national/international stature as a result of their contributions to scholarship and research and whose work has been notably influential in their fields of specialization.	Generally expected to be at the rank of professor	1 - 3 The title "Distinguished Professor" is retained as long as the individual remains at OSU	$3,000 stipend	George Bailey, Chair, Distinguished Professor Selection Committee 737-3164 late fall term '96
OSU Alumni Association Distinguished Professor Award	Recognizes outstanding professional achievement through teaching and scholarship, for service to the university and the community, and professional leadership, nationally and internationally.	Faculty who hold professorial rank	1	$3,000 recipient; $500 department	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/14/97
Elizabeth P. Ritchie Distinguished Professor Award	Recognizes an individual for outstanding undergraduate teaching; research particularly related to improvement of instruction and professional leadership.	Faculty who hold academic rank	1	$2,500 recipient; $500 department	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/14/97
Dar Reese Excellence in Advising Award	Recognizes outstanding advising of undergraduate students by a member of the OSU faculty.	Faculty who hold academic rank	1	$1,000	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/14/97
D. Curtis Mumford Faculty Service Award	Recognizes individuals for exceptional, ongoing, dedicated service to the faculty and to OSU.	Not restricted	1	$1,000 per year	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/14/97

NAME OF AWARD	AWARD PURPOSE	ELIGIBILITY	# AWARDED EACH YEAR	STIPEND AMOUNT	CONTACT PERSON AND DUE DATE
OSU Faculty Teaching Excellence Award (formerly Burlington Resources Foundation Faculty Achievement Award)	Recognizes unusually significant & meritorious achievement in teaching and scholarship that enhances the effectiveness of instruction; emphasis on actual classroom teaching.	Full-time Faculty – Assoc. Prof., Asst. Prof., or Inst. w/less than 10 yrs service to OSU	1	$2,500	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/14/97
Honorary Doctorate Award	Individuals who have distinguished themselves in their selected areas of endeavor and are recognized for their eminence as national and international leaders and models.	Leaders of national and international eminence	1 - 3	N/A	Provost's Office 737-2111 Winter term 1997
OSU Distinguished Service Award	Recognizes individuals who have made significant contributions to OSU, Oregon, the nation, and/or the world.	Individuals who have made significant contribution to society	1 - 2	N/A	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/07/97
Richard M. Bressler Senior Faculty Teaching Award	Recognizes full professors who have been at OSU a minimum of 15 years and consistently provide direct instruction to undergraduate students.	Full Professors with minimum of 15 years at OSU	1	$2,500	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/14/97
Extended Education Faculty Achievement Award	Recognizes significant and meritorious achievement which enhances the effectiveness of extended education by faculty who devote a significant amount of time to extended education, whether on or off campus.	Full-time faculty with 5 or more years of service to OSU	1	$2,000	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/14/97
OSU Outstanding Faculty Research Assistant Award	Recognizes individuals for their contributions to the university as evidenced by exceptional work experience, scholarship, innovation, professional growth, and contributions valuable to the State of Oregon.	Faculty Research Assistants and Senior Faculty Research Assistants	1	$750	Jon Olson, Chair, Faculty Recognition and Awards Committee 737-3712 2/14/97

DEPARTMENT OF BIOCHEMISTRY AND BIOPHYSICS

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November 22, 1996

TO: Faculty Senate President and Executive Committee

FROM: W. Gamble, Science Faculty Senator

SUBJECT: A Faculty Senate Distinct from the Current Membership

I have been requested by a faculty member, who is not a member of the senate, to request the following. The current Faculty Senate is in actuality a University Senate. Therefore, it is proposed that an Academic Senate, whose members shall be professorial ranked faculty and faculty research assistants who do not have formal administrative assignments. I am therefore requesting this proposal be placed on the December 5, 1996 Faculty Senate meeting for action by the Senate.

WG:bh

Introduced as New Business 12/5/96