Docket Item:

University Program Approval: Oregon State University (OSU), M.Eng/M.S./Ph.D in Bioengineering.

Summary:

OSU proposes a new degree program leading to a Master of Engineering, Master of Science and Doctor of Philosophy in Bioengineering. Higher Education Coordinating Commission (HECC) staff completed a review of the proposed program. After analysis, HECC staff recommends approval of the program as proposed.

Staff Recommendation:

The HECC recommends the adoption of the following resolution:

RESOLVED, that the Higher Education Coordinating Commission approve the following program: M.Eng/M.S./Ph.D in Bioengineering at Oregon State University, effective Fall 2016.

Oregon State University seeks the Oregon Higher Education Coordinating Commission's approval to offer an instructional program leading to a M.Eng./M.S./Ph.D. degree in Bioengineering.

1. *Describe the purpose and relationship of the proposed program to the institution's mission and strategic plan.*

   Oregon State University (OSU) is proposing a new M.Eng., M.S., Ph.D. in Bioengineering degree program. The program will be located in School of Chemical, Biological and Environmental Engineering and will include faculty and students from across the College of Engineering. Bioengineering is an interdisciplinary field that applies engineering principles and quantitative methods to the advancement of knowledge at the molecular, cellular, tissue, organ, and system levels, and to the development of new biologicals, materials, devices, and processes. The main objective of the proposed graduate programs is to provide students with training in bioengineering, including broad exposure to the discipline through coursework and seminars as well as a focused research experience.

   The proposed Bioengineering graduate program strongly aligns with OSU's Improving Human Health and Wellness signature area of distinction. In addition, it is expected that creation of this new graduate program will lead to growth of bioscience-based industries in Oregon through development of new technologies and strengthening of the bioengineering workforce. The proposed graduate program in Bioengineering also directly aligns with the final signature area of distinction, "Promoting Economic Growth and Social Progress."

2. *What evidence of need does the institution have for the program?*

   From 2001 to 2010, the US bioscience industry grew by 6.4%, despite an overall drop in private sector employment of 2.9% during the same time period. This growth is largely due to new technologies and advancements that have spawned new businesses. According to the US Bureau of Labor Statistics, employment in bioscience-based industries is projected to grow even more significantly over the next decade, at a rate much faster than average. Employment of biomedical engineers in particular is projected to grow by 27%. This growth is particularly apparent in Oregon where employment in bioscience-based industries increased by over 30% from 2001 to 2010.

   Currently, OSU graduate students interested in bioengineering must choose one of the existing engineering programs and complete courses that neither align with nor capture the multi-disciplinary nature of modern bioengineering research. In addition, the vast

preponderance of undergraduates with interest in pursuing graduate study in bioengineering (mainly from OSU but also from the Oregon Institute of Technology [Oregon Tech], Portland State University [PSU], the University of Oregon [UO], and others) must leave the state. As evidence of the strong demand for graduate training in bioengineering in the Northwest, the University of Washington's Bioengineering program receives over 300 applicants per year and can only accept about 6% of those applicants. Establishment of a graduate program in Bioengineering will provide an environment for collaborative research and training along interdisciplinary themes and will serve to attract and retain talented students in the state.

3. *Are there similar programs in the state? If so, how does the proposed program supplement, complement, or collaborate with those programs?*

   The most closely related program in Oregon is the Biomedical Engineering (BME) graduate program (M.S. and Ph.D.) at the Oregon Health & Science University (OHSU). OSU's proposed Bioengineering graduate program would complement the current BME program at OHSU while also providing more opportunities for current Oregon undergraduates (from Oregon Tech, OSU, PSU, UO, etc.) to pursue a graduate degree in Bioengineering within the state. OHSU is supportive of OSU's plans to create a new graduate program in Bioengineering and there have been several meetings with OHSU faculty about opportunities for joint research and educational activities. The College of Engineering will continue to explore these opportunities as the OSU Bioengineering program is launched and grows.

4. *What new resources will be needed initially and on a recurring basis to implement the program? How will the institution provide these resources? What efficiencies or revenue enhancements are achieved with this program, including consolidation or elimination of programs over time, if any?*

   The College of Engineering has added 41 new faculty members in the last four years, and searches for several additional faculty members are underway. These new faculty members provide the increased capacity needed to deliver the new Bioengineering graduate program. The annual cost in terms of faculty time for delivering the new Bioengineering graduate program core courses (15 credits) is estimated at about $190,000. This estimate is based on an assumed $90,000 academic year salary, 40% OPE, and a typical teaching load of about 10 credits per year. The number of faculty lines required to deliver the core is approximately 1.5.

   There will also be some cost associated with the service activities of the Bioengineering graduate program director. Assuming the director dedicates 10% of his or her time to program-related service duties over the entire year (including summer), the cost of these service activities will total approximately $17,000 (salary plus OPE). In addition, there will need to be some administrative and advising support. It is expect, for example, that the School of Chemical, Biological and Environmental Engineering operations manager will

need to devote approximately 15% of her annual effort to this program (in concert with her existing efforts already devoted to support of the existing graduate degree programs within the School). This equates to $14,000 (salary plus OPE) annually. In the first two years of the new Bioengineering graduate program, it is anticipated that promotion costs of about $18,000 per year will be needed in order to create promotional materials, build a new website for the program as well as more comprehensive efforts to promote the launch of the program (including top student recruitment and visits). The College of Engineering has committed $50,000 over the next two years to support the launching and promotion of the new Bioengineering graduate program. In the long term, the costs of program promotion and student recruitment are estimated at about $10,000 per year. This cost will be paid by the School of Chemical, Biological and Environmental Engineering.

All appropriate University committees and the Statewide Provosts Council have approved the proposed program. The Oregon State University's Board of Trustees approved the program on March 31, 2016.

Recommendation to the Commission

The Statewide Provosts Council recommends that the Oregon Higher Education Coordinating Commission authorize Oregon State University to establish an instructional program leading to a M.Eng./M.S./Ph.D. degree in Bioengineering, effective Fall 2016.

Institution: **Oregon State University**
Program: **M.Eng./M.S./Ph.D. in Bioengineering**

Action: At the May 5, 2016 meeting, the Statewide Provosts Council approved a new graduate program for Oregon State University, M.Eng/M.S./Ph.D. in Bioengineering, to move forward to the Oregon Higher Education Coordinating Commission for its review/approval. The OSU Board of Trustees approved it at their March 31, 2016 meeting.

Eastern Oregon University
Sarah Witte, provost
X Approved
__Opposed
__Abstained

Oregon State University
Sabah Randhawa, provost
X Approved
__Opposed
__Abstained

Portland State University
Sona Andrews, provost
X Approved
__Opposed
__Abstained

University of Oregon
Scott Coltrane, provost
X Approved
__Opposed
__Abstained

Oregon Health & Science University
Jenny Mladenovic, provost
X Approved
__Opposed
__Abstained

Oregon Tech
Brad Burda, provost
X Approved
__Opposed
__Abstained

Southern Oregon University
Susan Walsh, provost
X Approved
__Opposed
__Abstained

Western Oregon University
Steve Scheck, provost
X Approved
__Opposed
__Abstained