Institution: Oregon State University
College/School: College of Engineering
Department/Program: BS, Architectural Engineering

Executive Summary

The proposed BS in Architectural Engineering (ARE) degree program will provide students with breadth and depth in the engineering sciences of buildings and their systems: structural systems; heating, ventilation and air-conditioning (HVAC) systems; electrical and lighting systems; and construction engineering and management. The program will emphasize integration across architectural engineering disciplines as well as with the existing civil engineering and construction engineering programs. The proposed ARE program will allow students to specialize in a chosen discipline while gaining the knowledge and skills to become leaders in the design and construction of green, energy efficient and more complex buildings.

There is demand for architectural engineers in Oregon. A recent survey of prospective adult learners in Portland identified architectural engineering as a course of study in "high" demand. There is currently only one accredited Architectural Engineering bachelor degree granting program on the West Coast, at the California Polytechnic State University, San Luis Obispo. Geographically, the next closest Architectural Engineering programs are in Wyoming and Colorado. Mt. Hood Community College has a 2-year architectural engineering technology program that offers some courses such as Sustainable Energy Modeling and Structural Design. An ARE program at Oregon State University would fill a void in the western US. There are currently only 6 Architectural Engineering Institute (AEI) members in Oregon and just 13 AEI members in Washington State. Compared to over 350 AEI members in other states, the low numbers in Oregon and Washington highlight both a need in the region and the opportunity for OSU to help to address this need. Meanwhile, the projected job growth for architectural engineers could be as high as 20% for the period between 2012 and 2022.

The proposed curriculum was developed based on a survey of existing ARE programs, a review of existing courses and curricula in the Civil Engineering (CE) and Construction Engineering Management (CEM) programs, and comparison to ABET accreditation requirements. The proposed course of study is consistent with 4-year Architectural Engineering programs at other universities and strongly leverages existing course offerings. 29 – 37 credit hours of new Architectural Engineering (ARE) courses are anticipated and outlined. The proposed Architectural Engineering (ARE) program will be offered at the OSU-Corvallis campus. The ARE program will join Civil Engineering (CE) and Construction Engineering Management (CEM) in what is currently the School of Civil & Construction Engineering (CCE), and will utilize all existing technologies for on-campus instruction. New courses have been identified that will be developed in CCE to support the program, and the College of Engineering has agreed to fund faculty lines in support of this new degree.

The Architectural Engineering degree is intended to attract students not currently enrolling in engineering at OSU. Published studies show that architectural engineering attracts female students with strength in math and interest in art and architecture, and who might otherwise major in architecture. The literature also indicates that the sustainable design

topics in architectural engineering are attractive to women, who are statistically more likely to support environmental causes and, on average, have a lower carbon footprint than men. Data from the Pennsylvania State University and anecdotal evidence from Mt. Hood Community College demonstrate that Architectural Engineering has been known to attract greater percentages of female and underrepresented students than many other engineering disciplines. Faculty will work on an “effective recruitment pipeline” to accommodate changing demographics, with increasing numbers of women and underrepresented minorities. Faculty will also strive to provide a climate that ensures retention and graduation rates of underrepresented students and women that are on par with those of majority populations in engineering.