

A. Academic and Student Affairs Committee

Establishment of Department of Industrial and Systems EngineeringRECOMMENDED ACTION

It is the recommendation of the Dean of the College of Engineering that the Industrial Engineering Program (IE) be established as the Department of Industrial and Systems Engineering effective March 2, 2009.

BACKGROUND

Industrial Engineering in the College of Engineering has been functioning as an independent academic unit with degree granting and budget authority since 1986. IE underwent two extensive external reviews during the 2007-2008 academic year: ABET accreditation and the Graduate School Program Review. Both reviews found IE to be strong academically with the BSIE, MSIE and PhD degree programs to be solid and well run. Both reviews recommended IE be designated as a department, having already functioned in that capacity for over 20 years. The designation as a department brings IE's name in line with its mission and goals and improves the ability of IE to recruit top notch faculty and graduate students, and increase national and international visibility. The designation also dovetails with the mission and goals of both the University and the College of Engineering. There are no budget implications associated with this name change.

UW Industrial Engineering offers degrees for both undergraduates and graduates, with robust programs for B.S.I.E., M.S.I.E., and Ph.D. degrees to prepare students for successful careers in a dynamic, cutting-edge field. The department also co-sponsors a five-year academic program with the UW Business School that leads to two degrees: a Bachelor of Science in Industrial Engineering and a Master of Business Administration. IE graduates from UW are in high demand from local, state, national and international sources, at all three degree levels. Currently, IE has 8 faculty members and approximately 100 undergraduate and 45 graduate students. The department's core faculty work closely with 23 adjunct and affiliate faculty, as well as research associates and lecturers. Four staff members support IE's educational and research efforts.

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IE's undergraduate program has always been in high demand both from student enrollment and company recruitment perspectives. At present IE receives around 150 applications for the 40 seats available each year. The GPAs of its entering classes have been rising continuously. The goal of the undergraduate curriculum is to provide graduates with a broad, comprehensive IE degree. IE partnered with the IE Visiting Committee to develop an internship program that provides 100% internship availability for students. The demand for graduates from the program reflects the breadth of interests of IEs. The manufacturing sector, including large and small companies, continues to recruit and hire IE's graduates. This includes companies like Boeing, Intel, Philips and Fluke. However, an equal demand is in service industries and companies like UPS, Microsoft, T-Mobile, and Starbucks, which also hire IE's graduates. There is also a continuing demand for IE graduates in consulting firms that specialize in process improvement activities, such as Accenture. Additionally, IE graduates are beginning to be recruited for both small entrepreneurial firms and in the emerging healthcare industry.

The graduate program at UW Industrial Engineering stands 23rd among industrial engineering programs offering a doctoral degree in the 2008 *US News and World Report* rankings. IE supports an MS program, which has strong demand from both students and employers. Most financial/grant support in the form of research assistantships, teaching assistantships and fellowships goes to PhD students, and to those MS students who are continuing on for a PhD. In common with many other IE programs, the MS students are largely self-supporting. Given the nature of the discipline, many PhD graduates go on to research positions in industry. Some of IE's PhDs go into academia, either as post-docs or as new faculty members. IE graduates teach at a number of schools, and the demand for them in academia is increasing.

In the past 5 years, the IE program has made substantial strides in academic excellence. Two (of two) junior faculty were promoted to the rank of Associate Professor with tenure. A new Assistant Professor was hired from the 2nd ranked IE Department in the nation (University of Michigan). IE at UW has focused on research in the areas of Health Systems Engineering and Integrated Logistics Systems. A new associate professor has been recruited (starting September 2009). Collaborative research has expanded tremendously, with IE faculty now engaged in joint research with the Department of Radiology, Global Health, Radiation Oncology, Environmental Health and Safety, Children's Hospital, the Business School, Electrical Engineering, Technical Communication and Civil and Environmental Engineering (including a recent joint faculty hire with CEE at the Associate Professor level). In addition to continuing scholarly activities in the traditional IE areas (manufacturing, logistics, operations research and applied statistics), IE has been focusing on systems engineering. It is working in the developing area of health systems engineering and has been offering a new certificate program (originally funded by the Boeing Co.) in Global Integrated Systems Engineering.

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In addition to these new and emerging research areas, each faculty member conducts research in their own area of expertise, most commonly in collaboration with others, either within IE, the UW or with other researchers. For example, 6 of the 8 faculty members in IE currently have funded research projects that are collaborative with academic researchers at other institutions. Of the other 2 faculty members, both have submitted collaborative proposals with academic researchers from other institutions or from other departments within the UW. Primary areas of individual research strength include optimization, virtual reality, multivariate quality control, reliability and robust design, humanitarian relief chains, and mass customization/ship production.

Funded research is underway in most of these areas.

IE faculty have received many honors including: 2 Presidential Young Investigator/Career Awards, 1 Research Initiation Award from the National Science Foundation, 1 Academic Engineer of the Year (Puget Sound) Award, 3 Fellows of Major Engineering Societies, and numerous best paper awards. There are 4 full Professors and each one is an internationally recognized expert in their area of specialty. The junior faculty members are developing similar reputations in the areas of multivariate data analysis, humanitarian relief chains, transportation cognition and safety, and optimization of complex systems.

According to the Department of Labor Statistics: “The broad and diverse skills of industrial engineers make them a prime source of management talent..... Industrial engineers are expected to have employment growth of 20 percent over the projections decade, faster than the average for all occupations. As firms look for new ways to reduce costs and raise productivity, they increasingly will turn to industrial engineers to develop more efficient processes and reduce costs, delays, and waste.”

The field of industrial engineering is growing rapidly. The local entrepreneurial culture combined with Seattle’s location on the Pacific Rim, makes UW IE uniquely poised to continue taking advantage of global initiatives and opportunities. If the proposed name change is granted, the Department of Industrial and Systems Engineering at the University of Washington would be the only independent industrial engineering department in the Pacific Northwest.