

AGENDA

ACADEMIC AFFAIRS COMMITTEE

UNIVERSITY OF SOUTHERN INDIANA BOARD OF TRUSTEES

September 3, 2015

1. REPORT ON DEGREEWORKS

Ms. Sandy Frank, registrar, will discuss the University's online, comprehensive academic advising, program planning, and degree audit system in a presentation entitled, "DegreeWorks: Helping Students Persist, Progress, and Graduate."

2. APPROVAL OF NEW DEGREE PROGRAM: BACHELOR OF SCIENCE IN MANUFACTURING ENGINEERING

Approval of a recommendation to the Board of Trustees to approve the degree program in Attachment A is recommended.

The Pott College of Science, Engineering, and Education proposes to offer a Bachelor of Science in Manufacturing Engineering degree. A complete abstract describing the program is in Attachment A. The implementation date is fall 2016.

The Pott College of Science, Engineering, and Education plans to offer the Bachelor of Science in Manufacturing Engineering on campus only. This program is a logical extension and fit for the current Bachelor of Science in Engineering program being offered since 2002 by the Department of Engineering. The program will allow University of Southern Indiana engineering students to specialize in manufacturing engineering. In addition, this proposed program directly supports the University's mission by enabling students to engage in learning, to advance in education and knowledge, and to enhance civic and cultural awareness. Through the program, students will develop the knowledge, skills, attitudes, and critical thinking necessary to become successful manufacturing engineers. This program will respond to Indiana's need for a manufacturing engineering program and will be only one of approximately 19 manufacturing engineering programs in the United States and the only program in Indiana.

Reaching Higher, Achieving More's goal of a "workforce-aligned" higher education system will be addressed by the proposed Bachelor of Science in Manufacturing Engineering degree program. The goal of this proposed program is to deliver an educational program of study that prepares graduates who are fully qualified for entry-level positions in the professional sector of the manufacturing engineering career field, whether private industry, consulting, or governmental agencies. The program graduates will be capable of completing the requirements for registration as professional engineers in Indiana and other states. Obtaining a professional degree results in an increase of \$510 in median weekly salary over obtaining a bachelor's degree alone, while also having a three percent lower unemployment rate (*Reaching Higher 6*). Additionally, the proposed program will enhance Indiana's economic competitiveness by helping to produce a higher-trained workforce with greater spending power. Secondly, this program also will address the "mission-driven" goal of *Reaching Higher, Achieving More* by implementing Indiana's first bachelor's degree in manufacturing engineering and providing students in southwest Indiana with an opportunity to obtain a discipline specific engineering degree.

The proposed program is comprised of 128 credit hours for calculus-ready students. It is recommended by the dean of the Pott College of Science, Engineering, and Education and has been approved by the University Curriculum Committee, the Faculty Senate, the Academic Planning Council, the provost, and the president.

3. APPROVAL OF NEW DEGREE PROGRAM: BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Approval of a recommendation to the Board of Trustees to approve the degree program in Attachment B is recommended.

The Pott College of Science, Engineering, and Education proposes to offer a Bachelor of Science in Mechanical Engineering (BSME) degree. A complete abstract describing the program is in Attachment B. The implementation date is fall 2016.

The Pott College of Science, Engineering, and Education plans to offer the Bachelor of Science in Mechanical Engineering on campus only. Since USI began offering the Bachelor of Science in Engineering program, there has been a growing demand from engineering students and prospective engineering students for a named degree in mechanical engineering; and employers are often looking for graduates with a Bachelor of Science in Mechanical Engineering. The addition of this proposed program would ensure students complete a rigorous curriculum including mechanical science and engineering design courses, and provide graduates with the formal recognition of this accomplishment on a diploma and transcript. A move to this degree program will be consistent with both the vision statement, "shaping the future through learning and innovation," and the mission statement, "USI is an engaged learning community advancing education and knowledge, enhancing civic and cultural awareness, and fostering partnerships through comprehensive outreach programs. We prepare individuals to live wisely in a diverse and global community." Because a Bachelor of Science in Mechanical Engineering is universally recognized as a standard engineering degree, such a degree at the University of Southern Indiana will be consistent with "advancing education" and also better prepare our students for the "global community," where such a degree is highly regarded.

The proposed program is comprised of 128 credit hours for calculus-ready students. It is recommended by the dean of the Pott College of Science, Engineering, and Education and has been approved by the University Curriculum Committee, the Faculty Senate, the Academic Planning Council, the provost, and the president.

ABSTRACT

Bachelor of Science in Manufacturing Engineering To be offered on-campus by the University of Southern Indiana, Evansville, Indiana

Consistency with Institution's Mission:

The proposed Bachelor of Science in Manufacturing Engineering program directly supports the University of Southern Indiana's mission by enabling students to engage in learning, advance in education and knowledge, and enhance civic and cultural awareness. Through the program, students will develop the knowledge, skills, attitudes, and critical thinking necessary to become successful manufacturing engineers. This program will respond to Indiana's need for a manufacturing engineering degree program.

Relation to Institution's Strategic and/or Academic Plan:

The proposed Bachelor of Science in Manufacturing Engineering degree program supports the strategic goals of the University's strategic plan to enhance experiential learning, increase the graduation rate, and increase diversity. These goals are addressed below:

Enhance Experiential Learning

The Bachelor of Science in Manufacturing Engineering degree program offers students hands-on experiences within each project and laboratory class, opportunities to participate in co-operative education and internships, and student organizations that participate in national engineering competitions.

Increased Graduation Rate

The manufacturing engineering degree program will help the University further its goal to improve recruitment and retention because it will be a discipline specific engineering degree that is better understood and known than the general engineering program. In addition, the program will be only one of approximately 19 manufacturing engineering programs in the United States and the only program in Indiana.

Increased Diversity

According to American Society of Engineering Education Publication "Engineering by the Numbers," 29.1 percent of graduates in manufacturing/industrial/systems engineering programs are women (Yoder, 2013). The addition of the Bachelor of Science in Manufacturing Engineering degree program will increase the University of Southern Indiana's number of female graduates in a STEM field.

Curriculum:

The proposed program is comprised of 128 credit hours for calculus-ready students.

Employment Possibilities:

A search on Engineerjobs.com shows that 8,293 jobs available in the United States are categorized as manufacturing engineering (as of August 6, 2015). Approximately 25 percent of those jobs are located in Indiana or its neighboring states. Within Indiana, Illinois, and Kentucky are 869 of those jobs, and in Indiana alone, there are currently 390 manufacturing engineering jobs available.

In addition, the Bureau of Labor Statistics indicates a 4.5 percent growth in manufacturing engineering from 2012 to 2022. While overall growth is expected to be 4.5 percent, there are industries that have growth as high as 39.5 percent. Indiana's Department of Workforce Development website projects that growth will be 6.5 percent for the state.

Lastly, a study by the Congressional Research Service, "The U.S. Science and Engineering Workforce: Recent, Current, and Projected Employment, Wages, and Unemployment," dated February 19, 2014, estimates the U.S. annual average number of job openings (job growth plus net replacements) for industrial (includes manufacturing) engineers will be 7,540 between 2012 and 2022.

ABSTRACT

Bachelor of Science in Mechanical Engineering

To be offered on-campus by the University of Southern Indiana, Evansville, Indiana

Consistency with Institution's Mission:

A move to the Bachelor of Science in Mechanical Engineering degree program will be consistent with both the vision statement, "shaping the future through learning and innovation," and the mission statement, "USI is an engaged learning community advancing education and knowledge, enhancing civic and cultural awareness, and fostering partnerships through comprehensive outreach programs. We prepare individuals to live wisely in a diverse and global community." Because a Bachelor of Science in Mechanical Engineering is universally recognized as a standard engineering degree, such a degree at the University of Southern Indiana will be consistent with advancing education and also better prepare our students for the global community, where such a degree is highly regarded.

Relation to Institution's Strategic and/or Academic Plan:

The proposed Bachelor of Science in Mechanical Engineering program supports the strategic goals of the University's strategic plan to provide leadership to Indiana and the region and to enhance experiential learning opportunities. These goals are addressed below:

Provide Leadership to Indiana and the Region

One of the key strategies supporting this goal is to "elevate our visibility to a level more appropriate to the University's accomplishments and impact on higher education and on the economy." The Bachelor of Science in Mechanical Engineering is the most common engineering degree in the United States. Thus, having the institution offer a Bachelor of Science in Mechanical Engineering degree program will noticeably elevate our visibility commensurate with the accomplishments of our graduates successfully completing such a degree.

Enhance Experiential Learning Opportunities

A key strategy supporting this goal is to increase internships and co-operatives. It is anticipated that internships and co-operatives will be more readily available to University of Southern Indiana students pursuing the familiar Bachelor of Science in Mechanical Engineering degree. Active student chapters of The American Society of Mechanical Engineers (ASME) and the Society of Automotive Engineers (SAE) are already in place at the University and provide numerous experiential learning opportunities through, for example, the "Human Powered Vehicle" and "Baja SAE" competitions. Experiential learning is built into the proposed program's curriculum in the sense that many of the required courses will have a hands-on-laboratory. Further, one of the new required courses in the curriculum will be a course in manufacturing. This course will give our students the opportunity to use much of the cutting edge equipment in the new Applied Engineering Center, thus increasing their experiential learning.

Curriculum:

The proposed program is comprised of 128 credit hours for calculus-ready students.

Employment Possibilities:

The Bureau of Labor and Statistics indicates a five percent growth in mechanical engineering positions nationally. This translates to over 11,000 jobs in a ten-year span from 2012 to 2022. Indiana is poised to capture many of these jobs. Indiana has the seventh highest availability of mechanical engineering jobs in the United States. These jobs range from manufacturing and design of automotive and aerospace parts to scientific research and development services. Indiana also has the third highest percentage of engineering positions for every 1,000 jobs available. Lastly, the demand for mechanical engineers in this region of Indiana (EGR11) is growing at over double the rate when compared to the state of Indiana as a whole.