

BACKGROUND AND REQUEST

WRIGHT STATE UNIVERSITY

Master of Engineering Innovation and Entrepreneurship

EXECUTIVE SUMMARY/RECOMMENDATION

This program clearly meets the Chancellor's standards for graduate degree programs. The Regents' Advisory Committee on Graduate Study voted unanimous approval for the new master's program. No serious concerns were raised in the review.

Request: Wright State University's College of Engineering and Computer Science (CECS) and the Raj Soin College of Business (RSCOB) seek approval for a Master of Engineering Innovation and Entrepreneurship degree.

Program Purpose/Mission: In order to maintain economic leadership in the face of increasing globalization, the United States must concentrate on fostering innovation and entrepreneurial activities. As the global economy has blossomed, corporations have been able to leverage the equally effective human capital of previously untapped nations to increase productivity, dramatically reduce costs, and improve their bottom line. The breakneck pace of technological advance makes it imperative that Ohio's labor force is equipped with both the technical and engineering skills needed to foster the innovation of "the next big thing," and the entrepreneurial and business knowledge that is necessary to guide innovation and speed its diffusion throughout the market.

The proposed program fulfills a need in Ohio and the U.S. to enhance economic development through innovation and entrepreneurship. Exploring effective means to teach entrepreneurship to engineering students has been receiving increasing attention recently. The proposed program aims to fulfill this need and help generate a pool of graduates with a blend of technical expertise in areas of emerging needs and a keen understanding of the business environment to contribute to the U.S. economy. Graduates from the program will be prepared to work for corporations and entrepreneurial firms in the knowledge economy with capabilities to be innovative and successful either as entrepreneurs starting new companies, or as entrepreneurs generating and managing new technical business opportunities within existing corporations.

The proposed Master of Engineering Innovation and Entrepreneurship program prepares students for innovation and entrepreneurship/intrapreneurship through seven key goals:

1. To expose participants to entrepreneurship concepts from both a business and engineering perspective: This goal is achieved through a combination of core classes and specific technical tracks.
2. To emphasize problem solving and creative thinking: This goal is achieved through specific core classes such as technology-based ventures, marketing strategy,

- management for creativity and innovation, systems engineering and analysis, and courses from technical tracks.
3. To provide first-hand experience in generating a business plan: The technology-based ventures class as well as a required team project with a sponsor will provide the foundation and sharpen the students' skill in business plan generation.
 4. To provide participants practical industry experience from concept development in preparation for market introduction: A required team project with a sponsor is an integral part of the program which focuses on achieving this goal.
 5. To expose students to multiple engineering and business disciplines, and to work in diverse, multi-cultural teams: In addition to smaller term projects in specific courses, a quarter-long team project will be geared towards achieving this goal.
 6. To provide participants the opportunity to interact with, and learn from, Dayton area high tech entrepreneurs: A required course for the students is a seminar on entrepreneurship and innovation, where guest lecturers will provide insight on entrepreneurship and innovation.
 7. To produce graduates who have the technical expertise and the keen understanding of the business environment needed to succeed in entrepreneurial activities: This goal will be achieved through the core classes, technical tracks and the team project.

Enrollments: The students targeted for this program typically will have a bachelor's degree in Engineering, Mathematics or Physics. Students with a bachelor's degree in Management Information Systems or a related business discipline can only be admitted to the program in the data management and analysis track. A candidate must have an undergraduate GPA of 2.7 or higher, and a GPA of 3.0 or higher for the last half of undergraduate credit hours. The students preferably will have two or more years of experience in professional practice. International students must meet the School of Graduate Studies minimum score in TOEFL/TSE. Anticipated enrollment is about 15 students per year, not on a cohort basis, in the first couple of years, growing to about 30 new students per year within five years of the program offering. Wright State University anticipates that 50% of the applications to this proposed new program will come from current WSU students, 20% from the work force in the Dayton area, and 30% from international students.

Curriculum: The proposed curriculum is comprised of 50 total credit hours. These credit hours are made up of seven 4-credit hour classes as core classes, a sequence of four 4-credit classes in a technical track, 1 five-hour team project with a company or an on-campus organization such as DaytaOhio, the Center for Global Business Education and Research, or Center for Innovation Management, and a one-hour seminar class.

Faculty, Facilities and Resources: Current faculty members from CECS and RSCOB have the expertise to teach all of the courses outlined in the curriculum. Most of the core classes and the elective courses are existing courses offered at Wright State University. The faculty members bring extensive experience in technology ventures, entrepreneurship, business planning, economics of innovation, technology transfer, and intellectual property management from both the academic and the business perspective. Two additional faculty (one within each college) are planned to be added to support this degree program within the next few years in time to support the anticipated enrollment growth.

The existing infrastructure including the computing labs and library resources are sufficient to handle the demands of the proposed new degree program.

Evidence of Need: Ohio lags the nation in the level and growth of high tech employment; moreover, since 2001 the gap has widened. In a recent special issue on “How to Build Creative Companies,” *Business Week* stressed the significance of reducing the product development cycle if U.S. companies are to remain leaders in innovation (Nussbaum, 2005). Unfortunately, in Ohio our educational offerings are not able to seamlessly combine the technical and business skills in a way that would accelerate innovation. This is particularly troublesome since Ohio’s overall employment and share of “high tech occupations” has been shrinking (Austrian & Taylor, 2007). In Ohio, engineering and business programs have been largely separated, producing on the one hand engineers with the technical expertise to design high quality products, and on the other hand, business leaders who can spot market opportunities and have the training to exploit them. We are not producing enough educated individuals who have both technical expertise and a keen understanding of the business environment.

Ohio still has considerable assets in the architecture and engineering and computer occupations, but to protect and grow these assets, it will require the creation of more dynamic firms and industries. Developing graduate programs in technological entrepreneurship and industrial innovation is a powerful tool to help stem the tide and reverse the condition of long term economic decline. The proposed Master of Engineering Innovation and Entrepreneurship degree program at Wright State University is well positioned to help address this need.

There is increasing interest in entrepreneurship programs nationally. This includes new degree and certificate programs related to entrepreneurship at various premier universities such as Stanford University, the University of Illinois, Cornell University and Duke University. While the need to infuse entrepreneurship and business studies into graduate engineering programs is becoming widely recognized as necessary to more fully capitalize on innovation opportunities from research (COGS, 2007), there does not exist a graduate degree program in innovation and entrepreneurship at any of the state universities within Ohio. Case Western Reserve University has a degree program in engineering and management offered jointly by the Case School of Engineering and the Weatherhead School of Management which shares the aim of producing business-savvy engineers. However, the Case Western curriculum has less of an innovation/entrepreneurship flavor than the proposed degree program at WSU, and is somewhat tightly coupled to students with interests in biomedical sciences/engineering.

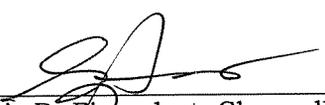
Sixteen different organizations provided Industrial letters of support for the proposed program, including Dell, General Motors Corporation, CSC, and Machine Products Corporation to name a few. Mr. Robert Appenzeller, President of Machine Products Corporation said, “With the coming developments at Wright Patterson Air Force Base, this program will help to produce graduates who can fill not only the jobs on the base, but the jobs with base contractors and in other evolving industries.” Mr. Randy Phillips, a senior executive of CSC wrote, “Program

graduates will be prepared to take their place in existing or evolving industries and will equip many to create their own new businesses. The result, new jobs and economic growth for the Dayton region and all of Ohio.”

With such strong endorsement from industrial leaders in the Dayton area and beyond, the employment opportunities for graduates from this program are strong.

End of Comment Period: March 2, 2009

No Comments Received, Recommend Approval

Approved	
	4/13/09
Eric D. Fingerhut, Chancellor	Date

mlc