BACKGROUND AND REQUEST

University of Dayton

Recommendation

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

Request: The University of Dayton's School of Engineering, in cooperation with the College of Arts and Sciences, seeks approval for a new Master of Science degree in Bioengineering.

Program Background and Purpose: The proposed Master of Science in Bioengineering degree program is designed to accommodate students with undergraduate degrees in a wide variety of disciplines, including engineering, the life/physical/natural sciences, and computer science, and will be highly interdisciplinary and inclusive of several emphasis areas including Biomaterials, Biomechanics, Biosystems Engineering, Bioengineering Instrumentation, and Bioprocess Engineering. The proposed MS program in Bioengineering program is a curricular outgrowth of the University's strategic efforts to integrate its well-established physical science and engineering expertise with its rapidly-growing biological and bioengineering research capabilities. The intent is to leverage and strengthen collaborative activities in both academics and scholarship across the University of Dayton's campus in the dynamic areas that lie at the intersection of bioscience and engineering. The proposed MS in Bioengineering program will educate students with engineering or science-related backgrounds by incorporating coursework as well as conceptual and technical approaches from both the engineering and science arenas. The proposed program will provide an educational basis to allow the students to either continue in academia in pursuit of a doctoral degree or enter into industry.

Enrollments: The projected enrollment is ten for the starting class, with a total steady state enrollment of 30 students. The University of Dayton expects these students to be primarily part-time and live and work within the local region. To accommodate these part-time students, many of the courses, including all of the core classes, will be offered in the evening.

Curriculum: The proposed program is a 30 semester-hour program, with a core 12 semester hours requirement; 12 semester-hours of specialized advanced study in a selected emphasis area; and 6 semester-hours of thesis or a special capstone project plus one additional 3-hour elective course. The coursework includes both lecture and laboratory components. The core requirements are designed to prepare both engineering and science undergraduates for advanced work in bioengineering. Students advance through the balance of the curriculum according to an individualized program of study.

Faculty, Facilities and Resources: The proposed program will utilize current and newly hired faculty, phasing in the emphasis areas. One additional tenure-track faculty member within the School of Engineering will be required to deliver the program, and the University has committed funding for this

position. The program will be administratively positioned within the Chemical and Materials Engineering Department of the School of Engineering. Several academic and research laboratory facilities, including the Nanoscale Engineering, Science and Technology (NEST) facilities and the labs of the Tissue Regeneration & ENgineering at Dayton (TREND) Center will support the program. As the program grows, the University of Dayton expects to invest in additional laboratory space and equipment to meet the needs of the program and associated faculty research. No special library resources will be needed to support the proposed program.

Evidence of Need: Broad evidence of need for this program is reflected in the fact that BioOhio, a non-profit organization that helps develop and promote bioscience industry, research and education in Ohio, stated in its *2007-08 Ohio Bioscience Growth* Report, that "In the past year Ohio has emerged as one of the leading bioscience states in the nation." BioOhio based this on a comprehensive assessment "Biotech Strength" conducted by *Business Facility Magazine* that measured over 20 criteria and ranked Ohio as fourth in the nation. BioOhio suggests that bioscience and bioengineering will continue to be critical to Ohio's further economic development as evidenced by the facts that 1) between 2002 and 2008, over half of the $873 million of Ohio Third Frontier projects awarded supported bioscience-related initiatives and 2) Governor Strickland's 2008 jobs stimulus package identified Ohio's biomedical industry as one of four growth industry clusters designated for $100,000 million in funding; another $50 million is earmarked for bioproducts industry incentives. Locally within the Dayton area, recent Base Realignment and Closure (BRAC) legislation will bring over 1,200 positions to Wright Patterson Airforce Base by 2011 (and likely more to the Dayton area by private contractors); many of these are expected to be in the health and biomedical-related training and R & D fields. The Occupational Handbook, 2008-09 Edition, published by the U.S. Bureau of Labor Statistics (BLS) indicates that biomedical engineers (the broad BLS classification that would encompass UD's graduates) are expected to have 21 percent employment growth over the 2006-12 projections decade, which places the field within the top tier with respect to projected growth potential. The BLS further states that within this field, "unlike many other engineering specialties, a graduate degree is recommended or required for many entry-level jobs."

An on-line survey of the UD alumni with undergraduate degrees in engineering and science was conducted by the University of Dayton Business Research Group in April 2009 to gauge the interest for earning a Master of Science in Bioengineering degree, and similarly, an on-line survey was conducted by the University of Dayton Business Research Group in May 2009 which demonstrated high interest

among current UD undergraduate junior and senior science and engineering students in the proposed program. The results of both surveys suggest that the proposed program will have little difficulty recruiting and targeting markets that would include both engineers and scientists already employed in the field (primarily as part-time students) and seniors graduating from engineering and science programs across the Midwest, including the University of Dayton.

End of Comment Period: January 6, 2010
No Comments Received: Recommend Approval

Approved	
Eric D. Fingerhut, Chancellor	Date 1/13/10

mlc