PROPOSAL

GRADUATE CERTIFICATE IN BIOTECHNOLOGY

DEPARTMENT OF BIOLOGICAL SCIENCES

SCHOOL OF ENGINEERING, MATHEMATICS, AND SCIENCE

TO BE OFFERED AT

PURDUE UNIVERSITY CALUMET

Proposal Received in the Graduate School
October 2008
Title: Biotechnology Certificate Program

Level of Certificate: Graduate
Proposal date of initiation: Spring 2009

I. Overview

This is a proposal by the Department of Biological Sciences for a graduate level, academic credit certificate in Biotechnology. Biotechnology is among the fastest growing areas in biology and the demand for trained professionals in this area is increasing significantly both nationally and internationally. Biotechnology plays critical roles in many areas such as manufacturing pharmaceuticals, biomaterials, and agents for gene and cell therapies. Biotechnology has also permeated the areas of food processing and agricultural production. In addition, with the continued impact of the human population on the Earth’s environment, biotechnology will be crucial for bioremediation and environmental clean-up of polluted air, water and soil.

In response to the need in this field, the Department of Biological Sciences has long been offering a series of courses related to biotechnology such as molecular biology, recombinant DNA techniques, human cytogenetics genetics technology, and environmental microbiology for our M.S. degree students. Furthermore, interested students may received additional hands-on experiences by working with faculty members on such research projects as functional and structural genomics, protein biochemistry, and cell biology.

II. Statement of purpose of the program

The Graduate Certificate in Biotechnology will be offered to students with a bachelor’s degree who wish to obtain advanced training in areas of biology that pertain to biotechnology without necessarily earning a master’s degree. Students who enter this program may have a variety of interests, including biochemistry, bioengineering, microbiology, molecular biology, cell biology, developmental biology, or molecular evolution. Students who are enrolled in the M.S. degree program are eligible for receiving the Certificate upon request and completion of the course work. It is expected that 5-10 students will initially be enrolled in this program, and over half of the students may come from those who are concurrently working on a graduate degree.

The required coursework will provide an overview of the field of biotechnology and opportunities to learn related scientific concepts and skills. Individuals completing this program will be prepared to for employment in the biotechnology industry and/or advanced graduate study.
II. Admission Requirements

The admission process for the Biotechnology Certificate Program will be equivalent to that for students seeking a Master’s Degree in Biology.

a. Admissions for new students:

1. Baccalaureate degree in science, engineering or related fields, from an accredited institution.
2. Successful completion of undergraduate courses in cell biology, genetics, organic chemistry, physics, and calculus.
3. A statement of career and education goals
4. Minimum English proficiency for applicants whose native language is not English, with the possibility of allowing exceptions, including substitution of alternate criteria. TOEFL Paper based 550, Computer based 213, Internet based: 77, with minimum scores as follows; Reading 19, Listening 14, Speaking 18, Writing 18); IETLS overall band score of 6.5.

b. Admissions for current graduate students:

Students who are currently admitted to a graduate degree program are eligible to earn the Certificate. These include graduate students in Biology or other fields as long as they meet the same requirements as stated in IIa above.

III. Completion Requirements:

Required courses (6 credits):

BIOL 507 Molecular Biology (3)
BIOL 508 Recombinant DNA Techniques (3)

Elective courses (a minimum of 10 credits):

BIOL 595 Food Microbiology (4)
BIOL 595 Environmental Microbiology (3)
BIOL 595 Medical Genetics (3)
BIOL 595 Human Cytogenetics Technology (40)
BIOL 566 Developmental Biology (4)
BIOL 525 Neurobiology (4)
BIOL 561 Immunology (3)
BIOL 595 Research (variable credits)
BIOL 595 Virtual Reality in Biomedicine (Training of virtual reality based pharmaceutical lab procedures). Several lab modules are currently being developed. The new course will be offered in the summer or fall of 2009.
GPA Requirements for Progression:

Students must maintain a GPA of 3.0 and a B in all courses required for the certificate.

Maximum number of credits that can be transferred from another institution:

Up to 6 credits of approved courses, taken within the last 3 years, may be transferred for the certificate program.

Maximum number of credits taken as an undergraduate student at Purdue University Calumet may be used for certificate:

Up to 6 credits of approved courses beyond the requirements for the baccalaureate degree, within previous 3 years, may be used for the certificate.

Maximum time to complete certificate:

Students must complete all required courses within three years of admission.