



UMBC biotechnology graduate programs are designed for professionals and individuals interested in pursuing a career in the biotechnology field. Combining graduate courses in life sciences with management and business courses, the Master in Professional Studies: Biotechnology is ideal for individuals interested in pursuing management opportunities within the biotechnology industry. Our graduate certificate programs provide students with practical skills that can be immediately applied on the job.

All courses are taught by experts in the fields of biotechnology and business, with oversight from an industry-led advisory board. Courses are offered in the evening to accommodate working professionals.

**Our offerings include:**

**Master in Professional Studies (M.P.S.):  
BIOTECHNOLOGY (30 Credits)**

The M.P.S.: Biotechnology curriculum includes graduate coursework in the life sciences, along with courses in regulatory affairs, leadership, project management, legal and ethical issues and financial management in a life science-oriented business. This program is ideal for individuals interested in pursuing career opportunities in science management or regulatory affairs in the biotechnology industry.

**Post-Baccalaureate Certificate:  
BIOTECHNOLOGY MANAGEMENT (12 Credits)**

This four-course graduate certificate provides a foundation in the management and business practices essential to employment in the business of biotechnology.

**Post-Baccalaureate Certificate:  
BIOCHEMICAL REGULATORY ENGINEERING  
(12 Credits)**

The graduate certificate in biochemical regulatory engineering provides in-depth exposure to key areas associated with bringing a biological product to market under the FDA approval process. This 12 credit program consists of four courses focusing on regulatory issues, compliance issues associated with Good Manufacturing Practices (GMP), quality control and quality assurance and facilities considerations for complying with GMP.

## ADMISSION REQUIREMENTS

### For M.P.S:

- Bachelor's degree in biological sciences, biochemistry, chemistry, chemical/biochemical engineering or a bachelor's degree in another field that includes sufficient credits from relevant courses in the life sciences
- Minimum grade point average of 3.0 (on a 4.0 scale)
- Two semesters of general chemistry and two semesters of organic chemistry

### For Graduate Certificates:

- Biotechnology Management: a bachelor's degree in any field
- Biochemical Regulatory Engineering: a bachelor's degree in science or relevant field
- Minimum grade point average of 3.0 (on a 4.0 scale)

### For International Students:

- TOEFL Scores: Minimum scores of 600 (PBT), 250 (CBT), 100 (IBT)
- Scores must be less than 2 years old
- IELTS Score: Minimum score of 7.5 required
- GRE scores are required unless your undergraduate degree was earned at an accredited U.S. university.
- The combined score of the Verbal Reasoning and Quantitative components must be at least 306, with the Verbal Reasoning score being at least 153. Also, the Analytical Writing score should be at least 4.5

## COSTS

### Maryland Resident

Tuition per credit: \$585 (plus mandatory fees)\*

### Non-Resident

Tuition per credit: \$968 (plus mandatory fees)\*

*This program does not offer merit-based financial aid. For more information on tuition and fees, please visit: [www.umbc.edu/sbs](http://www.umbc.edu/sbs).*

*\*For Academic Year 2015/2016*

## Master in Professional Studies (M.P.S.): BIOTECHNOLOGY (30 Credits)

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### Degree Requirements\*

#### Life Science Courses\* (15 credits)

- BTEC 650: Applied Biochemistry
- BTEC 651: Molecular and Cell Biology
- BTEC 652: Molecular Biotechnology
- BTEC 653: Applied Bioprocess Engineering
- BTEC 654: Emerging Topics in Biotechnology

*\* These courses must be taken in the above sequence starting in the fall semester of each academic year.*

#### Core Management Courses (12 credits)

- BTEC 660: Regulatory Issues in Biotechnology
- BTEC 670: Legal and Ethical Issues in the Science Profession
- BTEC 680: Financial Management
- BTEC 665: Management, Leadership and Communication

#### Program Electives (3 credits)

##### Choose one from the following:

- BTEC 662: Good Manufacturing Practices for Bioprocesses
- BTEC 685: Project Management Fundamentals
- BTEC 690: Innovation and Technology Entrepreneurship

*\*The first three management courses must be taken in the above sequence starting in the fall semester; the fourth core management course and the elective are taken in the order determined by the semester in which the elective is taken.*

## Post-Baccalaureate Certificate: BIOTECHNOLOGY MANAGEMENT (12 Credits)

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- BTEC 665: Management, Leadership and Communication
- BTEC 670: Legal and Ethical Issues in the Science Professionals
- BTEC 680: Financial Management
- BTEC 685: Project Management Fundamentals

All credits earned in this graduate certificate may be applied to the Master in Professional Studies (M.P.S.): Biotechnology degree.

## Post-Baccalaureate Certificate: BIOCHEMICAL REGULATORY ENGINEERING (12 Credits)

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- ENCH 660: Regulatory Issues in Biotechnology
- ENCH 662: Good Manufacturing Practices for Bioprocesses
- ENCH 664: Quality Control & Quality Assurance for Biotechnology Products
- ENCH 666: Design, Construction and Validation of GMP Biotechnology Facilities

## INTERNATIONAL STUDENTS

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The M.P.S. Biotechnology program can accommodate the full-time course load required for international students. To maintain the course load requirements, international students must take 9 credits (3 courses) per semester except for the summer semester. This will result in 4 additional elective classes over the course of the degree program. The electives and core management courses may be customized to fit a particular professional development need.

*All students are required to start in the fall semester. Exceptions can be made for special circumstances.*

## PROFESSIONAL EXPERIENCE PROGRAM (PEP) OPTION

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Students interested in acquiring professional experience by working as an apprentice with a company operating in a specific area of biotechnology may apply to the PEP. The option to earn academic credit is available.

## FACULTY & CURRICULUM

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UMBC's Biotechnology graduate program and its strong academic programs in the life sciences are led by a distinguished faculty of nearly fifty members spanning the Departments of: Biological Sciences; Chemistry and Biochemistry; Chemical, Biochemical and Environmental Engineering.

## WHY BIOTECHNOLOGY?

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The biotechnology sector continues to be one of the fastest growing economic sectors in the U.S. creating new opportunities within the four primary sub sectors:

- Agricultural feedstock and chemicals
- Drugs and pharmaceuticals
- Medical devices and equipment and research
- Testing and medical laboratories

## WHY UMBC?

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- The excellent academic and research expertise in the biosciences provides the foundation for the M.P.S. Biotechnology programs and certificate programs in biotechnology management and biochemical regulatory engineering.
- For six years running (2009-2014), UMBC was ranked #1 in the U.S. News and World Report's list of "national up-and-coming" universities.

## FOR MORE DETAILS

### For Program Information:

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### For Application Information:

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