Biotechnology

Department of Biology
Worcester State University offers a program in biotechnology to meet the need for skilled laboratory associates in the experimental laboratory and in manufacturing facilities of the biotechnology industry. Biotechnology graduates are trained in tissue culture, molecular biology, protein purification, analytical chemistry, and regulatory affairs and are eligible for internships. In addition, students may opt for a major in biotechnology with a concentration in pre-medicine.

Graduates are qualified for careers in research and development, quality assurance, quality control, and manufacturing as well as for further (graduate) education.

The Biotechnology major is sponsored jointly by the departments of Biology and Chemistry.

- Biotechnology
- Combined BS/MS Program in Biotechnology
- Honors Program in Biotechnology
- Major in Biotechnology and prerequisites for the Accelerated Pharmacy Program with Massachusetts College of Pharmacy and Health Science University
- Major in Biotechnology, Concentration in Bioinformatics
- Major in Biotechnology, Concentration in Pre-Medicine

Faculty
Roger S. Greenwell, Co-Coordinator of the Biotechnology Program, Associate Professor (2014), B.S. Western Kentucky University; Ph.D. University of Wisconsin-Madison

Susan Mitroka, Co-Coordinator of the Biotechnology Program, Associate Professor (2013), B.A. Rutgers University; Ph.D. Virginia Polytechnic Institute and State University

Jeffry C. Nichols, Department Chair, Associate Professor (2006), B.A. Texas Tech University; Ph.D. Rice University

Maura Pavao, Professor (2001), B.S. Worcester Polytechnic Institute; M.S., Ph.D. Rutgers University

Courses
BT-101 Introduction to Forensic Sciences
LASC Categories: NSP, HBS, LAB
Survey of forensic case studies and the laboratory techniques used to solve crimes including microscopy, chromatography, ballistics and DNA analysis.
Every year. 4 Credits

BT-240 Research Experience for Undergraduates
Lab and/or field based research on a specific research topic under the supervision of a faculty member.
1-6 Credits

BT-375 Tissue Culture
LASC Categories: NLL
Prerequisites: BI-204 and CH-210.
A review of the methods of animal and plant tissue culture. Media preparation, aseptic techniques and cell culture technology. Three lecture hours and three laboratory hours per week.
Spring only and every year. 4 Credits

BT-376 Biotechnology
LASC Categories: NLL
Prerequisites: CH-120, CH-121, BI-141 and BI-204.
Principles, applications of recombinant DNA (molecular/microbial aspects). The Biotechnology industry including bioreactor manufacturing standards and government rules. Three lecture hours and three laboratory hours per week.
Fall and Spring and every year. 4 Credits

BT-377 Fermentation Technology
LASC Categories: NLL
Prerequisites: BI-141 and BI-204.
Explores the application of biological and engineering principles involved in manufacturing pharmaceutical products.
Every 2-3 years. 4 Credits

BT-378 Bioinformatics
LASC Categories: NLL
Prerequisites: BI-141 and BI-203.
Provides an overview of Bioinformatics including database structure, genomics, computational biology and proteomics. Three lecture hours and three laboratory hours per week.
4 Credits

BT-408 Directed Study: Biotechnology
Directed study offers students, who because of unusual circumstances may be unable to register for a course when offered, the opportunity to complete an existing course with an established syllabus under the direction and with agreement from a faculty member.
3 Credits

BT-410 Biotechnology Seminar
LASC Categories: CAP
Up-to-date developments in Biotechnology; reparation and presentation of technical literature. Students will study new techniques and procedures used by the industry.
1-4 Credits

BT-440 Advanced Research Experience
Advanced lab and/or field based research on a specific research topic under the supervision of a faculty member.
1-6 Credits

BT-450 Internship in Biotechnology
Qualified upper-level biotechnology majors can learn experimental techniques by working in a company laboratory or a professional manufacturing environment.
Fall and Spring and every year. 3-6 Credits