

BIOTECHNOLOGY, CERTIFICATE OF ACHIEVEMENT

Biotechnology is a rapidly growing industry with projections for continued growth and exciting opportunities for employment. The Biotechnology Program is one of several in the state with a comprehensive curriculum in biomanufacturing. This program is designed in consultation with members of local industry (Baxter Healthcare Corporation, AMGEN Corporation, and others) to provide the essential technical experiences and training needed for this thriving field. The curriculum balances basic science courses with practical laboratory applications.

To earn a Certificate of Achievement in Biotechnology, students complete 39 specified units.

Course ID	Title	Units/ Hours
Required Courses		
BIOL M02A or BIOL M02AH	General Biology I Honors: General Biology I	5
CHEM M01A or CHEM M01AH	General Chemistry I ¹ Honors: General Chemistry I	5
CHEM M01B	General Chemistry II ¹	5
MATH M15 or MATH M15H	Introductory Statistics Honors: Introductory Statistics	4
MICR M01	General Microbiology	5
BIOT M10 or BIOL M13	Introduction to Biotechnology and Molecular Biology Introduction to Biotechnology and Molecular Biology	4
BIOT M02A or BIOL M12A	Environmental Control and Process Support Environmental Control and Process Support	2
BIOT M02B or BIOL M12B	Manufacturing: Quality Control and Validation Manufacturing: Quality Control and Validation	2
BIOT M02C or BIOL M12C	Manufacturing: Cell Culture and Microbial Fermentation Manufacturing: Cell Culture and Microbial Fermentation	3
BIOT M02D or BIOL M12D	Bioprocessing: Recovery and Purification Bioprocessing: Recovery and Purification	2
BIOT M02E or BIOL M12E	Business & Government Regulation Business & Government Regulation	2
Total Units		39

¹ Students not planning for university transfer may substitute CHEM M12 Introductory Chemistry I/CHEM M13 Introductory Chemistry II for CHEM M01A General Chemistry I/CHEM M01AH Honors: General Chemistry I/CHEM M01B General Chemistry II.

Year 1		
Fall Semester		Units/Hours
BIOT M02A	Environmental Control and Process Support	2
BIOT M10	Introduction to Biotechnology and Molecular Biology	4
CHEM M01A or CHEM M01AH	General Chemistry I or Honors: General Chemistry I	5
Units/Hours		11
Spring Semester		
BIOL M02A	General Biology I	5
CHEM M01B	General Chemistry II	5
MATH M15	Introductory Statistics	4
Units/Hours		14
Year 2		
Fall Semester		Units/Hours
BIOL M02C	Genetics and Molecular Biology	5
MICR M01	General Microbiology	5
Units/Hours		10
Spring Semester		
BIOT M02D	Bioprocessing: Recovery and Purification	2
BIOT M02E	Business & Government Regulation	2
Units/Hours		4
Total Units/Hours		39

Upon successful completion of this program, students will be able to:

- successfully culture cells and purify product produced by such cell cultures.