

EXPERIMENTAL BIOTECHNOLOGY, GRADUATE CERTIFICATE

biochem_ms_program@case.edu

Credential: Graduate Certificate
Field of Study: Experimental Biotechnology

Program Overview

The Graduate Certificate in Experimental Biotechnology program prepares students for employment in academia or industries such as health care, biotechnology, and pharmaceuticals. It provides hands-on experience and valuable technical skills in biochemistry, molecular biology, and biotechnology. The program can be completed in one year of full-time study or two years of part-time study. Part-time study is ideal for those who wish to pursue the certificate while they are employed.

Graduate Policies

For graduate policies and procedures, please review the School of Graduate Studies section of the General Bulletin.

Program Requirements

The program has the following components

Code	Title	Credit Hours
Required Courses:		
<i>Classroom courses:</i>		
BIOC 407	Introduction to Biochemistry: From Molecules To Medical Science ^a	4
BIOC 408	Molecular Biology ^a	4
BIOC 501	Biochemical and Cellular Techniques for Biotechnology ^b	3
BIOC 511	Practice and Professionalism in Biotechnology ^b	1
<i>Laboratory courses:</i> ^c		
BIOC 500	Biotechnology Laboratory: Molecular Biology Basics	1
BIOC 502A	Biotechnology Laboratory: Molecular Biology and Biochemical Techniques	2
BIOC 502B	Biotechnology Laboratory: Eukaryotic Molecular and Cellular Biology	2
BIOC 502C	Biotechnology Laboratory: Mass Spectrometry Techniques	1
Total Credit Hours		18

a These courses provide a strong academic foundation in biochemistry and molecular biology.

b These courses about experimental design and the practice of biotechnology cover experimental design, documentation of experiments, and professional skills.

c The laboratory courses provide hands-on experience in recombinant protein production, mammalian cell culture, molecular and cell biology, protein detection, immunocytochemistry, and mass spectrometry. During these courses, students receive expert mentoring to help them become proficient in these areas.

Sample Plan of Study

Full Time Schedule

First Year		Credit Hours
Fall		
BIOC 407	Introduction to Biochemistry: From Molecules To Medical Science	4
BIOC 500	Biotechnology Laboratory: Molecular Biology Basics ^a	1
BIOC 501	Biochemical and Cellular Techniques for Biotechnology	3
BIOC 511	Practice and Professionalism in Biotechnology	1
Credit Hours		9
Spring		
BIOC 408	Molecular Biology ^b	4
BIOC 502A	Biotechnology Laboratory: Molecular Biology and Biochemical Techniques	2
BIOC 502B	Biotechnology Laboratory: Eukaryotic Molecular and Cellular Biology	2
BIOC 502C	Biotechnology Laboratory: Mass Spectrometry Techniques	1
Credit Hours		9
Total Credit Hours		18

a Students may be excused from BIOC 500 if they have taken an equivalent course elsewhere or have learned the material covered in this course through hands-on experience.

b Students who have taken equivalent courses at other institutions can substitute other Biochemistry courses (BIOC 412, BIOC 434, BIOC 450) or suitable electives offered by other programs.

Part Time Schedule

First Year		Credit Hours
Fall		
BIOC 500	Biotechnology Laboratory: Molecular Biology Basics ^a	1
BIOC 501	Biochemical and Cellular Techniques for Biotechnology	3
BIOC 511	Practice and Professionalism in Biotechnology	1
Credit Hours		5
Spring		
BIOC 502A	Biotechnology Laboratory: Molecular Biology and Biochemical Techniques	2

BIOC 502C	Biotechnology Laboratory: Mass Spectrometry Techniques	1
Credit Hours		3
Second Year		
Fall		
BIOC 407	Introduction to Biochemistry: From Molecules To Medical Science ^b	4
Credit Hours		4
Spring		
BIOC 502B	Biotechnology Laboratory: Eukaryotic Molecular and Cellular Biology	2
BIOC 408	Molecular Biology ^b	4
Credit Hours		6
Total Credit Hours		18

- a Students may be excused from BIOC 500 if they have taken an equivalent course elsewhere or have learned the material covered in this course through hands-on experience.
- b Students who have taken equivalent courses at other institutions can substitute other Biochemistry courses (BIOC 412, BIOC 434, BIOC 450) or suitable electives offered by other programs.