PROFESSIONAL SCIENCE MASTER'S IN BIOMANUFACTURING AND BIOTECHNOLOGY

Requirements
Effective Fall 2025

Code	Title	Credits
Core Course Requirements		
BUS 500	Foundations for Business Impact [1]	2
BUS 601	Quantitative Business Analysis	2
BUS 614	Accounting Concepts	2
BUS 620	Leadership and Teams	2
CBE 504/BIOM 504	Fundamentals of Biochemical Engineering	3
CBE 505	Biochemical Engineering Laboratory	1
CBE 522/BIOM 522	Bioseparation Processes	3
CBE 687	Internship	7
MIP 300	General Microbiology [2]	3
Biological Engineering Courses		
Select a minimum of 6 credits from the following:		6
BIOM 422	Quantitative Systems and Synthetic Biology	
BIOM 525/ MECH 525	Cell and Tissue Engineering [3]	
BIOM 526/ ECE 526	Biological Physics [4]	
BIOM 533/ CIVE 533	Biomolecular Tools for Engineers	
CBE 560	Engineering of Protein Expression Systems	
CBE 570	Biomolecular Engineering/Synthetic Biology	
CBE 540/CIVE 540	Advanced Biological Wastewater Processing	
Business Electives		
Select a minimum of 2 credits from the following:		2
BUS 626	Managing Human Capital	
BUS 640	Financial Principles and Practice [5]	
BUS 655	Marketing Management	
Bioscience Courses		
Select a minimum of 6 credits from the following:		6
BC 411	Physical Biochemistry	
BC 463	Molecular Genetics	
BC 465	Molecular Regulation of Cell Function	
BC 512	Principles of Macromolecular Structure	
BC 563	Molecular Genetics [6]	
BC 565	Molecular Regulation of Cell Function [7]	
BC 571	Quantitative Biochemistry	
BSPM 740/ SOCR 740	Plant Molecular Genetics	
CHEM 521/BC 521	Principles of Chemical Biology	
CHEM 522	Methods of Chemical Biology	
CM 515	Computational Cell and Molecular Biology	
DSCI 336	Data Graphics and Visualization	
DSCI 510	Linux as a Computational Platform	
DSCI 511	Genomics Data Analysis in Python	
FTEC 350	Fermentation Microbiology	
FTEC 375	Introduction to Fermentation Unit Operations	
FTEC 572	Food Biotechnology [4]	
MIP 450	Microbial Genetics	
MIP 545	Microbial Metagenomics/Genomics Data Analysis	
MIP 550	Microbial and Molecular Genetics Laboratory [8]	
MIP 565/BZ 565	Next Generation Sequencing Platform/ Libraries	
MIP 570	Functional Genomics	
MIP 611	Advanced Microbiological Research Methods	
MIP 613	Applied Microbiology and Virology	
MIP 616	Modern Molecular Biology for Microbiologists	
SOCR 455	Microbiomes of Soil Systems	
STAR 511	Design and Data Analysis for Researchers I	
Program Total Credits:		**39**

A minimum of 39 credits are required to complete this program.

1. BUS 500 is a prerequisite (or concurrent) for the other BUS courses.
2. Students who have taken MIP 300 or who otherwise have a strong microbiology background should substitute a more advanced microbiology course.
3. May be offered every other year (even).
4. May be offered every other year (odd).
5. BUS 640 has BUS 601 and BUS 614 as prerequisites.
6. Students cannot receive credit for both BC 463 and BC 563.
7. Students cannot receive credit for both BC 465 and BC 565.
8. MIP 550 has multiple prerequisites. Students must take MIP 300, then MIP 450, then meet with the MIP 550 instructor to discuss whether the course is a good fit and thereby potentially obtain an override.