

BIOM Course Requirements

Minimum number of credit hours = **36**

Industry internship required

Core Course Requirements – **18** credits for MR and **22** credits for MS

Course Number and Title	Credits
BEC 515 Biopharmaceutical Product Characterization Techniques (fall) OR BEC 588 Animal Cell Culture Engineering (spring)	2
BEC 575 Global Regulatory Affairs for Medical Products (online)	3
BEC 577 Advanced Biomanufacturing and Biocatalysis (spring)	3
BEC 590 Industry Practicum in Biomanufacturing (fall)	3
BEC 601 Biomanufacturing Seminar (two semesters)	1 (2)
BEC 610 Preparation for Industry Internship in Biomanufacturing (spring)	1
BEC 610 Internship Reflections for Biomanufacturing (fall)	1
ST 511 Experimental Statistics for Biological Sciences	3
BEC 669 (x2) Biomanufacturing Research (MS only - 2nd, 3rd sem)	2 (4)

Each student must complete one upstream or downstream biomanufacturing track + 1 BEC elective course = 8 hours (Electives may come from the other track or other BEC Electives)

Upstream track	
CHE 563 Fermentation of Recombinant Microorganisms	2
BBS 526 Industrial Microbiology and Biomanufacturing lab	2
BEC 580 cGMP Upstream Operations	2
OR	
Downstream track	
BEC 532 Biologic Processing Science	2
BEC 536 Introduction to Downstream Process Development	2
BEC 585 cGMP Downstream Operations	2

MBA Coursework – 9 Hours Required for MR, 6 hours required for MS

BUS 554 Project Management	3
MBA 5xx Elective	3
MBA 5xx Elective	3

BIOM Electives

BEC 525 Molecular Biology for Biomanufacturing	2
BEC 545 Cell Line Development for Biomanufacturing	2
BEC/BME 583 Tissue Engineering Technologies	2
BIT 510 Core Technologies in Molecular and Cellular Biology	4
BIT 572 Drug Delivery: Theory and Modern Practices	3
BEC 595 (BTEC Special Topics Courses)	1-3