

## Michigan Technological University

### Interdisciplinary Minor in Bioprocess Engineering

Program Code IMBE, Academic Year 2021-22

Department of Chemical Engineering and Biological Sciences

Total Credits Required: 18

#### Required Engineering Course (Select one course, 3 credits)

Course	Credits
CM 2110 Fund of Chem Engineering I (3) <i>Prereqs: (CH 1112 or (CH 1150 and CH 1151) and (MA1160 or MA1161)</i>	
CM 2200 Intro to Minerals and Materials (3) <i>Prereqs: none</i>	
CEE 3501 Environmental Engineering Fundamentals (3) <i>Prereqs: MA 2160 and CH 1112 or (CH 1150 and CH 1151)</i>	
CEE 3503 Environmental Engineering (3) <i>Prereqs: MA 2160 and CH 1112 or (CH 1150 and CH 1151)</i>	

#### Required Biochemistry Course (Select one course, 3 credits)

Course	Credits
BL 2100 Principles of Biochemistry (3) <i>Prereqs: (BL 1020 or BL 1040 or BE 2400) and CH 1112 or (CH 1150 and CH 1151)</i> or BL 3020 Biochemistry I (3) <i>Prereqs: (BL1020 or BL1040 or BE2400) and CH2410</i>	
CH 4710 Biomolecular Chemistry I (3) <i>Prereqs: CH 2420</i>	

#### Required Applied Biochemistry Courses (Select 3 or more credits)

Course	Credits
BL 4070 Environmental Toxicology (3) <i>Prereqs: (BL 1020 or BL 1040) and CH 1150 and CH 1160</i>	
BL 4120 Environmental Remediation (3) <i>Prereqs: BL 1020 or BL 1040</i>	
CM 4710 Biochemical Processes (3) <i>Prereqs: BL 2100 or CH 2410 or BL 3020</i>	

#### Elective Courses (Select remaining credits from course list below, 3 to 9 credits)

Course	Credits
BL 3210 General Microbiology (4) <i>Prereqs: (BL 1020 or BL 1040)</i> or BL 3310 Environmental Microbiology (3) <i>Prereqs: BL 1020 or BL 1040 or BL 3080</i>	
BL 4000 Research in Biology (1-6) <i>Instructor Permission Required</i>	
BL 4020 Biochemistry II (3) <i>Prereqs: BL 3020</i>	
BL 4820 Biochem Lab Techniques I (2) <i>Prereqs: BL4010(C) or CH4710(C)</i>	
BL 4995 Research in Biochemistry (1 - 6) <i>Prereqs: none</i>	
CH 4110 Pharmaceutical Chemistry: Drug Action (3) <i>Prereqs: BL2100 or CH4710</i>	
CH 4120 Pharmaceutical Chemistry: Drug Design (3) <i>Prereqs: CH 2420</i>	
CH 4140 Pharmaceutical Analysis (3) <i>Prereqs: CH 2410</i>	
CH 4720 Biomolecular Chemistry II (3) <i>Prereqs: BL 4010 or CH 4710</i>	
CM 3025 Bioprocessing Laboratory (1) <i>Prereqs: CH1112 or CH1151</i>	
CM 4040 UG Research in Bioengineering (1-6) <i>Prereqs: none</i>	
CM 4080 UG Research in Biofuels (1-6) <i>Prereqs: none</i>	
CM 4780 Biomanufacturing and Biosafety (3) <i>Prereqs: BL 2100 or CH 4710 or CM 4040 or CM 4080 or CM 4710 or (CM 3110(C) and BL 1040)</i>	
ENT XXXX Enterprise Project Work (1-3) <i>Topic must be approved by minor academic advisor</i>	