

Michigan Technological University

Interdisciplinary Minor in Bioprocess Engineering

Program Code IMBE, Academic Year 2022-23

Department of Chemical Engineering and Biological Sciences

Total Credits Required: 18

Required Engineering Course: select one for 3 credits

- CM 2110 Material and Energy Balances (3) *Prereqs: (CH 1112 or (CH 1150 and CH 1151) and (MA1121 or MA1160 or MA1161)*
- CM 2200 Intro to Minerals and Materials (3) *Prereqs: none*
- CEE 3501 Env Engineering Fundamentals (3) *Prereqs: MA 2160 and CH 1112 or (CH 1150 and CH 1151)*
- CEE 3503 Environmental Engineering (3) *Prereqs: MA 2160 and CH 1112 or (CH 1150 and CH 1151)*

Required Biochemistry Course: select one for 3 credits

- BL 3020 Biochemistry I (3) *Prereqs: (BL1020 or BL1040 or BE2400) or (BL1200 and BL1210) or (BL1400 and BL1410) and (CH2410 or CH2420)*
- CH 4710 Biomolecular Chemistry I (3) *Prereqs: CH 2420 or CH2440*

Required Applied Biochemistry Courses: select 3 or more credits

- BL 4070 Environmental Toxicology (3) *Prereqs: BL 1020 or BL1040 or (BL1200 and BL1210) or (BL1400 and BL1410) and CH 1150 and CH 1160*
- BL 4120 Environmental Remediation (3) *Prereqs: BL 1020 or BL1040 or (BL1200 and BL1210) or (BL1400 and BL1410)*
- CM 4710 Biochemical Processes (3) *Prereqs: BL 2100 or CH 2410 or BL 3020*

Elective Courses: select remaining credits from course list below for 3 to 9 credits

- BL 3210 General Microbiology (4) *Prereqs: BL 1020 or BL1040 or (BL1200 and BL1210) or (BL1400 and BL1410) OR*
 - BL 3310 Environmental Microbiology (3) *Prereqs: BL 1020 or BL1040 or BL3080 or (BL1200 and BL1210) or (BL1400 and BL1410)*
- BL 4000 Research in Biology (1-6) *Instructor Permission Required*
- BL 4020 Biochemistry II (3) *Prereqs: BL 3020*
- BL 4995 Research in Biochemistry (1 - 6) *Prereqs: none*
- CH 4110 Medicinal Chemistry: Mechanism of Drug Action (3) *Prereqs: CH2410 or CH2430*
- CH 4120 Medicinal Chemistry: Drug Design (3) *Prereqs: CH 2420 or CH2440*
- CH 4140 Introduction to Pharmaceutical Analysis (3) *Prereqs: CH 2410 or CH2430*
- CH 4720 Biomolecular Chemistry II (3) *Prereqs: BL 3020 or CH 4710*
- CM 3025 Bioprocessing Laboratory (1) *Prereqs: CH1112 or (CH1150 and CH1151)*
- CM 4040 UG Research in Biological Engineering (1-6) *Prereqs: none*
- CM 4080 UG Research in Biofuels Engineering (1-6) *Prereqs: none*
- CM 4780 Biomanufacturing and Biosafety (3) *Prereqs: BL 2100 or CH 4710 or CM 4040 or CM 4080 or CM 4710 or (CM 3110(C) and BL 1040 or (BL1400 and BL1410) or (CM3110(C) and BL1020 or (BL1200 and BL1210))*
- ENT XXXX Enterprise Project Work (1-3) *Topic must be approved by minor academic advisor*