MichiganTech
Degree Services
Registrar's Office

Department of Chemical Engineering and Department of Biological Sciences

Interdisciplinary Minor in Bioprocess Engineering

IMBE

Name (please print): _____
(Last) (First) (Middle)

Student Number: _____

Primary Major:_____ Expected Major Completion Term: _____

There are two tracks to the Bioprocess Engineering Minor, the Engineering Track and the Biological Track (located on the reverse of this page.) Please select <u>one</u> for completion.

Engineering Track

Required Courses (10 Credits)

_____ BL2100 Principles of Biochemistry (3) *or* CH4710 Biomolecular Chemistry 1 (3)

_____ CM2120 Fund of Chem Engg 2 (3) *or* CM2200 Intro to Minerals and Materials (3) *or* CE3501 Env Engg Fundamentals (3) *or* CE3503 Environmental Engineering (3)

_____ CM4125 Bioprocess Engineering Lab (1)

_____ CM4710 Biochemical Processes (3)

Elective Courses (6 Credits)

_____ BL3210 Microbiology (4) *or* BL3310 Environmental Microbiology

_____ BL4000 Undergrad. Research in Bio. Sci. (1-3) *

_____ BL4010 Biochem I (3)

_____ BL4020 Biochem II (3)

_____ BL4220 Applied & Industrial Microbiology (3)

_____ BL4820 Biochem Lab I (2)

_____ CH4110 Phar. Chem. I: Drug Action (3)

_____ CH4120 Phar. Chem. II: Drug Design (3)

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Elective Courses (continued)

_____ CH4720 Biomolecular Chemistry II (3)

_____ CM4000 Undergrad. Research in Chem. Eng. (1-3) *

_____CM4550 Industrial Chemical Production (3)

_____CM4770 Analytical Microdevice Technologies (3)

_____ CM4990 Special Topics in CM (1-3) *

* Topic must be approved by Department Chair

Courses listed in this minor have the following prerequisites (shown in parenthesis). Concurrency is illustrated by the letter C: CE3501 (MA2160 and (CH1150, CH1151, and CH1153)), CM3810 (CH1150, CH1151, and CH1153), CH4110 (CH4710 or BL4010), CM4550 ((CH2400 or CH2410) and CM3510 C), CH4120 (CH4110), CM4710 (CM3110 C), CH4710 (CH2420), CH4720 (CH4710 or BL4010), BL2100 ((BL1040 or BL1020) and (CH1150, CH1151, and CH1153)), BL4820 (BL4010 C or CH4710 C), BL3210 ((BL1020 or BL1040) and (BL2100 or CH4710)), CM2120 (CM2110), BL4020 (BL4010), BL4010 ((BL1020 or BL1040 or BL2010) and BL2100 and (CH2400 or CH2420) and CH2420), CM4125 (CM4710 C or BL3210 or BL3310), CE3503 (MA2160 and (CH1150, CH1151, and CH1153))

Credits Required = 16

Total Credits _____

Interdisciplinary Minor in Bioprocess Engineering (continued)

Biological Track

Required Courses (14 Credits)

_____ BL2100 Principles of Biochemistry (3)

_____ BL3210 Microbiology (4)

_____ BL4220 Applied and Industrial Microbiology (3)

_____ CM3810 Intro to Unit Operations (3) *or* CM4710 Biochemical Processes (3) *or* CM2200 Intro to Minerals and Materials (3) *or* CE3501 Env Engg Fundamentals (3) *or* CE3503 Environmental Engineering (3)

_____ CM4125 Bioprocess Engineering Lab (1)

Elective Courses (2 Credits)

_____ BL4000 Undergrad. Research in Bio. Sciences (1-3) *

_____ BL4010 Biochem I (3)

_____ BL4020 Biochem II (3)

_____ BL4820 Biochem Lab I (2)

_____ CM2200 Intro to Minerals and Materials (3)

_____ CM4000 Undergrad. Research in Chem. Eng. (1-3) *

_____ CM4710 Biochemical Processes (3)

_____ CM4770 Analytical Microdevice Technologies (3)

_____ CM4990 Special Topics in CM (1-3) *

* Topic must be approved by Department Chair

_____ _____

Student Signature Date

_____ _____

Academic Advisor Date

Credits Required = 16

Total Credits _____

Information and Guidelines

- Minors require a minimum of 16 semester credit hours. Of these 16 credit hours no more than 6 credit hours may be 1000 or 2000 level courses. For minors exceeding 16 credits, the additional credits beyond 16 may be at any level. Each minor must include at least 6 credit hours of 3000 level or higher courses which are not required for a student's Major degree except as free electives.
- Undergraduate requirements and special provisions for each Minor are listed and defined by each academic unit offering the Minor. Minors offered in cross-disciplinary areas must originate in a designated department, school, or multidisciplinary program as recognized by the University.
- Students may not take a Minor with the same title as their Major or Major Concentration.
- A minimum cumulative grade point average of 2.0 is required for courses in the Minor.
- It is recommended that students consider Minors as early as possible in their program of study. Students desiring a Minor should indicate their intent by filing a "Change/Addition of Major/Minor" form with the Office of Student Records and Registration no later than the first semester of their junior year.
- Students desiring a Minor must also file the applicable 'Minor Audit Form' with the academic advisor of the department offering the minor two semesters prior to completion of their associated undergraduate degree. The academic advisor will approve and forward the form to Degree Services. Once this Minor Audit Form is on file with Degree Services, any change of intent to pursue the minor must be reported directly to the Degree Services Office, 487-2395. Failure to do so could delay the awarding of the undergraduate degree.
- Any changes to the requirements, e.g. course substitutions, must be indicated and submitted to the Degree Services Office on a "Petition to Alter Degree Requirements" form by the academic advisor in the department offering the minor.