

# B.S. in Chemical Engineering

## Four-year Academic Plan

### With two semesters of organic chemistry



Michigan Technological University  
Department of Chemical Engineering

This plan is the standard plan the B.S. in Chemical Engineering. It is especially good for students planning to minor Polymer Science and Engineering, Bioprocess Engineering, or Mineral Processing.

### Freshman Year

#### Fall Semester

Course	Title	Cr
CH 1150	University Chemistry I	3
CH 1151	University Chemistry I Lab	1
CH 1153	University Chemistry I Rec	1
ENG 1101	Eng Analysis and Problem Solv	3
MA 1160	Calculus with Technology I	4
PH 1100	Physics by Inquiry I	1
UN 1001	Perspectives	3
	Co-Curricular (1 unit)*	
<b>Total</b>		<b>16</b>

#### Spring Semester

Course	Title	Cr
CH 1160	University Chemistry II	3
CH 1161	University Chemistry II Lab	1
ENG 1102	Eng Modeling and Design	3
MA 2160	Calculus with Technology II	4
PH 2100	University Physics I	3
UN 1002	World Cultures**	4
<b>Total</b>		<b>18</b>

### Sophomore Year

#### Fall Semester

Course	Title	Cr
CH 2410	Organic Chemistry I	3
CH 2411	Organic Chemistry Lab I	1
CM 2110	Fundamentals of ChE I	3
MA 3160	Multivariable Calc with Techn	4
PH 1200	Physics by Inquiry II	1
UN 2001	Composition	3
	Co-Curricular (1 unit)*	
<b>Total</b>		<b>15</b>

#### Spring Semester

Course	Title	Cr
CH 2420	Organic Chemistry II	3
CM 2120	Fundamentals of ChE II	3
MA 2321	Elementary Linear Algebra	2
MA 3521	Elem Differential Equations	2
PH 2200	University Physics II	3
UN 2002	Institutions	3
	Co-Curricular (1 unit)*	
<b>Total</b>		<b>16</b>

### Junior Year

#### Fall Semester

Course	Title	Cr
CH 3510	Physical Chemistry I	3
CH 3511	Physical Chemistry Lab I	2
CM 3110	Transport/Unit Operations I	3
CM 3215	Fundamentals of ChE Lab	2
CM 3410	Tech Comm for ChE	3
	HASS (Gen Ed) Distribution*	3
<b>Total</b>		<b>16</b>

#### Spring Semester

Course	Title	Cr
CM 3120	Transport/Unit Operations II	3
CM 3230	Thermodynamics for ChE	4
CM 3310	Process Control	3
CM 3510	Chemical Reaction Eng	3
	HASS (Gen Ed) Distribution*	3
<b>Total</b>		<b>16</b>

### Senior Year

#### Fall Semester

Course	Title	Cr
CM 4110	Unit Operations Lab	3
CM 4310	Process Safety/Environment	3
CM 4855	ChE Proc Anal & Design I	3
	Technical Elective*	3
	Technical Elective*	3
	HASS (Gen Ed) Distribution*	3
<b>Total</b>		<b>18</b>

#### Spring Semester

Course	Title	Cr
CM 4120	Chemical Plant Operations Lab	3
CM 4860	ChE Proc Anal & Design II	2
CM 4861	ChE Design Lab II	1
	Technical Elective*	4
	Free Elective*	3
	HASS (Gen Ed) Distribution*	3
<b>Total</b>		<b>16</b>

\*See back for description.

\*\*Two semesters of a single modern language (6 cr) in addition to UN1003 (1cr) can substitute for UN1002 and 3 credits of gen ed distribution course requirements.

Updated 3/10/2009

## Technical Electives (10 credits total)

Students must take 10 credits of approved technical electives. The list of approved technical electives can be found on the department's webpage at <http://www.chem.mtu.edu> Select the Undergraduate Program, then Degree Requirements.

1. \_\_\_\_\_ 3 CM
2. \_\_\_\_\_ 3 Eng
3. \_\_\_\_\_ 4 Tech

With these 10 credits, you must take:

1. Three credits of chemical engineering elective,
2. Three credits of engineering elective, and
3. Four credits of technical elective.

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## HASS (Gen Ed) Distribution Courses (15 credits total)

Students must take 15 credits of general education distribution courses to satisfy the university's general education requirements. These classes must be chosen from the Humanities, Arts, and Social Sciences (HASS) Distribution List. A limited number of credits may also come from the Creative Endeavor List and/or Supplemental List.

Restrictions:

- Minimum of 6 credits must be at the 3000-4000 level
- Limit of 3 credits from the Creative Endeavor List
- ~~Limit of 3 credits from the Supplemental List~~ *met with CM 3410*

The HASS Distribution List can be found on the OSRR web page at <http://www.admin.mtu.edu/em/> Select the Schedule Planning Center. You may also search for these classes on Banweb by selecting the following attributes: Humanities, Arts, and Social Sciences, HASS Creative Endeavor, or HASS Supplemental List.

1. CM 3410 \_\_\_\_\_ 3 Supplem. List
2. \_\_\_\_\_ 3
3. \_\_\_\_\_ 3
4. \_\_\_\_\_ 3
5. \_\_\_\_\_ 3

**NOTE:** CM 3410 is required by the department and on the Supplemental List. No other classes from the Supplemental List may be applied as gen ed distribution courses.

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## Co-Curricular Activities (3 units total)

A co-curricular unit involves the same time commitment as an academic semester credit but is not included in calculation of the GPA or in the overall degree-credit requirement. Repeatable courses may not be repeated for co-curricular general education credit.

1. \_\_\_\_\_ 0.5
2. \_\_\_\_\_ 0.5
3. \_\_\_\_\_ 0.5
4. \_\_\_\_\_ 0.5
5. \_\_\_\_\_ 0.5
6. \_\_\_\_\_ 0.5

Enrollment in a co-curricular activity will count toward satisfactory progress for financial aid purposes and toward status as a full-time student. The list of approved co-curricular activities can be found on the OSRR web page at <http://www.admin.mtu.edu/em/> Select the Schedule Planning Center.

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## Free Electives (3 credits total)

Free electives are any MTU course or transfer equivalents with course numbers of 1000 or higher, EXCLUDING courses that count as co-curricular activities. Free electives may be taken pass/fail.

1. \_\_\_\_\_ 3

## Final Year Accelerated Coursework MS Degree in Chemical Engineering

Fall Semester			Spring Semester		
Course	Title	Cr	Course	Title	Cr
CM5100	Applied Math C	3	CM5300	Adv. Trans Phen	3
CM5200	Advanced Thermodynamics	3	CM5400	Adv. Reactive Systems Analy.	3
CM5310	Laboratory Safety	1	Technical Electives	As approved by Graduate Program Director	6
CM5500	Theory /Methods of Research	2		<b>Total</b>	<b>12</b>
Technical Elective	As approved by Graduate Program Director	3			
	<b>Total</b>	<b>12</b>			

**The student needs 30 credits for MS degree, of which 6 credits can be counted for both the master's and bachelor's degrees. So after completing 24 'new credits' in the graduate school year, and using 6 credits for both the BS and MS degrees, a total of 30 credits is obtained. (155 credits total BS + MS)**