

# B.S. in Chemical Engineering

2014-2015 Academic Year

Five-year Academic Plan for students starting in MA 1032

Traditional Chemistry Option

**MichiganTech**

Michigan Technological University  
Department of Chemical Engineering

This suggested schedule includes a full-year of organic chemistry. Two semesters of organic chemistry are recommended to all chemical engineering students and is especially encouraged to those planning to minor in *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
CM 1000	Introduction to Chemical Engg	1
ENG 1001	Engineering Problem Solving	2
MA 1032	Data, Functions, & Graphs Plus	4
UN 1015	Compositions	3
	Co-Curricular (1 cr)*	
	<b>Total</b>	<b>16</b>

### Spring Semester

Course	Title	Cr
CH 1160	University Chemistry II	3
CH 1161	University Chemistry II Lab	1
CH 1163	University Chemistry II Rec++	1
ENG 1100	Engineering Analysis	2
MA 1161	Calculus with Technology I	5
UN 1025	Global Issues**	3
	Co-Curricular (1 cr)*	
	<b>Total</b>	<b>16</b>

++Note: CH 1163 is recommended but not required.

## Sophomore Year

### Fall Semester

Course	Title	Cr
CH 2410	Organic Chemistry I	3
CH 2411	Organic Chemistry Lab I	1
ENG 1102	Eng Modeling and Design	3
MA 2160	Calculus with Technology II	4
PH 1100	Physics by Inquiry I	1
	HUFA Elective*	3
	Co-Curricular (1 cr)*	
	<b>Total</b>	<b>16</b>

### Spring Semester

Course	Title	Cr
CH 2420	Organic Chemistry II	3
MA 3160	Multivariable Calc with Techn	4
PH 2100	University Physics I	3
	SBS Elective*	3
	<b>Total</b>	<b>13</b>

## Junior Year

### Fall Semester

Course	Title	Cr
CM 2110	Fundamentals of ChE I	3
CM 3410	Tech Comm for ChE	3
MA 2320	Elementary Linear Algebra	2
	or	
MA 2330	Introduction to Linear Algebra	3
PH 1200	Physics by Inquiry II	1
PH 2200	University Physics II	3
	<b>Total</b>	<b>12-13</b>

### Spring Semester

Course	Title	Cr
CH 3510	Physical Chemistry I	3
CH 3511	Physical Chemistry Lab I	2
CM 2120	Fundamentals of ChE II	3
MA 3520	Elem Differential Equations	2
	or	
MA 3560	Math Modeling with Diff Eq	3
	HASS Course*	3
	<b>Total</b>	<b>13-14</b>

## Senior Year

### Fall Semester

Course	Title	Cr
CM 3110	Transport/Unit Operations I	3
CM 3215	Fundamentals of ChE Lab	2
CM 3230	Thermodynamics for ChE	4
	ChE Elective*	3
	HASS Course*	3
	<b>Total</b>	<b>15</b>

### Spring Semester

Course	Title	Cr
CM 3120	Transport/Unit Operations II	3
CM 3310	Process Control	3
CM 3510	Chemical Reaction Eng	3
	HASS Course*	3
	<b>Total</b>	<b>12</b>

## Senior Year 2

### 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
	<b>Total</b>	<b>12</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
	HASS Course*	3
	<b>Total</b>	<b>13</b>

\* See back for description.

\*\* A 3000-level or higher modern language course may be used in place of UN 1025, Global Issues.

*This is not an official list of degree requirements. Adjustments may be required due to curriculum changes.*

Updated 5/1/2014

# Elective Worksheet

## Traditional Chemistry Option (13 credits total)

- 1) **Organic Chemistry II Lecture**  
CH 2420 \_\_\_\_\_ 3 cr
  - 2) **ChE Elective** (3-4 cr)  
\_\_\_\_\_
  - 3) **Additional Technical Electives** (6-7 cr)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Total = 13 cr**

- The additional technical electives can come from the ChE, Engineering, and/or Math, Science, and Applied Business (MSAB) lists that are on the Technical Elective handout.
- A maximum of 4 credits can be from the MSAB list.

The Technical Elective handout is available on the department webpage: <http://www.mtu.edu/chemical/>

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## General Education Requirements (24 credits total)

- 1) **Required Gen Ed Core Courses** (12 cr)  
UN 1015 \_\_\_\_\_ 3 cr  
UN 1025 or 3000+ level language course  
\_\_\_\_\_ 3 cr  
HUFA Elective \_\_\_\_\_ 3 cr  
SBS Elective \_\_\_\_\_ 3 cr
- 2) **HASS Courses** (12 cr)  
\_\_\_\_\_ 3 cr  
\_\_\_\_\_ 3 cr  
(3000+ lev) \_\_\_\_\_ 3 cr  
(3000+ lev) \_\_\_\_\_ 3 cr

- 6 credits of HASS must be at the 3000+ level
- optional - 3 cr MAX from HASS Creative Endeavors
- optional - 3 cr MAX from HASS Supplemental

**Recommended HASS course:** EC 3400 Economic Decision Analysis, prior or during fall senior year classes.

### Humanities and Fine Arts (HUFA) Electives:

- FA 2330 Art Appreciation
- FA 2520 Music Appreciation
- FA 2820 Theater Appreciation
- HU 2130 Introduction to Rhetoric
- HU 2501 American Experience in Literature
- HU 2538 British Experience in Literature
- HU 2700 Introduction to Philosophy
- HU 2820 Communication and Culture
- HU 2910 Language and Mind

### Social and Behavioral Science (SBS) Electives:

- EC 2001 Principles of Economics
- PSY 2000 Principles of Psychology
- SS 2100 World Peoples and Environments
- SS 2200 Prehistory and Archaeology
- SS 2400 Introduction to Human Geography
- SS 2500 United States History to 1871
- SS 2501 United States History Since 1877
- SS 2502 European History to 1650
- SS 2503 European History Since 1650
- SS 2504 World History to 1500
- SS 2505 World History Since 1500
- SS 2600 American Government and Politics
- SS 2700 Introduction to Sociology

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## Co-Curricular Course Requirement (3 credits total)

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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Co-curricular courses count for financial aid and full-time student status; however they are not included in GPA calculations or in the 131 credits total required for graduation.

Co-curricular courses may only be used once for this requirement, except PE 0210 which may be used twice.

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## Free Elective Requirement (3 credits total)

MA 1032 \_\_\_\_\_ 4 cr

Free electives are any class, 1000-level or higher that are not co-curricular courses. They may be taken pass/fail, unless the course is being used for a minor.

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## OPTIONAL - Minor (6 credits not double counting)

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Each minor must include at least 6 credits of 3000-level or higher courses that are not counting elsewhere for your degree (required courses, technical electives, HASS courses, etc.), EXCEPT these credits can count toward your free elective requirement.