

## B.S. in Chemical Engineering

Five-year Academic Plan for students starting in MA 1032

With one semester of organic chemistry

**MichiganTech**

Michigan Technological University  
Department of Chemical Engineering

This plan provides an option for students wishing to emphasize inorganic chemistry.

### 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 1001	Engineering Problem Solving	2
MA 1032	Data, Functions, & Graphs Plus	4
UN 1001	Perspectives	3
	Co-Curricular (1 unit)*	
<b>Total</b>		<b>14</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 1002	World Cultures**	4
	Co-Curricular (1 unit)*	
<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
UN 2001	Composition	3
	Co-Curricular (1 unit)*	
<b>Total</b>		<b>15</b>

#### Spring Semester

Course	Title	Cr
MA 3160	Multivariable Calc with Techn	4
PH 2100	University Physics I	3
UN 2002	Institutions	3
	HASS Distribution*	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	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	or	
MA 3560	Math Modeling with Diff Eq	3
	HASS Distribution*	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
	Technical Elective*	3
	HASS Distribution*	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
CM 4740	Hydro/Pyrometallurgy*	4
<b>Total</b>		<b>13</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*	3
	HASS Distribution*	3
<b>Total</b>		<b>12</b>

\*See back for more information.

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

Updated 5/2/2011

## Technical Electives (9 credits total)

Students choosing this option must take 9 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.

With these 9 credits, you must take:

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

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

**NOTE:** One credit from CM 4740 counts for the tenth credit of technical elective and reduces the CM elective requirement to two credits.

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## HASS 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.

The HASS Distribution List can be found on the Registrar's Office web page at <http://www.mtu.edu/registrar/>. Select General Education Requirements. 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.

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

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*

1. CM 3410 \_\_\_\_\_ 3 Supp List/3000+
2. \_\_\_\_\_ 3 Level 3000+
3. \_\_\_\_\_ 3
4. \_\_\_\_\_ 3
5. \_\_\_\_\_ 3

Recommended HASS course: EC 3400 Economic Decision Analysis, prior or during fall senior year 2 classes.

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## Co-Curricular Requirement (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, except PE 0210. PE 0210 may be repeated once if the topics are different.

Enrollment in a co-curricular activity will count toward satisfactory progress for financial aid purposes and toward full-time student status. The list of approved co-curricular activities can be found on the Registrar's Office web page at <http://www.mtu.edu/registrar/>. Select General Education Requirements.

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

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## Free Electives (3 credits total)

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

Free elective requirement met with MA 1032.

1. MA 1032 \_\_\_\_\_