# Michigan Technological University Bachelor of Science Degree Audit

Major Program: Chemical Engineering, Concentration: Engineering Enterprise

Program Code: ECME, Academic Year 2020-21 Total credits required for the degree: 131

# Required Engineering Courses: 90 to 95 credits

Course         Credits           CH 1150         3           CH 1151         1           CH 1153         1           CH 1160         3           CH 21161         1           CH 2410         3           CH 2411         1           CH 2420 or BL 2100 or BL 3020 or CM 4740         3/4           CH 3510         3           CH 3511         2           CM 2110         3           CM 2120         3           CM 3110         3           CM 3220         3           CM 3230         4           CM 3215         3           CM 3310         3           CM 4110         3           CM 4410         3           CM 4855         3           CM 4860         2           ENG 1101 or         3/4           ENG 1001 and ENG 1100         3           ENG 1102         3           MA 2160         4           MA 2320 or MA 2321 or MA 2330         2/3           MA 3160         4           MA 3520 or MA 3521         0           Or MA 3530 or MA 3560         1           PH 1100         <	Required Engineering Courses: 90 to 95 credits		
CH 1151       1         CH 1160       3         CH 1161       1         CH 2410       3         CH 2411       1         CH 2420 or BL 2100 or BL 3020 or CM 4740       3/4         CH 3510       3         CH 3511       2         CM 2110       3         CM 2120       3         CM 3110       3         CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 4110       3         CM 420       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1102       3         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	Course	Credits	
CH 1153       1         CH 1160       3         CH 1161       1         CH 2410       3         CH 2411       1         CH 2420 or BL 2100 or BL 3020 or CM 4740       3/4         CH 3510       3         CH 3511       2         CM 2110       3         CM 2120       3         CM 3110       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 4110       3         CM 4110       3         CM 4860       2         ENG 1101 or       3/4         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	CH 1150	3	
CH 1160       3         CH 1161       1         CH 2410       3         CH 2411       1         CH 2420 or BL 2100 or BL 3020 or CM 4740       3/4         CH 3510       3         CH 3511       2         CM 2110       3         CM 2120       3         CM 3110       3         CM 3220       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 4110       3         CM 4120       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3/4         ENG 1102       3         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	CH 1151	1	
CH 1161       1         CH 2410       3         CH 2411       1         CH 2420 or BL 2100 or BL 3020 or CM 4740       3/4         CH 3510       3         CH 3511       2         CM 2110       3         CM 2120       3         CM 3110       3         CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3/4         ENG 1102       3         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	CH 1153	1	
CH 2410       3         CH 2411       1         CH 2420 or BL 2100 or BL 3020 or CM 4740       3/4         CH 3510       3         CH 3511       2         CM 2110       3         CM 2120       3         CM 3110       3         CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       2         ENG 1001 and ENG 1100       3/4         ENG 1102       3         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	CH 1160	3	
CH 2411       1         CH 2420 or BL 2100 or BL 3020 or CM 4740       3/4         CH 3510       3         CH 3511       2         CM 2110       3         CM 2120       3         CM 3110       3         CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4110       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3/4         ENG 1102       3         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         Or MA 3530 or MA 3560       2/3         PH 1100       1         PH 1200       1	CH 1161	1	
CH 2420 or BL 2100 or BL 3020 or CM 4740       3/4         CH 3510       3         CH 3511       2         CM 2110       3         CM 2120       3         CM 3110       3         CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4120       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3/4         ENG 1102       3         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         Or MA 3530 or MA 3560       2/3         PH 1100       1         PH 1200       1	CH 2410	3	
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CM 2110       3         CM 2120       3         CM 3110       3         CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4120       3         CM 4310       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3/4         ENG 1002       3         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	CH 3510	3	
CM 2120       3         CM 3110       3         CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         MA 1160 or MA 1161       4/5         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         Or MA 3530 or MA 3560       PH 1100       1         PH 1200       1	CH 3511	2	
CM 3110       3         CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4120       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       2/3         PH 1100       1         PH 1200       1	CM 2110	3	
CM 3120       3         CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4120       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3/4         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       PH 1100       1         PH 1200       1	CM 2120	3	
CM 3230       4         CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4120       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       2/3         PH 1100       1         PH 1200       1	CM 3110	3	
CM 3215       3         CM 3310       3         CM 3510       3         CM 4110       3         CM 4120       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3/4         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       2         PH 1100       1         PH 1200       1	CM 3120	3	
CM 3310       3         CM 3510       3         CM 4110       3         CM 4120       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         MA 1160 or MA 1161       4/5         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       2         PH 1100       1         PH 1200       1	CM 3230	4	
CM 3510       3         CM 4110       3         CM 4120       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	CM 3215	3	
CM 4110       3         CM 4120       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2360       4         MA 3520 or MA 2321 or MA 2330       2/3         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       2         PH 1100       1         PH 1200       1	CM 3310	3	
CM 4120       3         CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	CM 3510	3	
CM 4310       3         CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3/4         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       2         PH 1100       1         PH 1200       1	CM 4110	3	
CM 4855       3         CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         MA 1160 or MA 1161       4/5         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       1         PH 1100       1         PH 1200       1	CM 4120	3	
CM 4860       2         ENG 1101 or       3/4         ENG 1001 and ENG 1100       3         ENG 1102       3         MA 1160 or MA 1161       4/5         MA 2160       4         MA 2320 or MA 2321 or MA 2330       2/3         MA 3160       4         MA 3520 or MA 3521       2/3         or MA 3530 or MA 3560       2         PH 1100       1         PH 1200       1	CM 4310	3	
ENG 1101 or ENG 1001 and ENG 1100  ENG 1102  MA 1160 or MA 1161  MA 2160  MA 2320 or MA 2321 or MA 2330  MA 3160  MA 3520 or MA 3521 or MA 3530 or MA 3560  PH 1100  1  PH 1200  1  3/4  3/4  3/4  3/4  3/4  3/4  3/4	CM 4855	3	
ENG 1001 and ENG 1100  ENG 1102  3  MA 1160 or MA 1161  4/5  MA 2160  4  MA 2320 or MA 2321 or MA 2330  2/3  MA 3160  4  MA 3520 or MA 3521  or MA 3530 or MA 3560  PH 1100  1  PH 1200  1	CM 4860	2	
ENG 1001 and ENG 1100  ENG 1102  3  MA 1160 or MA 1161  4/5  MA 2160  4  MA 2320 or MA 2321 or MA 2330  2/3  MA 3160  4  MA 3520 or MA 3521  or MA 3530 or MA 3560  PH 1100  1  PH 1200  1	ENG 1101 or	2/4	
MA 1160 or MA 1161 4/5  MA 2160 4  MA 2320 or MA 2321 or MA 2330 2/3  MA 3160 4  MA 3520 or MA 3521 2/3  or MA 3530 or MA 3560  PH 1100 1  PH 1200 1	ENG 1001 and ENG 1100	3/4	
MA 2160 4  MA 2320 or MA 2321 or MA 2330 2/3  MA 3160 4  MA 3520 or MA 3521 2/3  or MA 3530 or MA 3560  PH 1100 1  PH 1200 1	ENG 1102	3	
MA 2320 or MA 2321 or MA 2330 2/3  MA 3160 4  MA 3520 or MA 3521  or MA 3530 or MA 3560  PH 1100 1  PH 1200 1	MA 1160 or MA 1161	4/5	
MA 3160 4  MA 3520 or MA 3521 or MA 3530 or MA 3560  PH 1100 1  PH 1200 1	MA 2160	4	
MA 3520 or MA 3521 or MA 3530 or MA 3560 PH 1100 1 PH 1200 1	MA 2320 or MA 2321 or MA 2330	2/3	
or MA 3530 or MA 3560       2/3         PH 1100       1         PH 1200       1	MA 3160	4	
or MA 3530 or MA 3560         PH 1100       1         PH 1200       1	MA 3520 <b>or</b> MA 3521	2/2	
PH 1200 1	or MA 3530 or MA 3560	2/3	
	PH 1100	1	
PH 2100 3	PH 1200	1	
	PH 2100	3	
PH 2200 3	PH 2200	3	

## **Approved Core Engineering Electives: 5 credits**

CM 1000, 2200, 3450, 3825, 3830, 3979, 4125, 4505, 4510, 4650, 4655, 4710, 4740, 4780, 5100, 5200, 5300, 5400, EE 3010, ENG 2120, ENT 3979, GE 4610, MEEM 2110, MSE 4740. No more than six credits from the following: CM 4000, 4020, 4040, 4060, 4080

Course	Credits

## **Concentration Requirements: 9 credits**

# Enterprise Project Work: 6 credits

Course	Credits
ENT 3950	1
ENT 3960	1
ENT 4950	2
ENT 4960	2

# **Enterprise Teaming and Communications: 2 credits**

Course	Credits
ENT 2961	2

## Enterprise Instructional Modules: 1 credit

ENT 3953, 3954, 3958, 3959, 3961, 3963, 3964, 3966, 3967, 3971, 3979, 3982, 3983

Course	Credits

## Free Electives: 0 to 3 credits

Any coursework is allowable, excluding co-curricular and coursework below the 1000-level.

Course	C	redits

## **General Education Core and HASS**

Courses used to complete Core and HASS requirements may not be used to complete other degree requirements. Students must complete 12 credits of Core coursework and 12 credits of Humanities, Fine Arts, and Social Science (HASS) coursework. Repeatable courses may not be repeated for general education credit. Core and HASS courses can be found on the General Education page.

## Core: 12 credits

Course	Credits
UN 1015	3
UN 1025 or an upper level modern language	3
Critical and Creative Thinking	3
Social Responsibility and Ethical Reasoning	3

#### HASS: 12 credits

Six of the 12 HASS credits must be at the 3000 or 4000 level (an upper division language course in place of UN1025 does not meet this requirement). No more than three credits may come from the HASS Restricted course list.

Course	Credits
Communication/ Composition	Minimum 3
Humanities and Fine Arts	Minimum 3
Social and Behavioral Sciences	Minimum 3
Course from any list above or from the Restricted HASS course list	0 to 3

## **Co-curricular Activities: 3 credits**

Required for graduation, but not included in the GPA calculation or in the overall credits required for the degree. Only courses on the co-curricular course list are eligible. Half credit (0.5) courses may be repeated to a maximum of one time for co-curricular credit. Find eligible courses on the <u>General Education</u> page.

Course	Credits