**Engineering Science Elective List (3 credits)**

BE2700  BIOMEDICAL SIGNALS & SYSTEMS
CM2110  FUND. OF CHEM ENGRG 1
CM2200  INTRO TO MINERALS AND MATERIALS
EE3010  CIRCUITS AND INSTRUMENTATION
MSE2100  INTRO TO MATERIALS SCI & ENGRG
MEEM2201  THERMODYNAMICS
MEEM2700  DYNAMICS

**Senior Design (SD) Pre-reqs (complete 7 of the following)**

CEE3101, CEE3202, CEE3331, CEE3332, CEE3401, CEE3503, CEE3620, CEE3810, CEE4213 or CEE4223

**UNDERGRADUATE CATALOG:**
http://www.mtu.edu/catalog/courses/

**GENERAL EDUCATION (CO-CURRICULAR & HASS LIST):**
https://www.mtu.edu/registrar/faculty-staff/advisors/gen-ed/

**Professional Electives**

**UNDERGRADUATE CATALOG:** [http://www.mtu.edu/catalog/courses](http://www.mtu.edu/catalog/courses)

- ANY 3000 OR HIGHER LEVEL COURSE IN CIVIL AND ENVIRONMENTAL ENGINEERING OR IN ANY OTHER ENGINEERING DEPARTMENT
  - * AN OVERALL GPA OF 3.00 IS REQUIRED TO TAKE GRADUATE LEVEL COURSES (5000 LEVEL)
  - * A MAXIMUM OF TWO (2) GRADUATE LEVEL COURSES MAY BE USED TOWARD YOUR BSCE DEGREE
- ANY 3000 OR HIGHER LEVEL COURSE IN BIOLOGY, CHEMISTRY, COMPUTER SCIENCE, CONSTRUCTION MANAGEMENT, GEOLOGY, FORESTRY, OR PHYSICS
- ANY 3000 OR HIGHER LEVEL COURSE IN MATHEMATICS
- ANY 3000 OR HIGHER LEVEL COURSE IN BUSINESS OR ECONOMICS. (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM)
- ANY 2000 OR HIGHER LEVEL COURSE IN SURVEYING
- HU3120 – TECHNICAL AND PROFESSIONAL COMMUNICATION

*NOTE: OTHER COURSES MAY BE USED TO SATISFY THE PROFESSIONAL ELECTIVES REQUIREMENT IF APPROVED BY THE DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING ACADEMIC ADVISOR.*

**GENERAL EDUCATION REQUIREMENTS**

**A. CORE COURSES (12 CREDITS)**

1. **UN1015** (COMPOSITION)
2. **UN1025** (GLOBAL ISSUES)
3. CRITICAL AND CREATIVE THINKING (Goal 4) *
4. SOCIAL RESPONSIBILITY & ETHICAL REASONING (Goal 8) **

*GOAL 4 LIST

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>FA2330</td>
<td>Economic Issues</td>
</tr>
<tr>
<td>FA2520</td>
<td>Political Issues</td>
</tr>
<tr>
<td>FA2720</td>
<td>Ethical Issues</td>
</tr>
<tr>
<td>FA2820</td>
<td>Social Issues</td>
</tr>
</tbody>
</table>

**GOAL 8 LIST

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC2000</td>
<td>Ethical Decision Making</td>
</tr>
<tr>
<td>ED2000</td>
<td>Social Policy</td>
</tr>
<tr>
<td>PS2000</td>
<td>Psychology</td>
</tr>
<tr>
<td>SS2100</td>
<td>Sociology</td>
</tr>
<tr>
<td>SS2200</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2400</td>
<td>Social Policy</td>
</tr>
<tr>
<td>SS2500</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2501</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2502</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2503</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2504</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2505</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2600</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2610</td>
<td>Social Issues</td>
</tr>
<tr>
<td>SS2700</td>
<td>Social Issues</td>
</tr>
</tbody>
</table>

**B. HASS COURSES (12 CREDITS) (General Ed Website, left)**

1. **COMMUNICATION/COMP (HASS LIST)**

2. **HU OR FA COURSE (HASS LIST)**

3. **SS OR EC OR PSY COURSE (HASS LIST)**

4. **ANY HASS OR HASS RESTRICTED COURSE (HASS LIST)**

* 6 credits must be upper division 3000-4000 level courses
* No more than 3 credits from the HASS Restricted list can be used to satisfy HASS requirements.
* Each course can satisfy only one requirement.

**C. CO-CURRICULAR ACTIVITIES (3 UNITS)**

(General Ed Website, left)

PE/FA/AR/AF____ PE/FA/AR/AF____
PE/FA/AR/AF____ PE/FA/AR/AF____
PE/FA/AR/AF____ PE/FA/AR/AF____
CIVIL ENGINEERING FLOWCHART

Water Resources

Academic Year 2018-19

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

NOTE: LINEAR ALGEBRA & DIFFERENTIAL EQUATIONS CAN BE TAKEN DURING THE SAME SEMESTER (MA2321 & MA3521) OR SEPARATE SEMESTERS (MA2320 & MA3520)

1. **MA1160/1161** CALCULUS I (4 CREDITS) F, S, Su
2. **MA2600** DIFFERENTIAL EQUATIONS (3 CREDITS) F, S, Su
3. **EE1000** INTRO TO CIVIL ENGINEERING (1 CREDIT) S
4. **CIVIL ENGINEERING** DEPARTMENTAL REQUIREMENTS

**Core Requirements**

**Fall Year 2**

1. **MA3160** CALCULUS II (4 CREDITS) F, S, Su
2. **EE1001** ELECTRONICS (3 CREDITS) F
3. **PH2000** PHYSICS II (3 CREDITS) F, S, Su
4. **ENG1003** COMPOSITION/COMMUNICATION (SEE HASS LIST) (3 CREDITS) F, S, Su

**Spring Year 3**

1. **MA3235** DIFFERENTIAL EQUATIONS (2 CREDITS) F, S, Su
2. **ENM2110** ENVIRONMENTAL ENGINEERING (3 CREDITS) F, S, Su
3. **MEC3101** STATISTICS (3 CREDITS) F, S, Su
4. **CIVIL ENGINEERING** DEPARTMENTAL REQUIREMENTS

**Fall Year 4**

1. **MA3710 OR CE3710** (Co-req or pre-req) F, S, Su
2. **CEE3351** PROFESSIONAL PRACTICE (2 CREDITS) F, S, Su
3. **CIVIL ENGINEERING** DEPARTMENTAL REQUIREMENTS

**Spring Year 4**

1. **MA3710** OR **CEE3710** (Co-req or pre-req) F, S, Su
2. **CEE3310** (L) WATER RESOURCES (4 CREDITS) F, S, Su
3. **CEE3310** (L) WATER RESOURCES (4 CREDITS) F, S, Su
4. **CEE3310** (L) WATER RESOURCES (4 CREDITS) F, S, Su

**General Education Requirements**

1. **UN1015** COMPOSITION (3 CREDITS) F, S, Su
2. **UN1025** GLOBAL ISSUES (3 CREDITS) F, S, Su
3. **ENG1000** ELECTRONICS (3 CREDITS) F
4. **ENM2110** ENVIRONMENTAL ENGINEERING (3 CREDITS) F, S, Su

**Water Resources Path Requirements**

1. **EE1000** INTRO TO CIVIL ENGINEERING (1 CREDIT) S
2. **UN1015** COMPOSITION (3 CREDITS) F, S, Su
3. **UN1025** GLOBAL ISSUES (3 CREDITS) F, S, Su

**Total Academic Credits:** 131
**Total Co-Curricular Units:** 3

16 15 18 17 16 15 18 16

Co-cur Unit (0.5 Unit) F, S, Su
Co-cur Unit (0.5 Unit) F, S, Su
Co-cur Unit (0.5 Unit) F, S, Su
Co-cur Unit (0.5 Unit) F, S, Su
Co-cur Unit (0.5 Unit) F, S, Su
Co-cur Unit (0.5 Unit) F, S, Su
Co-cur Unit (0.5 Unit) F, S, Su
Co-cur Unit (0.5 Unit) F, S, Su

**Updated 06/11/18**
### Water Resources Requirements

Choose 1 course from the following

- **CEE3202** STRUCTURAL ANALYSIS  F, Sp  3 cr.
- **CEE3332** FUND. OF CONSTRUCTION  F, Sp  3 cr.
- **CEE3401** TRANSPORTATION ENGRG  F, Sp  3 cr.

#### WATER RESOURCES DESIGN COURSE (select 1)

- **CEE4620** RIVER/FLOODPLAIN HYDRAULICS  Fall  3 cr.
- **CEE4640** STORMWATER MANAGE. & LID  Su  3 cr.
- **CEE4665** STREAM RESTORATION  Spring  3 cr.

#### WATER RESOURCES ELECTIVES (select 4)

- **CEE4502** WASTE TREATMENT  Fall  3 cr.
- **CEE4503** WATER TREATMENT  Spring  3 cr.
- **CEE4505** SURFACE WATER QUALITY  Fall  3 cr.
- **CEE4507** WATER DISTRIBUTION/COLLECT.  Spring  3 cr.
- **CEE4620** RIVER/FLOODPLAIN HYDRAULICS  Fall  3 cr.
- **CEE4640** STORMWATER MANAGE. & LID  Su  3 cr.
- **CEE4665** STREAM RESTORATION  Spring  3 cr.
- **CEE5620** STOCHASTIC HYDROLOGY  Spring  3 cr.
- **CEE5666** WR PLANNING & MANAGEMENT  Var.  3 cr.
- **GE3850** GEOHYDROLOGY  F, Sp  3 cr.
- **GE4800** GROUNDWATER ENGRG  Spring  3 cr.

### Senior Design (SD) Pre-regqs (complete 7 of the following)

- CEE3101, CEE3331, (CEE3202 or CEE3332 or CEE3401), CEE3620, CEE3810, CEE3503, 3 WATER RESOURCES DESIGN COURSE, & 2 WATER RESOURCES ELECTIVES

### Engineering Science Elective List (3 credits)

- BE2700  BIOMEDICAL SIGNALS & SYSTEMS
- CM2110  FUND. OF CHEM ENGRG 1
- CM2200  INTRO TO MINERALS & MATERIALS
- EE3010  CIRCUITS & INSTRUMENTATION
- MSE2100  INTRO TO MATERIALS SCI & ENGRG
- MEEM2201  THERMODYNAMICS
- MEEM2700  DYNAMICS

### UNDERGRADUATE CATALOG:

- [http://www.mtu.edu/catalog/courses/](http://www.mtu.edu/catalog/courses/)

### GENERAL EDUCATION REQUIREMENTS

#### A. CORE COURSES (12 CREDITS)

1. **UN1015** (COMPOSITION)
2. **UN1025** (GLOBAL ISSUES)
3. **CRITICAL AND CREATIVE THINKING (Goal 4)**
4. **SOCIAL RESPONSIBILITY & ETHICAL REASONING (Goal 8)**

#### B. HASS COURSES (12 CREDITS) (General Ed Website, left)

1. COMMUNICATION/COMP (HASS LIST)
2. HU OR FA COURSE (HASS LIST)
3. SS OR EC OR PSY COURSE (HASS LIST)
4. ANY HASS OR HASS RESTRICTED COURSE (HASS LIST)

#### C. CO-CURRICULAR ACTIVITIES (3 UNITS)

(General Ed Website, left)

- PE/FA/AR/AF_____  PE/FA/AR/AF_____
- PE/FA/AR/AF_____  PE/FA/AR/AF_____
- PE/FA/AR/AF_____  PE/FA/AR/AF_____


**Transportation Requirements**

Choose 1 course from the following

- CEE3202 STRUCTURAL ANALYSIS  
  F, Sp  3 cr.
- CEE3503 ENVIRONMENTAL ENG.  
  Sp  3 cr.
- CEE3620 WATER RESOURCES ENG  
  F, Sp, Su  3 cr.

**TRANSPORTATION DESIGN COURSE** (Select 1)

- CEE4401 PAVEMENT DESIGN  
  Fall  3 cr.
- CEE4407 TRANSPORTATION DESIGN  
  Spring  4 cr.

**TRANSPORTATION ELECTIVES** (select 4)

- CEE4333 ESTIMATING, PLAN., CONST.  
  Fall  3 cr.
- CEE4344 CONSTRUCTION SCHEDULING  
  Spring  3 cr.
- CEE4401 PAVEMENT DESIGN  
  Fall  3 cr.
- CEE4402 TRAFFIC ENGINEERING  
  Fall  3 cr.
- *CEE4404 RAILROAD ENGINEERING  
  Fall  3 cr.  
  (*pre-req is CEE3490 – 1 cr, Offered in the spring)

- CEE4406 AIRPORT PLANNING  
  Spring  3 cr.
- CEE4407 TRANSPORTATION DESIGN  
  Spring  4 cr.
- CEE4410 TRANSPORTATION PLANNING  
  Fall  3 cr.

**Senior Design (SD) Pre-reqs**

(complete 7 of the following)

- CEE3101, (CEE3202 or CEE3503 or CEE3620),  
  CEE3331, CEE3332, CEE3401, CEE3810
- TRANSPORTATION DESIGN COURSE, & 2  
  TRANSPORTATION ELECTIVES

**Engineering Science Elective List** (3 credits)

- BE2700 BIOMEDICAL SIGNALS & SYSTEMS
- CM2110 FUND. OF CHEM ENGRG 1
- CM2200 INTRO TO MINERALS & MATERIALS
- EE3010 CIRCUITS AND INSTRUMENTATION
- MSE2100 INTRO TO MINERALS SCI & ENGRG
- MEEM2201 THERMODYNAMICS
- MEEM2700 DYNAMICS

**UNDERGRADUATE CATALOG:**

http://www.mtu.edu/catalog/courses/

**GENERAL EDUCATION REQUIREMENTS**

**A. CORE COURSES (12 CREDITS)**

1. UN1015 (COMPOSITION)
2. UN1025 (GLOBAL ISSUES)
3. CRITICAL AND CREATIVE THINKING (Goal 4) *
4. SOCIAL RESPONSIBILITY & ETHICAL REASONING  
   (Goal 8) **

**B. HASS COURSES (12 CREDITS)** (General Ed Website, left)

1. COMMUNICATION/COMP (HASS LIST)
2. HU OR FA COURSE (HASS LIST)
3. SS OR EC OR PSY COURSE (HASS LIST)
4. ANY HASS OR HASS RESTRICTED COURSE (HASS LIST)

- 6 credits must be upper division 3000-4000 level  
  courses
- No more than 3 credits from the HASS Restricted list  
  can be used to satisfy HASS requirements.
- Each course can satisfy only one requirement.

**C. CO-CURRICULAR ACTIVITIES** (3 UNITS)

(Generic Ed Website, left)

- PE/FA/AR/AF______  
  PE/FA/AR/AF______
- PE/FA/AR/AF______  
  PE/FA/AR/AF______

**Professional Electives**

UNDERGRADUATE CATALOG: http://www.mtu.edu/catalog/courses/

- ANY 3000 OR HIGHER LEVEL COURSE IN CIVIL AND ENVIRONMENTAL ENGINEERING OR IN ANY OTHER ENGINEERING DEPARTMENT
  
  * AN OVERALL GPA OF 3.00 IS REQUIRED TO TAKE GRADUATE LEVEL COURSES (5000 LEVEL)
  
  * A MAXIMUM OF TWO (2) GRADUATE LEVEL COURSES MAY BE USED TOWARD YOUR BSCE DEGREE

- ANY 3000 OR HIGHER LEVEL COURSE IN BIOLOGY, CHEMISTRY, COMPUTER SCIENCE, CONSTRUCTION MANAGEMENT, GEOLOGY, FORESTRY, OR PHYSICS

- ANY 3000 OR HIGHER LEVEL COURSE IN MATHEMATICS

- ANY 3000 OR HIGHER LEVEL COURSE IN BUSINESS OR ECONOMICS. (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM)

- ANY 2000 OR HIGHER LEVEL COURSE IN SURVEYING

- HU3120 – TECHNICAL AND PROFESSIONAL COMMUNICATION

NOTE: OTHER COURSES MAY BE USED TO SATISFY THE PROFESSIONAL ELECTIVES REQUIREMENT IF APPROVED BY THE  
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING ACADEMIC ADVISOR.
### Built Infrastructure Requirements

**BUILT INFRASTRUCTURE DESIGN COURSE** (select 1)

- CEE213 STRUCTURAL CONCRETE DESIGN Spring 4 cr.
- CEE4223 STEEL DESIGN 1 Fall 4 cr.
- CEE4820 FOUNDATION ENGINEERING Fall 3 cr.

**BUILT INFRASTRUCTURE ELECTIVES** (select 4)

- CEE4020 COMPUTER APPLICATIONS Fall 3 cr.
- CEE4201 MATRIX STRUCTURAL ANALYSIS Fall 3 cr.
- CEE4213 STRUCTURAL CONCRETE DESIGN Spring 4 cr.
- CEE4223 STEEL DESIGN 1 Fall 4 cr.
- CEE4233 STRUCTURAL TIMBER DESIGN Spring 3 cr.
- CEE4244 LOADS FOR CIVIL STRUCTURES Spring 3 cr.
- CEE4333 ESTIMATING, PLANNING, CONST. Fall 3 cr.
- CEE4344 CONSTRUCTION SCHEDULING Spring 3 cr.
- CEE4820 FOUNDATION ENGINEERING Fall 3 cr.
- CEE4830 GEOSYNTHETICS Spring 3 cr.
- CEE4850 ROCK ENGINEERING Spring 3 cr.
- CEE5212 PRESTRESSED CONCRETE DESIGN Fall 3 cr.
- CEE5213 CONCRETE/MASONRY BLDG SYS Fall 3 cr.

### Senior Design (SD) Pre-reqs

**COMPLETE 7 OF THE FOLLOWING**

- CEE3101, CEE3331, CEE3332, CEE3202, CEE3620, CEE3810, BUILT INFRASTRUCTURE DESIGN COURSE, & 2 BUILT INFRASTRUCTURE ELECTIVES

### Engineering Science Elective List (3 credits)

- BE2700 BIOMEDICAL SIGNALS & SYSTEMS
- CM2110 FUND. OF CHEM ENGRG 1
- CM2200 INTRO TO MINERALS & MATERIALS
- EE3010 CIRCUITS AND INSTRUMENTATION
- MSE2100 INTRO TO MATERIALS SCI & ENGRG
- MEEM2201 THERMODYNAMICS
- MEEM2700 DYNAMICS

### General Education Requirements

**A. CORE COURSES (12 CREDITS)**

1. **UN1015** (COMPOSITION)
2. **UN1025** (GLOBAL ISSUES)
3. CRITICAL AND CREATIVE THINKING (Goal 4) *
4. SOCIAL RESPONSIBILITY & ETHICAL REASONING (Goal 8) **

- *GOAL 4 LIST**
  - FA2330
  - FA2520
  - FA2720
  - FA2820
  - HU2130
  - HU2324
  - HU2503
  - HU2501
  - HU2538
  - HU2700
  - HU2910
  - SS2000
  - SS2100
  - SS2200
  - SS2400
  - SS2501
  - SS2500
  - SS2502
  - SS2503
  - SS2504
  - SS2505
  - SS2600
  - SS2610
  - SS2700

- **GOAL 8 LIST**
  - EC2001
  - ED2000
  - PSY2000
  - SS2100
  - SS2200
  - SS2400

**B. HASS COURSES (12 CREDITS)** (General Ed Website, left)

1. COMMUNICATION/COMP (HASS LIST)
2. HU OR FA COURSE (HASS LIST)
3. SS OR EC OR PSY COURSE (HASS LIST)
4. ANY HASS OR HASS RESTRICTED COURSE (HASS LIST)

- 6 credits must be upper division 3000-4000 level courses
- No more than 3 credits from the HASS Restricted list can be used to satisfy HASS requirements.
- Each course can satisfy only one requirement.

### Professional Electives

**UNDERGRADUATE CATALOG: [http://www.mtu.edu/catalog/courses/](http://www.mtu.edu/catalog/courses/)**

- ANY 3000 OR HIGHER LEVEL COURSE IN CIVIL AND ENVIRONMENTAL ENGINEERING OR IN ANY OTHER ENGINEERING DEPARTMENT
  - * AN OVERALL GPA OF 3.00 IS REQUIRED TO TAKE GRADUATE LEVEL COURSES (5000 LEVEL)
  - * A MAXIMUM OF TWO (2) GRADUATE LEVEL COURSES MAY BE USED TOWARD YOUR BSCE DEGREE
- ANY 3000 OR HIGHER LEVEL COURSE IN BIOLOGY, CHEMISTRY, COMPUTER SCIENCE, CONSTRUCTION MANAGEMENT, GEOLOGY, FORESTRY, OR PHYSICS
- ANY 3000 OR HIGHER LEVEL COURSE IN MATHEMATICS
- ANY 3000 OR HIGHER LEVEL COURSE IN BUSINESS OR ECONOMICS (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM)
- ANY 2000 OR HIGHER LEVEL COURSE IN SURVEYING
- HU3120 – TECHNICAL AND PROFESSIONAL COMMUNICATION

- NOTE: OTHER COURSES MAY BE USED TO SATISFY THE PROFESSIONAL ELECTIVES REQUIREMENT IF APPROVED BY THE DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING ACADEMIC ADVISOR.