CIVIL ENGINEERING FLOWCHART

General Academic Year 2019-20

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

F INDICATES COURSE IS OFFERED FALL SEMESTER
S INDICATES COURSE IS OFFERED SPRING SEMESTER
Su INDICATES COURSE IS OFFERED SUMMER SEMESTER
L INDICATES A COURSE WHICH INCLUDES A LAB MUST BE SCHEDULED IN ADDITION TO THE LECTURE
(T) INDICATES THE COURSE CAN EITHER BE TAKEN AT THE SAME TIME (CO-REQ) OR TAKEN PRIOR TO THE COURSE (PRE-REQ)

**HIGHLY RECOMMENDED BUT NOT REQUIRED**

**ONE SEMESTER OF 3000 LEVEL OR HIGHER LANGUAGE COURSE CAN REPLACE UN1025**

**SEE REVERSE SIDE FOR EXPLANATION OF PROFESSIONAL ELECTIVES, GENERAL EDUCATION DISTRIBUTION AND CO-CURRICULAR COURSES**
**Senior Design (SD) Pre-reqs**
(complete 7 of the following)

- CEE3101
- CEE3202
- CEE3331
- CEE3332
- CEE3401
- CEE3503
- CEE3620
- CEE3810
- CEE4213
- CEE4223

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>BE2700</td>
<td>BIOMEDICAL SIGNALS &amp; SYSTEMS</td>
</tr>
<tr>
<td>CM2110</td>
<td>FUND. OF CHEM ENGRG 1</td>
</tr>
<tr>
<td>CM2200</td>
<td>INTRO TO MINERALS &amp; MATERIALS</td>
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<tr>
<td>EE3010</td>
<td>CIRCUITS AND INSTRUMENTATION</td>
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<td>MSE2100</td>
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</tr>
<tr>
<td>MEEM2201</td>
<td>THERMODYNAMICS</td>
</tr>
<tr>
<td>MEEM2700</td>
<td>DYNAMICS</td>
</tr>
</tbody>
</table>

**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

- Any **1000** or higher level course in Computer Science, Fine Arts or Forestry. (CS, FA, FW)
- Any **2000** or higher level course in Biological Sciences, Chemistry, Construction Management, Geology, Physics or Surveying. (BL, CH, CMG, GE, PH, SU)
- Any **2000** or higher level course in Business or Economics (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM).
- Any **3000** or higher level course in Mathematics, Humanities, Psychology, Social Sciences or University Wide (MA, HU, PSY, SS, UN).
- Any **3000** or higher level course in Civil and Environmental Engineering (CEE) or any other Engineering Dept.

NOTE: OTHER COURSES MAY BE USED TO SATISFY THE PROFESSIONAL ELECTIVES REQUIREMENT IF APPROVED BY THE DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING ACADEMIC ADVISOR.
**Senior Design (SD) Pre-reqs:**
(complete 7 of the following)
CEE3101, CEE3331, (CEE3202 or CEE3332 or CEE3401), CEE3620, CEE3810, CEE3503, WATER RESOURCES DESIGN COURSE, & 2 WATER RESOURCES ELECTIVES

**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.

**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**
   - FA2330, FA2520, FA2720, FA2820, HU2130, HU234, HU2501, HU2503, HU2538, HU2700, HU2820, HU2910, SS2300

**B. HASS Courses (12 Credits)**
1. **Comm/Comp:**
   - __________________________
2. **Humanities & Fine Arts:**
   - __________________________
3. **Social & Behavioral Sciences:**
   - __________________________
4. **Any HASS or HASS Restricted Course:**
   - 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)**
PE/FA/AR/AF______  PE/FA/AR/AF______
PE/FA/AR/AF______  PE/FA/AR/AF______

**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
- Any **1000** or higher level course in Computer Science, Fine Arts or Forestry. (CS, FA, FW)
- Any **2000** or higher level course in Biological Sciences, Chemistry, Construction Management, Geology, Physics or Surveying. (BL, CH, CMG, GE, PH, SU)
- Any **2000** or higher level course in Business or Economics (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM).
- Any **3000** or higher level course in Mathematics, Humanities, Psychology, Social Sciences or University Wide (MA, HU, PSY, SS, UN).
- Any **3000** or higher level course in Civil and Environmental Engineering (CEE) or any other Engineering Dept.

**Note:** Other courses may be used to satisfy the professional electives requirement if approved by the Department of Civil and Environmental Engineering Academic Advisor.
**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 4 cr.

**TRANSPORTATION DESIGN COURSE** (Select 1)

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

**TRANSPORTATION ELECTIVES** (select 4)

- CEE4101 BITUMINOUS MATERIALS Fall 3 cr.
- CEE4333 ESTIMATING, PLAN., CONST. Spring 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.
- CEE4407 TRANSPORTATION DESIGN Spring 4 cr.
- CEE4410 TRANSPORTATION PLANNING Fall 3 cr.
- CEE4760 OPT. METHODS IN CEE Spring 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.
- CEE4760 OPT. METHODS IN CEE Spring 3 cr.

**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
4. Social Resp. & Ethical Reasoning
5. Any 1000 or higher level course in Computer Science, Fine Arts or Forestry. (CS, FA, FW)
6. Any 2000 or higher level course in Biological Sciences, Chemistry, Construction Management, Geology, Physics or Surveying. (BL, CH, CMG, GE, PH, SU)
7. Any 2000 or higher level course in Business or Economics (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM).
8. Any 3000 or higher level course in Mathematics, Humanities, Psychology, Social Sciences or University Wide (MA, HU, PSY, SS, UN).
9. Any 3000 or higher level course in Civil and Environmental Engineering (CEE) or any other Engineering Dept.

**B. Hass Courses (12 Credits)**

1. Comm/Comp:
2. Humanities & Fine Arts:
3. Social & Behavioral Sciences:
4. Any Hass or Hass Restricted Course:

**C. Co-Curricular Activities (3 Units)**

PE/FA/AR/AF_____ PE/FA/AR/AF_____
PE/FA/AR/AF_____ PE/FA/AR/AF_____
PE/FA/AR/AF_____ PE/FA/AR/AF_____
**Built Infrastructure Requirements**

**Built Infrastructure Design Course** (select 1)
- CEE4213 Structural Concrete Design Spring 4 cr.
- CEE4223 Steel Design 1 Fall 4 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. Spring 3 cr.
- CEE4344 Construction Scheduling Spring 3 cr.
- CEE4820 Foundation Engineering Fall 3 cr.
- CEE4830 Geosyntheticics Spring 3 cr.
- CEE4850 Rock Engineering Spring 3 cr.
- CEE5212 Prestressed Concrete Design Fall 3 cr.
- CEE5213 Concrete/Masonry Bldg Sys Fall 3 cr.

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**General Education Requirements**

**A. Core Courses (12 Credits)**

1. **UN1015** (Composition)
2. **UN1025** (Global Issues)

**B. Critical and Creative Thinking**

3. Social Resp. & Ethical Reasoning
   - FA2330, FA2520, FA2720, FA2820, HU2130, HU2324, HU2501, HU2503, HU2538, HU2700, HU2820, HU2910, SS2300

**C. Professional Electives**

- Any 1000 or higher level course in Computer Science, Fine Arts or Forestry. (CS, FA, FW)
- Any 2000 or higher level course in Biological Sciences, Chemistry, Construction Management, Geology, Physics or Surveying. (BL, CH, CMG, GE, PH, SU)
- Any 2000 or higher level course in Business or Economics (ACC, BUS, EC, FIN, MGT, MIS, MKT, OSM).
- Any 3000 or higher level course in Mathematics, Humanities, Psychology, Social Sciences or University Wide (MA, HU, PSY, SS, UN).
- Any 3000 or higher level course in Civil and Environmental Engineering (CEE) or any other Engineering Dept.

**PROFESSIONAL ELECTIVES**

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

- **Built Infrastructure Design Course** (select 1)
- **Built Infrastructure Electives** (select 4)

**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

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