- 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

F INDICATES COURSE IS OFFERED FALL SEIVIESTER

Michigan Tech

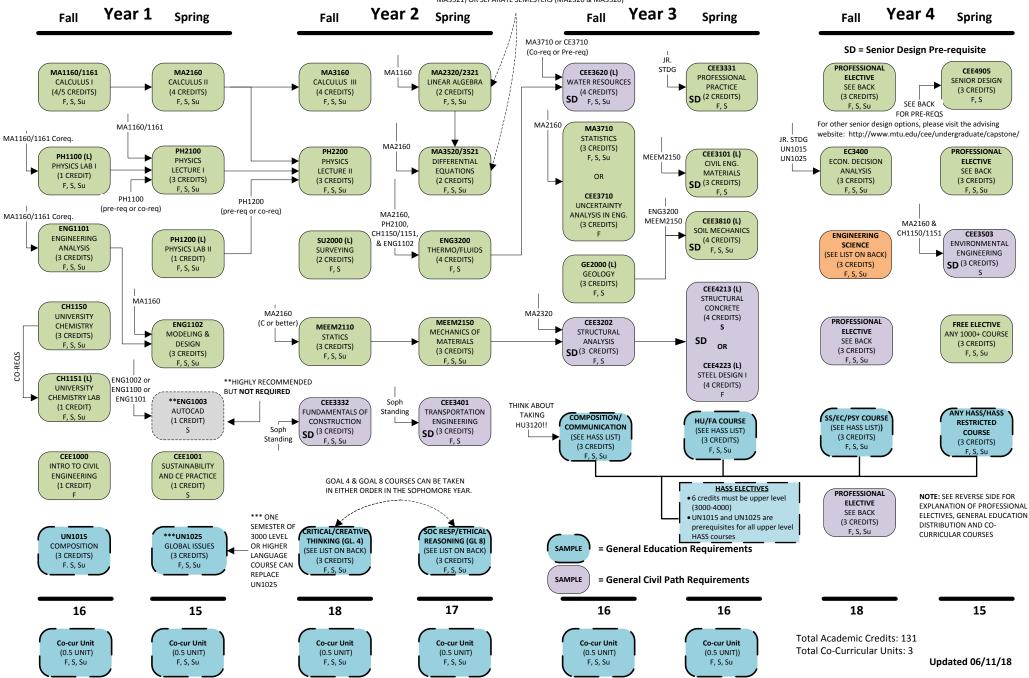
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Adjustments may be required due to curriculum changes.

General Academic Year 2018-19

CIVIL ENGINEERING FLOWCHART

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



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

<u>Senior Design (SD) Pre-reqs</u> (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

- 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	**GOAL 8 LIST
FA2330	EC2001
FA2520	ED2000
FA2720	PSY2000
FA2820	SS2100
HU2130	SS2200
HU2324	SS2400
HU2501	SS2500
HU2503	SS2501
HU2538	SS2502
HU2700	SS2503
HU2820	SS2504
HU2910	SS2505
SS2300	SS2600
	SS2610
	SS2700

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

- S INDICATES COURSE IS OFFERED SPRING SEMESTER
- Su INDICATES COURSE IS OFFERED SUMMER SEMESTER
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 MUST BE SCHEDULED IN ADDITION TO THE LECTURE

CIVIL ENGINEERING FLOWCHART Water Resources

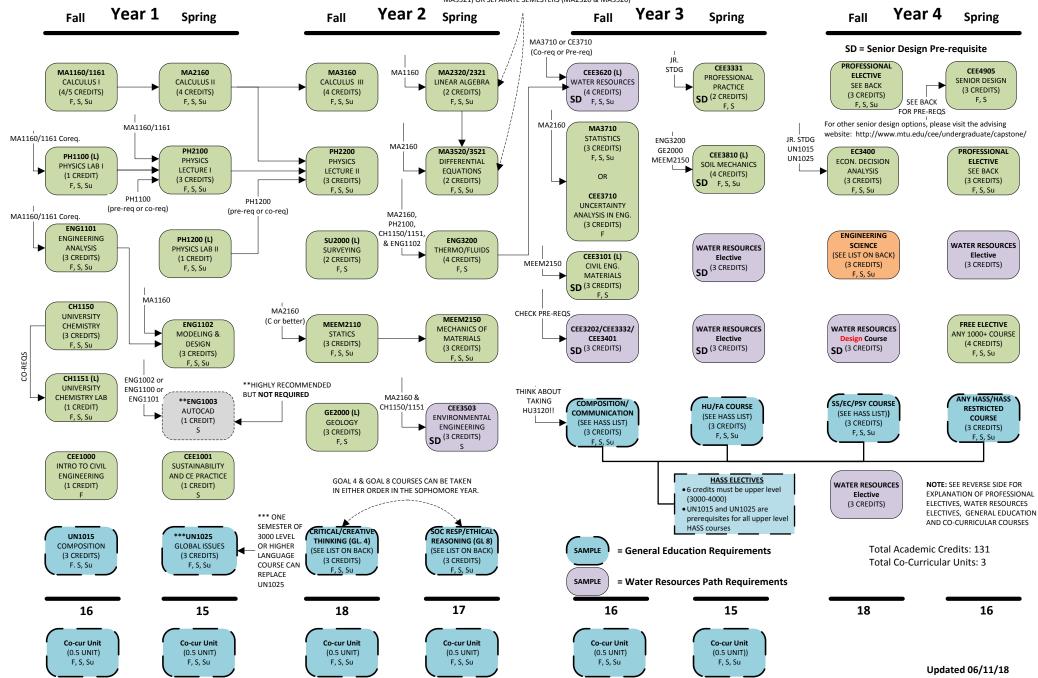
Academic Year 2018-19

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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.

<u>Senior Design (SD) Pre-reqs (complete 7 of the following)</u>

CEE3101, CEE3331, (CEE3202 or CEE3332 or CEE3401), CEE3620, CEE3810, CEE3503, 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 AND INSTRUMENTATION
MSE2100	INTRO TO MATERIALS SCI & ENGRG
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- 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	**GOAL 8 LIST
FA2330	EC2001
FA2520	ED2000
FA2720	PSY2000
FA2820	SS2100
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HU2324	SS2400
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HU2503	SS2501
HU2538	SS2502
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HU2820	SS2504
HU2910	SS2505
SS2300	SS2600
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	SS2700

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- 1. COMMUNICATION/COMP (HASS LIST)
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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
PF/FΔ/ΔR/ΔF	PF/FA/AR/AF

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CIVIL ENGINEERING FLOWCHART

Transportation

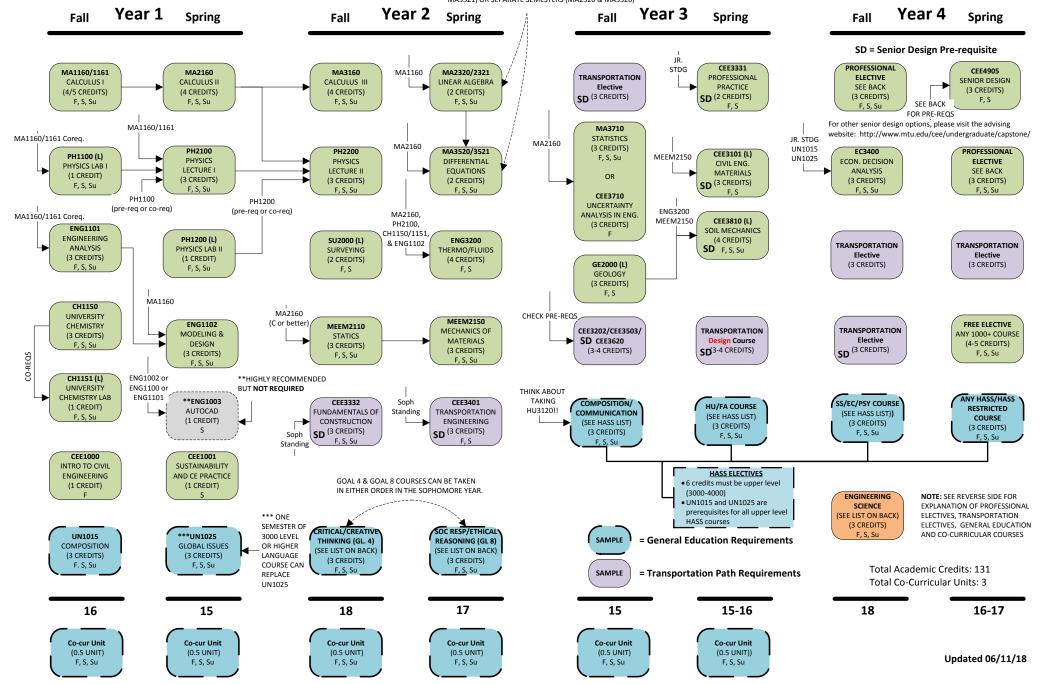
Academic Year 2018-19

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This is not an official list of degree requirements.

Adjustments may be required due to curriculum changes.



Transportation Requirements

Choose 1 course from the following

CEE32UZ	STRUCTURAL ANALYSIS	г, эр	o cr.
CEE3503	ENVIRONMENTAL ENG.	Sp	3 cr.
CEE3620	WATER RESOURCES ENG	F, Sp, S	u 3 cr.

TRANSPORTATION DESIGN COURSE (Select 1)

	PAVEMENT DESIGN TRANSPORTATION DESIGN	Fall Spring	3 cr. 4 cr.
	RTATION ELECTIVES (select 4) ESTIMATING, PLAN., CONST.	Fall	3 cr.
0== 40 4 4			_

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-reg is CEE3490 – 1 cr. Offered in the spring)

(pre red is ezza-so			
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
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- HU3120 TECHNICAL AND PROFESSIONAL COMMUNICATION

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GENERAL EDUCATION REQUIREMENTS

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- 1. UN1015 (COMPOSITION)
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- 3. CRITICAL AND CREATIVE THINKING (Goal 4) *
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FA2720	PSY2000
FA2820	SS2100
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HU2538	SS2502
HU2700	SS2503
HU2820	SS2504
HU2910	SS2505
SS2300	SS2600
	SS2610
	SS2700

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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

- S INDICATES COURSE IS OFFERED SPRING SEMESTER
- (L) INDICATES A COURSE WHICH INCLUDES A LAB

F, S, Su

F, S, Su

Su INDICATES COURSE IS OFFERED SUMMER SEMESTER

CIVIL ENGINEERING FLOWCHART

Built Infrastructure

Academic Year 2018-19



F, S, Su

NOTE: LINEAR ALGEBRA & DIFFERENTIAL EQUATIONS CAN MUST BE SCHEDULED IN ADDITION TO THE LECTURE BE TAKEN DURING THE SAME SEMESTER (MA2321 & MA3521) OR SEPARATE SEMESTERS (MA2320 & MA3520) Year 1 Year 2 Year 3 Year 4 Spring Spring **Spring** Fall **Spring** Fall Fall Fall MA3710 or CE3710 SD = Senior Design Pre-requisite (Co-reg or Pre-reg) JR. CEE3331 PROFESSIONAL CEE3620 (L) STDG CEE4905 MA1160/1161 MA2160 MA3160 MA1160 MA2320/2321 PROFESSIONAL FLECTIVE CALCULUS I CALCULUS II CALCULUS III LINEAR ALGEBRA WATER RESOURCES SENIOR DESIGN PRACTICE SEE BACK (3 CREDITS) (4/5 CREDITS) (4 CREDITS) (4 CREDITS) (2 CREDITS) (4 CREDITS) SD (2 CREDITS) SEE BACK (3 CREDITS) SD F, S, Su F, S F. S. Su F. S. Su F, S, Su F, S, Su F, S, Su For other senior design options, please visit the advising MA2160 MA1160/1161 MA3710 website: http://www.mtu.edu/cee/undergraduate/capstone/ MA1160/1161 Coreg **STATISTICS** IR STDG BUILT (3 CREDITS) UN1015 PH2100 PH2200 INFRASTRUCTURE PH1100 (L) F, S, Su UN1025 PHYSICS DIFFERENTIAL **ECON DECISION** FLECTIVE PHYSICS SD Elective PHYSICS LAB I LECTURE I LECTURE II **EQUATIONS ANALYSIS** SEE BACK (3-4 CREDITS) (1 CREDIT) OR (3 CREDITS) (3 CREDITS) (3 CREDITS) (3 CREDITS) (2 CREDITS) F, S, Su CEE3710 PH1100 PH1200 LINCERTAINTY ENG3200 (pre-reg or co-reg) (pre-req or co-req) MA1160/1161 Coreq MA2160. ANALYSIS IN ENG. GE2000 CEE3810 (L) PH2100, (3 CREDITS) MEEM2150 ENG1101 SOIL MECHANICS CH1150/1151 SD (4 CREDITS) **ENGINEERING** PH1200 (L) SU2000 (L) FNG3200 BUILT BUILT & ENG1102 ANALYSIS PHYSICS LAB II SURVEYING THERMO/FLUIDS INFRASTRUCTURE INFRASTRUCTURE F, S, Su (3 CREDITS) (1 CREDIT) (4 CREDITS) CEE3101 (L) (2 CREDITS) Flective Flective MFFM2150 F, S, Su F, S, Su CIVIL ENG. (3-4 CREDITS) (3-4 CREDITS) F, S F, S MATERIALS SD (3 CREDITS) MA1160 CH1150 SEE BACK MA2160 MA2320 LINIVERSITY ENG1102 MEEM2150 CEE3202 (C or better) BUILT FREE ELECTIVE **CHEMISTRY** MEEM2110 BUILT MODELING & MECHANICS OF STRUCTURAL INFRASTRUCTURE ANY 1000+ COURSE (3 CREDITS) STATICS INFRASTRUCTURE DESIGN MATERIALS ANALYSIS SD Elective (3-4 CREDITS) (4 CREDITS) (3 CREDITS) F, S, Su (3 CREDITS) SD (3 CREDITS) sign Course (3 CREDITS) SD_(3-4 CREDITS) F, S, Su F, S, Su CO-REQS F. S. Su F, S, Su ENG1002 or **HIGHLY RECOMMENDED CH1151 (L) ENG1100 or **ENG1003 BUT NOT REQUIRED UNIVERSITY ENG1101 THINK ABOUT AUTOCAD CHEMISTRY LAB ANY HASS/HASS TAKING Soph CFF3332 COMPOSITION/ SS/EC/PSY COURSE (1 CREDIT) **HU/FA COURSE** (1 CREDIT) GE2000 (L) RESTRICTED Standing HU3120!! S **FUNDAMENTALS OF** COMMUNICATION (SEE HASS LIST)) (SEE HASS LIST) **GEOLOGY** COURSE CONSTRUCTION (SEE HASS LIST) (3 CREDITS) (3 CREDITS) (3 CREDITS) (3 CREDITS) SD (3 CREDITS) (3 CREDITS) F, S, Su F. S. Su F, S F, S, Su F, S, Su CEE1000 CEE1001 INTRO TO CIVIL SUSTAINABILITY AND CE PRACTICE HASS ELECTIVES **ENGINEERING** GOAL 4 & GOAL 8 COURSES CAN BE TAKEN ENGINEERING NOTE: SEE REVERSE SIDE FOR (1 CREDIT) (1 CREDIT) • 6 credits must be upper level IN EITHER ORDER IN THE SOPHOMORE YEAR. SCIENCE EXPLANATION OF PROFESSIONAL (3000-4000) (SEE LIST ON BACK ELECTIVES. BUILT INFRASTRUCTURE • UN1015 and UN1025 are (3 CREDITS) ELECTIVES, GENERAL EDUCATION AND prerequisites for all upper level *** ONE CO-CURRICULAR COURSES HASS courses SEMESTER OF SOC RESP/ETHICAL CRITICAL/CREATIVE ***UN1025 UN1015 3000 LEVEL THINKING (GL. 4) **REASONING (GL 8)** SAMPLE = General Education Requirements COMPOSITION GLOBAL ISSUES OR HIGHER (SEE LIST ON BACK) (SEE LIST ON BACK) Total Academic Credits: 131 (3 CREDITS) (3 CREDITS) LANGUAGE (3 CREDITS) (3 CREDITS) COURSE CAN F. S, Su F, S, Su Total Co-Curricular Units: 3 F. S. Su F, S, Su SAMPLE = Built Infrastructure Path Requirements REPLACE UN1025 17 18 16 15 18 16 15 16 Co-cur Unit Co-cur Unit Co-cur Unit Co-cur Unit Co-cur Unit Co-cur Unit (0.5 UNIT) (0.5 UNIT) (0.5 UNIT) (0.5 UNIT) (0.5 UNIT)) (0.5 UNIT)

F, S, Su

F, S, Su

F, S, Su

Updated 06/11/18

Built Infrastructure Requirements

BUILT INFRASTRUCTURE DESIGN COURSE (select 1)

CEE4213	STRUCTURAL CONCRETE DESIGN	Spring	4 cr.
CEE4223	STEEL DESIGN 1	Fall	4 cr.
CEE4820	FOUNDATION ENGINEERING	Fall	3 cr.

BUILT INFRASTRUCTURE ELECTIVES (select 4)

DOIL! INT	MASTROCTORE ELECTIVES (SCIECT 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
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SS2300	SS2600
	SS2610
	SS2700

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

1. COMMUNI	CATION/COMP	(HASS LIST)
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T)

3.	SS OR E	OR PSY	'COURSE	(HASS	LIST
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4. ANY HASS OR HASS RESTRICTED COURSE (HASS LIST)

 6 credits must be upper division 3000-4000 level courses

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PE/FA/AR/AF	PE/FA/AR/AF
PE/FA/AR/AF	PE/FA/AR/AF
PE/FA/AR/AF	PE/FA/AR/AF