

# Civil Engineering Undergraduate Curriculum (UCORE) Fall 2016

## FRESHMAN YEAR

### First Semester

- (4) Chem 105 Principles of Chem I [PSCI]  
(Pre Req.) 1 yr hs Chem or Chem 101; Math 106)
- (3) Creative & Prof Arts [ARTS]
- (3) English 101 Intro Writing [WRTG]
- (4) Math 171 Calculus I [QUAN] (Math108)<sup>1</sup>
- (2) ENGR 120 Innovation in Design
- (16) Total Hours

### Second Semester

- (4) Biol 102 OR MBioS 101<sup>2</sup> [BSCI]
- (3) History 105 [ROOTS]
- (4) Math 172 Calculus II (Math 171)<sup>1</sup>
- (2) Math 220 Linear Algebra (Math 171 c//)
- (3) ECONS 101 OR 102 Micro/Macro [SSCI]
- (16) Total Hours

## SOPHOMORE YEAR

### First Semester

- (3) Diversity [DIVR]
- (3) CE 211 Statics(Math 172 c//; Phys 201 c//)<sup>1</sup>
- (3) COM 102, OR (4) H D 205 [COMM]
- (2) Math 273 Calculus III (Math 172)
- (4) Phys 201 Classical Phys [PSCI] (Math 171)<sup>1</sup>
- (15) Total Hours

CERTIFY<sup>1</sup>

### Second Semester

- (3) ME 212 Dynamics (CE 211, Math 172)
- (3) CE 215 Mech of Materials (CE 211)
- (3) Stat 360 or 370 Statistics (Math 172)
- (2) EE 221 Numerical Computing for Engrs (Math 172, 220)
- (1) ME 220 Materials Lab (CE 215 c//)
- (4) Phys 202 Classical Phys (Phys 201) OR Geol 102<sup>3</sup> OR Chem 106 (Chem 105)<sup>2</sup>
- (16) Total Hours

## JUNIOR YEAR

Writing Portfolio must complete after 60 semester credits

### First Semester

- (2) CstM 254 Construction Graphics (certified CE Major)
- (2) CE 302 Intro to Surveying (Math 171)<sup>7</sup>
- (3) CE 315 Fluid Mechanics (ME 212)<sup>7</sup>
- (4) CE 317 Geotech Engr (CE 215; CE315 c//) [M]<sup>7</sup>
- (3) CE Breadth Elective<sup>4</sup>
- (3) CE Breadth Elective<sup>4</sup>
- (17) Total Hours

### Second Semester

- (3) CE Breadth Elective<sup>4</sup>
- (3) CE Breadth Elective<sup>4</sup>
- (2) CE 303 CE Computer Applications<sup>7</sup>
- (3) Math 315 Diff Equations (Math 273, 220 c//)
- (3) Engl 402 Technical Writing [WRTG]
- (2) EE 304 Electric Circuits (Math315 c//)
- OR (3) ME 301 Thermodynamics (Phys 201)
- (16/17) Total Hours

## SENIOR YEAR

All students required to take Fundamentals of Engineering Exam and fulfill the Experiential Requirement prior to graduation.

### First Semester

- (3) CE 463 Engineering Administration
- (1) CE 466 FE Exam Review
- (3) CE Laboratory (CE400, 414, 415, 416)<sup>5,7</sup>
- (9) CE Electives<sup>5,7</sup>
- (16) Total Hours

### Second Semester

- (3) CE 465 Integrated C E Des [M] [CAPS]<sup>6\*</sup>
- (1) CE 480 Ethics & Professionalism [M]<sup>7</sup>
- (3) Humanities [HUM]
- (9) CE Electives<sup>5,7</sup>
- (16) Total Hours

The alternate senior year schedules shown on the next page are offered to those students interested in studying with a Construction, Environmental, Water Resources, Structural, or Infrastructure engineering emphasis. This would substitute for the senior year above and complete the study schedule for the Bachelor of Science degree in Civil Engineering.

<sup>1</sup>Classes that must be completed prior to certification.

<sup>2</sup>Course strongly recommended for students emphasizing environmental engineering.

<sup>3</sup>Course strongly recommended for students emphasizing structural, geotechnical or infrastructure engineering.

<sup>4</sup>Choose three courses from CE 322(Math/Stat 360/370 c//; CE 302 c//)<sup>7</sup>, 330(CE 215)<sup>7</sup>, 341(Chem 105; MBioS 101 rec), and 351(CE 315)<sup>7</sup> and one other upper-division CE elective, may opt to take all four 300 level courses.

### Environmental Engineering Emphasis

#### First Semester

- (3) CE 402 Applied Meteorology<sup>5</sup>
- (3) Humanities [HUM]
- (3) CE 415 Env Meas (CE 341; Math 360 /370 or c//)<sup>5,7</sup>
- (3) CE 418 Hazardous Waste Eng. (CE 341)<sup>5</sup>
- (3) CE 463 Engineering Administration
- (1) CE 466 FE Exam Review

(16) Total Hours

#### Second Semester

- (3) CE 401 Climate Change Science and Engineering<sup>5,7</sup>
  - (3) CE 403 Air Quality Management<sup>5</sup>
  - OR CE 419 Hazardous Waste Treatment (CE 418)<sup>5</sup>
  - (3) CE 442 Water/Waste (CE 341)<sup>5</sup>
  - (3) CE 465 Integrated C E Des [M] [CAPS]<sup>6\*</sup>
  - (1) CE 480 Ethics & Professionalism [M]<sup>7</sup>
  - (3) CE 405 Sustainability: The Green Environment<sup>5</sup>
- (16) Total Hours

### Water Resources Emphasis

#### First Semester

- (3) Humanities [HUM]
  - (3) CE 451 Open Channel Flow (CE 351)<sup>5</sup>
  - (3) CE 450 Hydraulic Engineering Design<sup>5</sup>
  - (3) CE 463 Engineering Administration
  - (3) CE 475 Groundwater (CE 317; and Math 172 or c//)<sup>5</sup>
  - (1) CE 466 FE Exam Review
- (16) Total Hours

#### Second Semester

- (3) CE 416 Hydraulics Lab (CE 315, Engl 402; Math 360 /370 or c//)<sup>5,7</sup>
  - (3) CE 460 Advanced Hydrology (CE 351)<sup>5</sup>
  - (3) CE Elective<sup>5</sup>
  - (3) CE 465 Integrated C E Des [M] [CAPS]<sup>6\*</sup>
  - (1) CE 480 Ethics & Professionalism [M]<sup>7</sup>
  - (3) CE 405 Sustainability: The Green Environment<sup>5</sup>
- (16) Total Hours

### Structural Engineering Emphasis

#### Breadth Electives, First Junior Semester

- (3) CE 330 Structural Engineering (CE 215)
- (3) CE 322 Transportation Engr (Math/Stat 360/370 c//; CE 302 c//)

#### First Senior Semester

- (3) CE 463 Engineering Administration
  - (3) CE 430 Analysis of Indeterminate Structures (CE 330; Math 220; EE 221)<sup>5,7</sup>
  - (3) CE 433 Reinforced Concrete Des. (CE 414)<sup>5,7</sup>
  - (3) CE 436 Design of Timber Structures (CE 414)<sup>5,7</sup>
  - (3) Humanities [HUM]
  - (1) CE 466 FE Exam Review
- (16) Total Hours

#### Breadth Electives, Second Junior Semester

- (3) CE 351 Water Resource Engr (CE 315)
- (3) CE 414 Structural Design Laboratory (CE 330 c//; Math/Stat 360 /370 or c//)<sup>5,7</sup>

#### Second Senior Semester

- (3) CE 431 Structural Steel Design (CE 414)<sup>5,7</sup>
  - (3) CE 434 Prestressed Concrete & Masonry (CE 433)<sup>5,7</sup>
  - (3) CE 465 Integrated C E Des [M] [CAPS]<sup>6\*</sup>
  - (1) CE 480 Ethics & Professionalism [M]<sup>7</sup>
  - (3) CE Elective [CE 435 recommended (CE 317)<sup>5,7</sup>]
  - (3) CE Elective [CE 538, CE 400, CE 425, or CstM 462 suggested]
- (16) Total Hours

### Infrastructure Engineering Emphasis

#### Breadth Electives, First Junior Semester

- (3) CE 322 Transportation Engr (Math/Stat 360/370 c//; CE 302 c//)
- (3) CE 341 Environmental Engr (Chem 105; MBioS 101 rec)

#### First Senior Semester

- (3) CE 400 CE Materials (Engl 402; Math/Stat 360 /370 or c//)<sup>5,7</sup>
- (3) CE 476 Pavement Management and Rehabilitation<sup>5,7</sup>
- (3) CE 433 Reinforced Concrete Design (CE 414)<sup>5,7</sup>
- (3) CE 463 Engineering Administration
- (3) CE 425 Soil and Site Improvement (CE 317)<sup>5,7</sup>
- (1) CE 466 FE Exam Review

(16) Total Hours

#### Breadth Electives, Second Junior Semester

- (3) CE 330 Structural Engineering (CE 215)
- (3) CE 473 Pavement Design (CE 317; CE 322 c//)<sup>5,7</sup>

#### Second Senior Semester

- (3) CE 434 Prestressed Concrete Design (CE 433)<sup>5,7</sup> OR CE 405 Sustainability: Green Engr <sup>5,7</sup>
  - (3) CE 435 Foundations (CE 317)<sup>5,7</sup>
  - (3) CE 465 Integrated C E Des [M] [CAPS]<sup>6\*</sup>
  - (1) CE 480 Ethics & Professionalism [M]<sup>7</sup>
  - (3) CE 472 Durable & Sustainable Pavementt & Bridges (CE 215)<sup>5,7</sup>
  - (3) Humanities [HUM]
- (16) Total Hours

### Construction Engineering Emphasis

#### First Semester

- (3) CE 400 CE Materials (Engl 402; Math/Stat 360 /370 or c//) OR CE 414 Structural Design Lab (spring)<sup>5,7</sup>
  - (3) CstM 462 Planning & Scheduling
  - (3) CE 433 Reinforced Concrete Des. (CE 414) OR CE 425 Soil and Site Improvement (CE 317)<sup>5,7</sup>
  - (3) Humanities [HUM]
  - (3) CE 436 Design of Timber Structures (CE 414) OR CE 476 Pavement Management and Rehabilitation<sup>5,7</sup>
  - (1) CE 466 FE Exam Review
- (16) Total Hours

#### Second Semester

- (3) CstM 356 Sub-Structures
  - (3) CE 465 Integrated C E Des [M] [CAPS]<sup>6\*</sup>
  - (1) CE 480 Ethics & Professionalism [M]<sup>7</sup>
  - (3) CE 431 Structural Steel Design (CE 414) OR CE 473 Pavement Design (CE 317; c// in CE 322) OR CE 435 Foundations (CE 317)<sup>5,7</sup>
  - (3) CE 463 Engineering Administration
  - (3) CstM 466 Heavy/Civil Estimating
- (16) Total Hours

<sup>5</sup>Elective Courses: The total credit hours for elective courses must be distributed such that at least 3 courses, not including the lab, are design emphasis in order for a student to qualify for a degree. CE electives including CE laboratory will be selected from at least two different areas (construction, environmental, geotechnical, hydraulics, structural, sustainability, and transportation/pavement).

<sup>6</sup>CE 465 must be taken in the final semester. \*Two CE elective courses must be completed before enrollment in CE 465.

<sup>7</sup>Certified major in CE, or instructor permission required.