

2012-2013 Civil Engineering Design Electives

The 2012-13 catalog introduced a “civil engineering design elective” in place of one of the senior design courses required by prior catalogs. Students on this catalog, will need to choose from the list below to satisfy their curriculum’s CE design elective requirement. Thirty-three such courses are included on this list, as per the following breakdown of offerings per each focus area:

Technical Area	Course Options
Structures	11
Geotechnical/Materials	8
Environmental/Water Resources	8
Transportation	5
Multidisciplinary (ME, AE, CE/ConE)	3

The following special notes are offered to provide important clarifications regarding various CE curriculum requirements:

- CE 333, 334, and 460 - *These courses may be taken as either ‘core’ or ‘elective’ CE classes...BUT they may not be counted twice as both a ‘core’ AND ‘elective’ on a student’s curriculum.*
- CE 453 – *This course is a core CE class requirement but it could be used as a design course elective for Environmental Emphasis CE majors.*
- CE 485 (i.e., which is taken along with construction engineering students in ConE 487) – *This course is now the only senior design or “capstone” course in the civil engineering program and it is expected to be taken in the student’s final semester.*
- CE 486 - *Students graduating under any prior (i.e., before 2012-2013) catalog that have not yet taken CE 486 will replace it with one of this list of design elective courses in order to graduate. Any course chosen to satisfy this requirement, or as a replacement for CE 486, may not also be used to satisfy engineering topics elective requirements.*
- All CE Design Elective Courses RE: Catalog Details – *The student is responsible for checking and abiding by the ISU catalog relative to official course details, prerequisites, and narratives.*

STRUCTURES (11 each)

C E 333. Structural Steel Design I	(2-2) Cr. 3. F.S. Prereq: C E 332, E M 327
C E 334. Reinforced Concrete Design I	(2-2) Cr. 3. F.S. Prereq: C E 332, E M 327
C E 436. Masonry and Timber Design	(2-2) Cr. 3. Alt. F., offered 2011. Prereq: 334
C E 446. Bridge Design	(2-2) Cr. 3. Alt. S., offered 2013. Prereq: 333, 334
C E 448. Building Design.	(2-2) Cr. 3. Alt. S., offered 2012. Prereq: 333, 334
C E 533. Structural Steel Design II	(3-0) Cr. 3. Prereq: 333
C E 534. Reinforced Concrete Design II	(2-2) Cr. 3. Prereq: 334
C E 535. Pre-Stressed Concrete Structures	(3-0) Cr. 3. Prereq: 334
C E 536. Masonry and Timber Design	(2-2) Cr. 3. Alt. F., offered 2011. Prereq: 334
C E 546. Bridge Design	(2-2) Cr. 3. Alt. S., offered 2013. Prereq: 333, 334
C E 548. Building Design	(2-2) Cr. 3. Alt. S., offered 2012. Prereq: 333, 334

GEOTECHNICAL/MATERIALS (8 each)

C E 460. Foundation Engineering	(3-0) Cr. 3. F.S. Prereq: <u>C E 360</u>
C E 467. Geomaterials Stabilization	(2-2) Cr. 3. F. Prereq: <u>C E 360</u>
C E 483. Pavement Analysis and Design	(3-0) Cr. 3. Prereq: 360 and 382

C E 484. Advanced Design of Concretes	(2-2) Cr. 3. F. <i>Prereq: 382</i>
C E 561. Applied Foundation Engineering	(2-3) Cr. 3. <i>Prereq: C E 460</i>
C E 567. Geomaterials Stabilization	(2-2) Cr. 3. F. <i>Prereq: C E 360</i>
C E 583. Pavement Analysis and Design	(3-0) Cr. 3. <i>Prereq: 360 and 382</i>
C E 584. Advanced Design of Concretes	(2-2) Cr. 3. F. <i>Prereq: 382</i>

ENVIRONMENTAL/WATER_RESOURCES (6 each)

C E 428. Water and Wastewater Treatment Plant Design	(General Option Only) (2-2) Cr. 3. S. <i>Prereq: 326</i>
C E 488X: Sustainable Infrastructure Systems	(3-0) CE Cr. 3. <i>Prereq: CE 326</i>
C E 473. Groundwater Hydrology	(3-0) Cr. 3. F. <i>Prereq: C E 372</i>
C E 522. Water Pollution Control Processes	(2-2) Cr. 3. <i>Prereq: <u>C E 521</u></i>
C E 528X. Solid and Hazardous Waste Management	(2-3) CE Cr. 3. <i>Prereq: CE326; CHEM 178 or equiv</i>
C E 570. Applied Hydraulic Design	(2-2) Cr. 3. <i>Prereq: 372</i>
C E 573. Groundwater Hydrology	(2-2) Cr. 3. <i>Prereq: 372</i>
CE 588X: Sustainable Infrastructure Systems	(3-0) CE Cr. 3. <i>Prereq: CE 326</i>

TRANSPORTATION (5 each)

C E 453. Highway Design	(2-2) Cr. 3. F.S. <i>Prereq: C E 306, C E 355, C E 372, C E 382</i>
C E 515. Railroad Engineering	(3-0) Cr. 3. <i>Prereq: C E 355</i>
C E 552. Traffic Safety, Operations, and Maintenance	(2-2) (Change to 3-0) Cr. 3. <i>Prereq: C E 355.</i>
C E 553. Traffic Engineering	(2-2) (Change to 3-0) Cr. 3. <i>Prereq: C E 355</i>
C E 558. Transportation Systems Development and Management	(3-0) Cr. 3. <i>Prereq: C E 350 or C E 355</i>

MULTIDISCIPLINARY/CONSTRUCTION (3 each)

A B E 478. Wood Frame Structural Design	(3-0) Cr. 3. Alt. S., offered 2013. <i>Prereq: <u>A E 216</u>, <u>E M 324</u></i>
A B E 578. Wood Frame Structural Design	(3-0) Cr. 3. Alt. S., offered 2013. <i>Prereq: A E 216, E M 324</i>
C E 505. Design of Construction Systems	(3-0) Cr. 3. <i>Prereq: 334, 360, <u>CON E 322</u> and 340</i>