

**Architectural Engineering & Design
Certificate Program
Department of Civil and Environmental Engineering**

The Architectural Engineering and Design (AE & D) Program provides undergraduates in Civil and Environmental Engineering and other engineering fields with a design experience that prepares them for graduate study and professional careers in structural design, construction management, architecture, and elsewhere in the building industry. The 6-course certificate program in AE & D is built on the McCormick School of Engineering Basic Studies Program and the Basic Civil Engineering Curriculum. Civil Engineering students completing this program will meet all requirements for the B.S. degree in Civil Engineering. Other Northwestern engineering students may earn the certificate by taking two additional courses (8 courses total).

Students may also take a variety of elective courses that are directly supportive of AE & D, and most can do this within their allotment of technical, free, and theme elective courses. Students interested in pursuing advanced studies in architecture are encouraged to include in their program of theme courses more fine arts and design courses that will develop their design skills and contribute to the portfolios necessary for application to architecture schools. The certificate program is described in detail below.

Required Courses for all Engineers

1. Civ_Env 385 (1) Design Studio I (F): Fundamentals – Self-referential design problem. Open to all juniors, seniors; students are expected to have taken, or be enrolled in CEE 221, Theory of Structures I.
2. Civ_Env 385 (2) Design Studio II (W): Intermediate – Contextual design problem. Restricted to junior-senior engineers having taken Design Studio I, or by permission of instructor; students are expected to have taken, or be enrolled in CEE 325, Reinforced Concrete.
3. Civ_Env 385 (3) Design Studio III (S): Advanced – Complex design problem. Prerequisite: Design Studio II, or by permission of instructor
 - a. *Course sequence integrates architecture history, principles and practice; contextual research and design experiences; and structural analysis and design; each course in this sequence approaches increasingly complex design problems.*
4. GEN_ENG 220 (W, S) Analytic and Computer graphics (CAD)
5. CIV_ENV 323 Structural Steel Design or CIV_ENV 352 Foundation Engineering
6. Art History ART HIST 232 Introduction to the History of Architecture and Design

Additional courses for students not majoring in civil engineering. (These are already in the basic civil engineering program)

7. CIV_ENV 221 Theory of Structures 1 (requires CIV_ENV 216 or equivalent)
8. CIV_ENV 325 Reinforced Concrete

Limits to Double Counting Courses

Four of the required course may not be counted in the requirements for the major. Thus, civil engineering students may count up to two of these course for their major; other engineers may be able to count up to four courses for the major, depending on the requirements for that major.

Recommended Technical or Unrestricted Electives for Certificate Program

- PROJ_MGT 441 Sustainability in Construction (1/2 course)
- PROJ_MGT 455 Computer-Integrated Project Delivery (1/2 course)
- CIV_ENV 302 Engineering Law
- CIV_ENV 304: Civil and Environmental Engineering Systems Analysis
- CIV_ENV 336 Project Scheduling
- DSGN 370 Engineering Portfolio
- DSGN courses

Recommended Unrestricted Electives for Certificate Program (Could be used as components of theme requirements)

- ART HIST 370 1, 2 Modern Architecture and Design
- Art Theory and Practice (select one course) ♦
 - ART 120 Basic Painting ♦ or
 - ART 125 Basic Drawing ♦ or
 - ART 140 Basic Sculpture ♦
 - Advanced courses in Art Theory and Practice
- History and/or Sociology
 - HISTORY 322-1, 2 Development of the Modern American City
 - SOCIOL 207 Problems of Cities
 - SOCIOL 301 The City: Urbanization and Urbanism

Recommended Internships for Certificate Program

- Summer experiences related to architecture and/or building design or construction, or
- Participation in Co-operative engineering program
- Summer international workshop as available

Additional Conditions for Awarding Certificate in Architectural Engineering and Design

- Completion of all requirements for McCormick B.S. degree.
- Maintenance of GPA of 2.0 or above in courses required for this certificate.

JANUARY 17, 2012