

# Technical Elective Requirements for Architectural Engineering

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## AREN ELECTIVES AND OPPORTUNITIES FOR SPECIALIZATION

**At least two technical electives (6 credits) must be selected from this list, from any emphasis area(s).**

Some technical electives are offered intermittently, and are not guaranteed to be offered every year.

Graduate versions of combined courses (e.g. CVEN 5728 instead of CVEN 4728) are also accepted.

### CONSTRUCTION ENGINEERING & MANAGEMENT

**Strongly recommended:** **AREN 4606 Construction Project Execution & Control** (AREN 4506) – spring  
**CVEN 3256 Construction Equipment & Methods** (CVEN 3246) – fall and spring

Other options: AREN 4315 Masonry Design (CVEN 3525) – spring every other year  
CVEN 3708 Geotechnical Engineering 1 (CVEN 3161) – fall and spring  
CVEN 3718 Geotechnical Engineering 2 (CVEN 3708) – fall and spring  
CVEN 4565 Design of Wood Structures (CVEN 3525) – spring every other year

Note: Students are encouraged to consider CVEN 2012 Intro to Geomatics as a basic engineering or free elective.

### LIGHTING/ELECTRICAL SYSTEMS

**Strongly recommended:** **AREN 4130 Optical Design** (AREN 3540) – fall  
**AREN 4580 Daylighting** (AREN 4130, 4550) – spring  
**AREN 4620 Adaptive Lighting Systems** (AREN 4550) – fall

Recommended: AREN 4530 Advanced Lighting Design (AREN 4550) – spring  
AREN 4560 Luminous Radiative Transfer (AREN 3540) – spring

### MECHANICAL SYSTEMS

AREN 4010 Energy System Modeling & Control (AREN 4110) – fall, intermittent  
AREN 4890 Sustainable Building Design (AREN 3010) – fall, intermittent  
AREN 4990 Computational Fluid Dynamics (CFD) Analysis (AREN 2120, APPM 2360) – intermittent  
AREN 5020 Building Energy Audits (AREN 3010) – spring, intermittent  
AREN 5080 Computer Simulation of Building Systems (AREN 3010) – spring, intermittent

### STRUCTURAL SYSTEMS

**Strongly recommended:** **CVEN 4545 Steel Design\*** (CVEN 3525) – spring  
**CVEN 4555 Reinforced Concrete Design\*** (CVEN 3525) – fall  
*\*Can only be taken as a technical elective if not used to fulfill the Structural Design requirement.*

Recommended: CVEN 4565 Design of Wood Structures (CVEN 3525) – spring every other year  
CVEN 4728 Foundation Engineering (CVEN 3718) – spring

Other options: AREN 4315 Masonry Design (CVEN 3525) – spring every other year  
AREN 5660 Embodied Carbon in Buildings (instructor consent) – spring  
CVEN 4161 Mechanics of Materials II (CVEN 3161) – fall

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## GENERAL TECHNICAL ELECTIVES

**The remaining 6 credits of technical electives may be chosen from the following:**

- Any upper-division (3000+) AREN or CVEN course
- Any course listed on the [CEAE Approved Technical Elective List](#)
- Up to 3 credits of independent study (must be approved by the CEAE Department)

Any other course must be petitioned and approved by the CEAE Department to count as a technical elective. Contact your academic advisor for guidance. Technical electives must be upper-division (3000+) and are generally math, science, or engineering courses with technical content.