INTEGRATED DESIGN ENGINEERING *Architectural Emphasis* – *FALL 2024*

1	**APPM 1350 (4)** Calculus 1 For Engineers	**CHEN 1201 (4)** General Chemistry for Engineers 1 (PR: 1 yr. HS Chemistry or CHEM 1021, HS Algebra)		**CSCI 1200 (3)** Intro to Computational Thinking Fall Only		**Humanities & Social Science (3)**
2	**APPM 1360 (4)** Calculus 2 For Engineers (PR: APPM 1350)	**PHYS 1110 (4)** General Physics 1 (CR: APPM 1350)	**GEEN 1400 (3)** Engineering Projects	**AREN 1027 (3)** Engineering Drawing		**Writing Requirement(3)**
3	**APPM 2350 (4)** Calculus 3 For Engineers (PR: APPM 1360)	**GEEN 2400 (3)** Engineering Projects for the Community (PR: GEEN 1400)	**GEEN 2851 (3)** Statics & Structures (PR: APPM 1360, PHYS 1110) Fall Only	**AREN 2050 (3)** Building Materials and Systems Fall Only		**Humanities & Social Science (3)**
4	**APPM 2360 (4)** Linear Algebra & Differential Equations (PR: APPM 1360)	**PHYS 1120 (4)** General Physics 2 (PR: PHYS 1110)	**PHYS 1140 (1)** Experimental Physics (CR: PHYS 1120)	**CVEN 3161 (3)** Mechanics of Materials I (PR: GEEN 2851, CR: APPM 2360)	**Concentration Course (3)**	**Humanities & Social Science (3)**
5	**GEEN 3010 (3)** Circuits for Engineers (PR: PHYS 1140) (CR: APPM 2360) Fall Only	**GEEN 3400 (3)** Invention & Innovation (PR GEEN 1400)	**GEEN 3852 (3)** Thermodynamics (PR: PHYS 1110) Fall Only	**Focus Area Course 1 (3)** See Page 2 for options		**Humanities & Social Science (3)** Upper Division
6	**Concentration Course (3)**	**Free Elective (3)**	**Math or Science Elective (1)** See Page 2 for Options	**Emphasis Elective 1 (3)** See Page 2 for options	**Focus Area Course 2 (3)** See Page 2 for options	**Free Elective (3)**
7	**Concentration Course (3)**	**Free Elective (3)**	**Free Elective (3)**	**AREN 4080 (2)** Arch. Design Studio 2 (RPR: AREN 3080) (CR: AREN 4318) Fall Only	**AREN 4318 (3)** AREN Design 1 See page 2 for requisites Fall Only	**Humanities & Social Science (3)** Upper Division
8	**Concentration Course (3)**	**GEEN 3853(4)** Data Analysis for Engineers (PR: APPM 2360, Computing, PHYS 1140) (CR: GEEN 3010, Writing, 3024) Spring Only	**Free Elective (3)**	**Emphasis Elective 2 (3)** See Page 2 for options	**AREN 4319 (2)** AREN Design 2 (PR: AREN 4318, AREN 4080) Spring Only	**Example** **COURSE NUMBER (Cr.)** Course Name (PR: Pre-Requisites) (CR: Co-Requisites) Fall or Spring Only Course

Effective: Fall 2024

Integrated Design Engineering Curriculum

Architectural Engineering Emphasis

Standard Course Substitutions

- **APPM 1350**: APPM 1345, MATH 1300
- **APPM 1360:** MATH 2300
- **APPM 2350:** MATH 2400
- **APPM 2360:** MATH 2130 and MATH 3430, MATH 2135 and MATH 3430
- **AREN 1027: NONE** (CVEN 1027 or GEEN 1017 would need to be petitioned if completed)
- **CHEN 1201:** CHEM 1113, CHEN 1211, MCEN 1024, ASEN 1022
- **CSCI 1200**: ASEN 1320 ,CSCI 1320, CSCI 1300, CHEN 1310, ECEN 1310, MCEN 1030
- **CVEN 3161:** MCEN 2063
- **GEEN 1400:** ASEN 1400, ASEN 1403, ECEN 1400
- **GEEN 2851:** CVEN 2121, MCEN 2023, ASEN 2071/2001/2401
- **GEEN 3010:** ECEN 3010
- **GEEN 3852:** AREN 2110, MCEN 3012, ASEN 2702/2002/2402, EVEN 3012
- **GEEN 3853:** CVEN 3227, MCEN 3047

Focus Area Courses (choose one focus area and complete the options listed):

CONSTRUCTION: must complete two courses

- CVEN 3246: Introduction to Construction
- AREN 4506: Pre-construction Estimating and Scheduling (PR: CVEN 3246)

LIGHTING/ELECTRICAL SYSTEMS: must complete two courses

- AREN 3540: Illumination I (PR: Computing and Calculus 3; spring only)
- One of the following:
  - AREN 4550: Illumination II (PR: AREN 3540; fall only)
  - AREN 4570: Building Electrical Systems Design I (PR: GEEN 3010; fall only)

MECHANICAL SYSTEMS: must complete three courses (and 3 less free elective credits)

- AREN 2120: Fluid Mechanics and Heat Transfer (PR: Thermodynamics, CR: Calculus 3 and APPM 2360; spring only)
- AREN 3010: Energy Efficient Buildings (PR: AREN 2120; fall only)
- AREN 4110: HVAC System Design (spring only)

STRUCTURAL SYSTEMS: must complete two courses

- CVEN 3525: Structural Analysis (PR: CVEN 3161)
- CVEN 4545: Steel Design (PR: CVEN 3525; spring only)
- CVEN 4555: Reinforced Concrete Design (PR: CVEN 3525; fall only)

AREN 4318 Pre/Co-Requisites:

- **Construction:** PR: CVEN 3246 and AREN 4506, GEEN 2400, GEEN 3400, AREN Elective 1
- **Electrical/Lighting:** PR: AREN 3540 and AREN 4550 or AREN 4570, GEEN 2400, GEEN 3400, AREN Elective 1
- **Mechanical:** PR: AREN 2120, AREN 3010, and AREN 4110, GEEN 2400, GEEN 3400, AREN Elective 1
- **Structures:** PR: CVEN 3525 and CVEN 4545 or CVEN4555, GEEN 2400, GEEN 3400, AREN Elective 1

Math or Science Electives

- Must reach at least 30 total math & science credits.
- This is a list of CU Boulder courses that have been approved to satisfy this requirement.
- Visit the IDE Advising webpage for more information.

Humanities & Social Science Electives/Writing Requirements

Visit the college's Humanities, Social Sciences, and Writing Requirements webpage for options.

FE Exam

Completion of the FE Exam is required of all IDE students to graduate.

Emphasis Electives:

Elective 1 options (Pre-Requisite for AREN 4318)

- CVEN 3246: Introduction to Construction
- AREN 3540: Illumination I (PR: Computing and Calculus 3; spring only)
- AREN 3010: Energy Efficient Buildings (PR: AREN 2120; fall only)
- CVEN 3525: Structural Analysis (PR: CVEN 3161)
- AREN 3080: Arch. Design Studio 1 (PR: AREN 1027)

Elective 2 (can be taken at any time)

- CVEN 3246: Introduction to Construction
- AREN 3540: Illumination I (PR: Computing and Calculus 3; spring only)
- AREN 3010: Energy Efficient Buildings (PR: AREN 2120; fall only)
- CVEN 3525: Structural Analysis (PR: CVEN 3161)
- AREN 3080: Arch. Design Studio 1 (PR: AREN 1027)

Concentration

IDE majors are required to officially declare a Concentration by the end of their second year at the latest. Students who transfer into the IDE major after their second year must declare a Concentration by the end of their first semester in IDE. Students who have not declared a Concentration before those deadlines will receive a hold on their registration until they declare. Students can initiate the declaration process by emailing or meeting with an IDE Academic Advisor.

Grade Requirements

The minimum passing grade for a course that is a prerequisite or corequisite for another required course is a C-. If a grade of D+ or lower is received in a course which is a prerequisite to another, the student may not register for the subsequent course until the first grade has been raised to a C- or higher. If a grade of D+ or lower is received in a course which is a corequisite to another, the course must be repeated until a grade of C- or higher is achieved.

The minimum passing grade for all required engineering core, disciplinary emphasis, and concentration courses is a C-. The minimum passing grade for a course that is not specifically a prerequisite or corequisite for another required course is D-, if not otherwise noted above.

In addition, students need to have a cumulative and major GPA of at least 2.000 in order to graduate from the College of Engineering. **Pass/Fail** is only permitted for up to 6 Free Elective credits.

Updated: January 2024

Helpful Links

- IDE Emphasis Areas
- IDE Concentrations
- IDE Core Courses
- IDE Projects
- FE Exam

- H&SS Requirements
- CEAS Forms (including Petition, Incomplete Grade, and Independent Study)
- Study Abroad