

AREN Block Diagram – pre-Fall 2018

Sem	CR						
8 SPR	17	<u>Tech Elective-3</u>	<u>Tech Elective-3</u>		AREN 4317-5 # AREN Design (see below*)	ENVD 3134-3 OR HSS Elective-3 Upper-division	<u>HSS Elective-3</u>
7 FALL	17	<u>Concentration II</u> AREN/CVEN XXXX-3***	<u>AREN/CVEN</u> <u>Tech Elective-3</u>		ARCH 4010-5 # Arch. Design (Senior standing)	ENVD 3114-3 OR ARCH 3214-3 History/Theory of Arch. 2 (<i>spring</i>)	<u>HSS Elective-3</u>
6 SPR	15	<u>Concentration I</u> AREN/CVEN XXXX-3***	<u>AREN/CVEN</u> <u>Tech Elective-3</u>	<u>Proficiency I-3***</u> CVEN 4545 or 4555 Structural Design AREN 4110 HVAC Design AREN 4130/4550/4560/4570 Light/Elec. CVEN 3256 Construct. Equip./Methods		<u>Proficiency II-3***</u>	<u>College-Appr.</u> <u>Writing</u> <u>Course-3**</u>
5 FALL	15		AREN 3540-3 # Illumination 1 (CSCI 1320, APPM 2350)	AREN 3010-3 # Energy Efficient Buildings (AREN 2050, 2110, 2120)	ECEN 3030-3 # Electrical Circuits (APPM 2360) OR AREN 3040-3	CVEN 3525-3 Structural Analysis (CVEN 3161)	<u>Free Elective-3</u>
4 SPR	17	APPM 2360-4 Introduction to Linear Algebra & Differential Equations (APPM 1360)	CSCI 1320-4 ⁺ Computer Sci. 1: Eng. Applications (co-req. APPM 1350)	AREN 2120-3 # Fluid Mech. & Heat Transfer (APPM 2350, AREN 2110, co- req. APPM 2360)	CVEN 3246-3 Introduction to Construction (4 th -semester standing)	CVEN 3161-3 Mechanics of Materials I (CVEN 2121, co- req. APPM 2360)	
3 FALL	17	APPM 2350-4 Calculus III for Engineers (APPM 1360)	PHYS 1120-4 Gen. Physics II (PHYS 1110, co- req. APPM 1360)	AREN 2110-3 Thermodynamics (PHYS 1110, co- req. APPM 1360)	AREN 2050-3 # Building Materials and Systems (Soph. standing)	CVEN 2121-3 Analytical Mechanics I (PHYS 1110, co- req. APPM 2350)	
2 SPR	14	APPM 1360-4 Calculus II for Engineers (APPM 1350)	PHYS 1110-4 Gen. Physics I (co-req. APPM 1350)		AREN 1027-3 Engineering Drawing	GEEN 1400-3 Engrg. Projects OR Basic Engineering Elective	
1 FALL	16	APPM 1350-4 Calculus I for Engineers (APPM 1235 or placement)	CHEN 1211-4 Gen. Chem. for Engineers (1 yr. HS chem. or CHEM 1021)	CHEM 1221-1 General Chemistry Lab for Engineers (co-req. CHEN 1211)	AREN 1316-1 ⁺ # Introduction to Architectural Engineering	CVEN 2012-3 # Introduction to Geomatics	<u>HSS Elective-3**</u>

Revised February 2020

Course is offered only once per year (FALL or SPRING as shown).

() Prerequisite and co-requisite requirements for course listed.

* AREN 4317 prerequisites: ARCH 4010; and (AREN 4506 and CVEN 3256) or (AREN 4550 and 4570) or (CVEN 4161 and 4555) or (AREN 4110 and 4890).

** Writing course options: HUEN 1010 (first-year students only); or HUEN 3100, WRTG 3030, WRTG 3035, or PHYS 3050 (junior standing).

*** See reverse for semesters that Proficiency and Concentration courses are offered (fall and/or spring) – varies by concentration.

+ Your computing/intro course requirements may be different than shown here based on the semester that you entered the AREN program. See the AREN undergraduate advisor with questions.

ARCHITECTURAL ENGINEERING CONCENTRATIONS

At least one concentration must be completed in its entirety, including all fundamental, proficiency, and concentration courses.

Fundamental – All students take the fundamental courses in all four concentration areas.

Proficiency – Students choose **two** of the four areas in which to take a second proficiency-level course.

Concentration – Students choose **one** area in which to take two additional concentration-level courses.

STRUCTURAL SYSTEMS

Fundamental – CVEN 3525 Structural Analysis (CVEN 3161) – **Fall and Spring**

Proficiency – CVEN 4545 Steel Design (CVEN 3525) – **Spring**
or CVEN 4555 Reinforced Concrete Design (CVEN 3525) – **Fall**

Concentration – CVEN 4161 Mechanics of Materials II (CVEN 3161) – **Fall**
and one of the following:
CVEN 4545 or 4555 (whichever not selected as proficiency)

MECHANICAL SYSTEMS

Fundamental – AREN 3010 Energy Efficient Buildings (AREN 2050, 2110, 2120) – **Fall**

Proficiency – AREN 4110 HVAC System Design (AREN 3010) – **Spring**

Concentration – AREN 4830 Computer Simulation of Building Systems – **Spring, intermittent**
AREN 4890 Sustainable Building Design (AREN 3010) - **Fall**

LIGHTING/ELECTRICAL SYSTEMS

Fundamental – ECEN 3030/**AREN 3040** Electrical Circuits (APPM 2360) – **Spring (starting 2020)**
and AREN 3540 Illumination I (computing, APPM 2350) – **Fall**

Proficiency – **AREN 4130 Optical Design (AREN 3540) – Varies**
or AREN 4550 Illumination II (AREN 3540) – **Fall (starting 2020)**
or AREN 4560 Luminous Radiative Transfer (AREN 3540) – **Spring, intermittent**
or AREN 4570 Electrical Systems (ECEN 3030) – **Fall**

Concentration – AREN 4550; **AREN 4130 or 4560**; AREN 4570 (two courses not selected as proficiency)

CONSTRUCTION ENGINEERING & MANAGEMENT

Fundamental – CVEN 3246 Introduction to Construction (4th-semester standing) – **Fall and Spring**

Proficiency – CVEN 3256 Construction Equipment & Methods (CVEN 3246) – **Fall and Spring**

Concentration – AREN 4506 Project Management I (CVEN 3246) – **Fall and Spring**
AREN 4606 Project Management II (CVEN 3246, AREN 4506) – **Spring**

ELECTIVE REQUIREMENTS

Basic Engineering Elective – Students who do not take GEEN 1400 may substitute any 3-credit technical course given in the engineering college with a designator ASEN, AREN, APPM, CHEN, COEN, CVEN, CSCI, ECEN, EMEN, EVEN, GEEN, or MCEN, or other course approved by the CEAE Curriculum Committee. Remedial courses (precalculus, etc.) or courses approved as HSS electives may not be used.

Free Elective – Any college-level course, except: cannot be remedial courses needed to fulfill deficiencies (algebra, trigonometry, precalculus, introductory chemistry, etc.) and cannot be similar to courses used toward graduation requirements (algebra-based physics, etc.).

Humanities and Social Science (HSS) Elective – See the College requirements and approved courses at <https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements>.

Technical Elective – Generally, an upper-division (3000+) science or engineering course with technical content. All upper-division AREN/CVEN courses are technical electives; up to 6 credits outside of AREN/CVEN may be selected with faculty advisor consent. Up to 3 credits of independent study, undergraduate research, or the following ROTC courses are acceptable as technical elective credit: AIRR 3010 or NAVR 4010. See the CEAE website for a list of approved technical electives for AREN students.