INTEGRATED DESIGN ENGINEERING - BACHELOR OF SCIENCE (BSIDE)

Integrated design is a process defined by its use of highly collaborative, multidisciplinary teamwork and consideration of all aspects of an engineering project. The Integrated Design Engineering program (formerly Engineering Plus) provides students with a solid grounding in the fundamentals of engineering and both instills and is structured by integrated design. Our majors customize their degree plans through their choice of one of six engineering emphases (selected from aerospace, architectural, civil, electrical, environmental or mechanical engineering), and a concentration in an approved second area such as entrepreneurship, environmental planning, pre-medical or CU Teach Engineering. At the core of our program are three hands-on iterative design project courses that explore and reinforce engineering principles, which jointly form a continuous experiential thread uniting the four-year IDE curriculum. These team-based projects showcase individual students' growing multidisciplinary knowledge and expertise toward developing vital skills in communication, innovation and leadership, as well as reinforce engineering methodologies required by the emphasis area capstone design experience. Our students graduate with the knowledge, skills and confidence required for success in a diverse and changing world.

Integrated Design Engineering is an approach that favors creativity, diversity and collaboration across disciplines in creating practical and innovative solutions in the service of humanity. Graduates from our program find enriching careers in engineering and related professional fields, establish and support new enterprises, teach secondary-level STEM education and enroll in graduate and professional degree programs.

For more information, visit the program (https://www.colorado.edu/program/ide/) website.

Requirements

Program Requirements

In order to earn a Bachelor of Science degree in Integrated Design Engineering (IDE), students must complete the curriculum in the undergraduate major program as outlined below. For up-to-date program information, visit the Integrated Design Engineering (https://www.colorado.edu/program/ide/) webpage. Required courses in engineering, mathematics and physical science are interwoven throughout the curriculum to provide a multifaceted education. The degree requires coursework in math and science (a minimum of 30 credits), a core of project-based integrated design-focused engineering courses taught by IDE faculty, a disciplinary emphasis (which includes engineering and design content), a selected concentration (https://www.colorado.edu/program/ide/academics/concentrations/) (12 or more credits), humanities and social sciences electives (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/), a writing course (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/) and free electives, for a total of 128 credits required for the degree.

Disciplinary Emphases

Integrated design engineering majors select one disciplinary emphasis (i.e., aerospace, architectural, civil, electrical, environmental or mechanical engineering), and then complete requirements associated with developing competency in that area. To meet graduation requirements, the combination of engineering core and disciplinary emphasis coursework must sum to 52 credits or more. All engineering core and disciplinary emphasis courses require a minimum grade of C-. All integrated design engineering students, regardless of emphasis, are required to take the Fundamentals of Engineering (FE) exam prior to graduation. With the exception of architectural engineering or civil engineering, students are not permitted to double major in a degree program in the same disciplinary area as their IDE emphasis. Students are not permitted to declare a minor in the same disciplinary area as their IDE emphasis.

- Aerospace Emphasis
- Architectural Emphasis
- Civil Emphasis
- Electrical Emphasis
- Environmental Emphasis
- Mechanical Emphasis

Concentration

The integrated design engineering concentration (minimum 12 credits) allows students to select additional coursework in a chosen field of study, either within or outside of engineering. The concentration course sequence must be a series of courses with increasing specificity or depth within a field, typically culminating in senior-level courses. Most concentrations will consist of at least four 3-credit courses. Every concentration *must* be pre-approved by the Integrated Design Engineering academic advisor *prior* to the commencement of the coursework. All concentration courses require a minimum grade of C-. All IDE majors must declare one approved concentration by the end of their fourth semester and students who transfer into the program after their fourth semester must declare an approved concentration by the end of their first semester in the major. No one is permitted to declare more than one concentration. Visit the program website for the current concentration requirements. (https://www.colorado.edu/program/ide/academics/concentrations/)

The Integrated Design Engineering degree is built around student choice and flexibility. The combinations of engineering emphases and available concentrations allow for over 100 possible pathways. The sample curriculum represents only a general idea of what is possible with integrated design engineering. Students are encouraged to visit the Integrated Design Engineering (https://www.colorado.edu/program/ide/academics/) website or an advisor for more specifics in planning their own unique pathway and to ensure that all degree requirements are met.

Prerequisites and Passing Grades

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.

Additional Graduation Requirements

- **FE Exam**: All integrated design engineering students, regardless of emphasis, are required to take the Fundamentals of Engineering (FE) exam prior to graduation.
- **Senior Survey:** All integrated design engineering students, regardless of emphasis, are required to take the Senior Survey prior to graduation.

Disciplinary Emphases

Aerospace Emphasis

Code	Title	Credit Hours
Engineering Requirement		
GEEN 1400	Engineering Projects	3
or ASEN 1400	Gateway to Space	
or ASEN 1403	Introduction to Rocket Engineering	
or ECEN 1400	Introduction to Digital and Analog Electronics	
GEEN 2400	Engineering Projects for the Community	3
GEEN 2851	Statics for Engineers	3
or ASEN 2401	Statics	
or CVEN 2121	Analytical Mechanics 1	
or MCEN 2023	Statics and Structures	
GEEN 3400	Invention and Innovation	3
GEEN 3852	Thermodynamics for Engineers	3
or ASEN 2402	Thermodynamics	
or AREN 2110	Thermodynamics	
or EVEN 3012	Thermodynamics for Environmental Science and Engineering	
or MCEN 3012	Thermodynamics	
Aerospace Requirement		
ASEN 1320	Aerospace Computing and Engineering Applications	4
or CHEN 1310	Introduction to Engineering Computing	
or CSCI 1300	Computer Science 1: Starting Computing	
or ECEN 1310	C Programming for ECE	
or MCEN 1030	Introduction to Engineering Computing	
ASEN 2403	Dynamics	3
or MCEN 2043	Dynamics	
or CVEN 3111	Analytical Mechanics 2	
ASEN 2501	Introduction to Astronautics	3
ASEN 2502	Introduction to Aeronautics	3
ASEN 3404	Aerospace Dynamics and Control	3
ASEN 4018	Senior Projects 1: Design Synthesis [1]	4
ASEN 4028	Senior Projects 2: Design Practicum	4
Emphasis Elective #1		6
Select two:		
ASEN 3401	Aerospace Structures	
ASEN 3402	Aerospace Heat Transfer	
ASEN 3403	Aerodynamics	
ASEN 3503	Aerospace Electronics	
Emphasis Elective #2:		3
ASEN 3501	Aerospace Experimental Methods	
or ASEN 3502	Aerospace Computational Methods	
Emphasis Elective #3:		3
ASEN 3405	Astrodynamics	
or ASEN 3406	Aircraft Dynamics	
Concentration Requirement [2]		**12**
Math and Science Requirement		
APPM 1350	Calculus 1 for Engineers	4
or APPM 1345	Calculus 1 with Algebra, Part B	
or MATH 1300	Calculus 1	
APPM 1360	Calculus 2 for Engineers	4
or MATH 2300	Calculus 2	
APPM 2350	Calculus 3 for Engineers	4
or MATH 2400	Calculus 3	
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
or MATH 2130 & MATH 3430	Introduction to Linear Algebra for Non-Mathematics Majors and Ordinary Differential Equations	
or MATH 2135 & MATH 3430	Introduction to Linear Algebra for Mathematics Majors and Ordinary Differential Equations	
MCEN 1024	Chemistry for Energy and Materials Science	3
or CHEN 1201	General Chemistry for Engineers 1	
or CHEN 1211	Accelerated Chemistry for Engineers	
or CHEM 1113	General Chemistry 1	
or CHEM 1400	Foundations of Chemistry	
PHYS 1110	General Physics 1	4
or PHYS 1115	General Physics 1 for Majors	
PHYS 1120	General Physics 2	4
or PHYS 1125	General Physics 2 for Majors	
PHYS 1140	Experimental Physics 1	1
Math or Science Science Electives [3]		**3**
Humanities, Social Sciences, and Writing		
Complete the College's Humanities, Social Sciences, and Writing requirements. [4]		18
Free Electives		**16**
Fundamentals of Engineering (FE) Exam		
Senior Survey		
Total Credit Hours		**128**

1. IDE students must meet the following prerequisites to enroll in ASEN 4018: GEEN 2400, GEEN 3400, ASEN 3404, ASEN 3501 or 3502, and two of the following emphasis electives: ASEN 3401, ASEN 3402, ASEN 3403, ASEN 3503.
2. Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.
3. View the IDE Advising (https://www.colorado.edu/program/ide/academics/advising/) webpage for math or science elective options.

[4] View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.

Note: The BS in Integrated Design Engineering with an aerospace engineering emphasis cannot be earned in combination with the BS in Aerospace Engineering Sciences.

Architectural Emphasis

Code	Title	Credit Hours
Engineering Requirement		
CSCI 1200	Introduction to Computational Thinking	3
or CHEN 1310	Introduction to Engineering Computing	
or CSCI 1300	Computer Science 1: Starting Computing	
or ASEN 1320	Aerospace Computing and Engineering Applications	
or ECEN 1310	C Programming for ECE	
or MCEN 1030	Introduction to Engineering Computing	
GEEN 1400	Engineering Projects	3
or ASEN 1400	Gateway to Space	
or ASEN 1403	Introduction to Rocket Engineering	
or ECEN 1400	Introduction to Digital and Analog Electronics	
GEEN 2400	Engineering Projects for the Community	3
GEEN 3400	Invention and Innovation	3
GEEN 2851	Statics for Engineers	3
or CVEN 2121	Analytical Mechanics 1	
or ASEN 2001		
or ASEN 2401	Statics	
or ASEN 2701	Introduction to Statics, Structures, and Materials	
or MCEN 2023	Statics and Structures	
GEEN 3010	Circuits for Engineers	3
or ECEN 3010	Circuits and Electronics for Mechanical Engineers	
or MCEN 3017	Circuits and Electronics for Mechanical Engineers	
GEEN 3852	Thermodynamics for Engineers	3
or AREN 2110	Thermodynamics	
or ASEN 2002		
or ASEN 2402	Thermodynamics	
or ASEN 2702	Introduction to Thermodynamics and Aerodynamics	
or MCEN 3012	Thermodynamics	
GEEN 3853	Data Analysis for Engineers	4
or CVEN 3227	Probability, Statistics and Decision	
or MCEN 3047	Data Analysis and Experimental Methods	
Architectural Requirement		
AREN 1027	Engineering Drawing	3
AREN 2050	Building Materials and Systems	3
CVEN 3161	Mechanics of Materials 1	3
or MCEN 2063	Mechanics of Solids	
AREN 4080	Architectural Design Studio 2 [1]	2
AREN 4318	Architectural Engineering Design 1 [2]	3
AREN 4319	Architectural Engineering Design 2	2
Select one Focus Area and complete its listed courses:		*6*
Construction		
CVEN 3246 & AREN 4506	Introduction to Construction and Pre-construction Estimating and Scheduling	
Electrical/Lighting		
AREN 3540 & AREN 4550	Illumination I and Illumination 2	
or AREN 4570	Building Electrical Systems Design 1	
Mechanical Systems [3]		
AREN 2120 & AREN 3010 & AREN 4110	Fluid Mechanics and Heat Transfer and Energy Efficient Buildings and Building Energy Systems Engineering	
Structures		
CVEN 3525 & CVEN 4545	Structural Analysis and Steel Design	
or CVEN 4555	Reinforced Concrete Design	
Emphasis Electives		
Choose two Emphasis Electives:		*6*
AREN 3010	Energy Efficient Buildings	
AREN 3080	Architectural Design Studio 1	
AREN 3540	Illumination I	
AREN 4110	HVAC System Design	
AREN 4506	Pre-Construction Estimating & Scheduling	
AREN 4550	Illumination 2	
AREN 4570	Electrical System Design	
CVEN 3246	Introduction to Construction	
CVEN 3525	Structural Analysis	
CVEN 4545	Steel Design	
CVEN 4555	Reinforced Concrete Design	
Concentration Requirement [4]		**12**
Math and Science Requirement		
APPM 1350	Calculus 1 for Engineers	4
or MATH 1300	Calculus 1	
or APPM 1345	Calculus 1 with Algebra, Part B	
APPM 1360	Calculus 2 for Engineers	4
or MATH 2300	Calculus 2	
APPM 2350	Calculus 3 for Engineers	4
or MATH 2400	Calculus 3	
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
or MATH 2130 & MATH 3430	Introduction to Linear Algebra for Non-Mathematics Majors and Ordinary Differential Equations	
or MATH 2135 & MATH 3430	Introduction to Linear Algebra for Mathematics Majors and Ordinary Differential Equations	
PHYS 1110	General Physics 1	4
or PHYS 1115	General Physics 1 for Majors	
PHYS 1120	General Physics 2	4
or PHYS 1125	General Physics 2 for Majors	
PHYS 1140	Experimental Physics 1	1
CHEN 1201	General Chemistry for Engineers 1	4

or CHEN 1211	Accelerated Chemistry for Engineers	
or CHEM 1113	General Chemistry 1	
or MCEN 1024	Chemistry for Energy and Materials Science	
Math or Science Elective [5]		**1**
Humanities, Social Sciences, and Writing		
Complete the College's Humanities, Social Sciences, and Writing requirements. [6]		18
Free Electives		**15**
Fundamentals of Engineering (FE) Exam		
Senior Survey		
Total Credit Hours		**128**

1 AREN 3080 is not a prerequisite for AREN 4080 for IDE students.

2 IDE students must meet the following prerequisites to enroll in AREN 4318: GEEN 2400 and GEEN 3400 and all required courses from a Focus Area listed above and one of: CVEN 3246 or AREN 3540 or AREN 4570 or AREN 3010 or CVEN 3525.

3 The Mechanical Systems Focus Area requires 9 credits to complete. Students pursuing this Focus Area will complete 3 fewer Free Elective credits.

4 Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.

5 View the IDE Advising (https://www.colorado.edu/program/ide/academics/advising/)webpage for math or science elective options.

6 View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.

Students are allowed to earn a BS in Integrated Design Engineering with an architectural engineering emphasis + BS in Architectural Engineering.

Civil Emphasis

Code	Title	Credit Hours
Engineering Requirement		
AREN 1027	Engineering Drawing	3
or CVEN 1027	Civil Engineering Drawing	
CSCI 1200	Introduction to Computational Thinking	3
or CHEN 1310	Introduction to Engineering Computing	
or CSCI 1300	Computer Science 1: Starting Computing	
or ASEN 1320	Aerospace Computing and Engineering Applications	
or ECEN 1310	C Programming for ECE	
or MCEN 1030	Introduction to Engineering Computing	
GEEN 1400	Engineering Projects	3
or ASEN 1400	Gateway to Space	
or ASEN 1403	Introduction to Rocket Engineering	
or ECEN 1400	Introduction to Digital and Analog Electronics	
GEEN 2400	Engineering Projects for the Community	3
GEEN 3400	Invention and Innovation	3
GEEN 2851	Statics for Engineers	3
or CVEN 2121	Analytical Mechanics 1	
or ASEN 2401	Statics	
or ASEN 2701	Introduction to Statics, Structures, and Materials	
or MCEN 2023	Statics and Structures	
GEEN 3010	Circuits for Engineers	3
or ECEN 3010	Circuits and Electronics for Mechanical Engineers	
or MCEN 3017	Circuits and Electronics for Mechanical Engineers	
GEEN 3852	Thermodynamics for Engineers	3
or AREN 2110	Thermodynamics	
or ASEN 2402	Thermodynamics	
or ASEN 2702	Introduction to Thermodynamics and Aerodynamics	
or MCEN 3012	Thermodynamics	
GEEN 3853	Data Analysis for Engineers	4
or CVEN 3227	Probability, Statistics and Decision	
or MCEN 3047	Data Analysis and Experimental Methods	
Civil Requirement		
CVEN 3161	Mechanics of Materials 1	3
or MCEN 2063	Mechanics of Solids	
CVEN 3313	Theoretical Fluid Mechanics	3
or AREN 2120	Fluid Mechanics and Heat Transfer	
or MCEN 3021	Fluid Mechanics	
or CHEN 3200	Chemical Engineering Fluid Mechanics	
CVEN 3323	Hydraulic Engineering	3
or CVEN 3708	Geotechnical Engineering 1	
Choose two Emphasis Electives:		6
CVEN 3246	Introduction to Construction	
CVEN 3323	Hydraulic Engineering	
CVEN 3414	Fundamentals of Environmental Engineering	
CVEN 3525	Structural Analysis	
CVEN 3708	Geotechnical Engineering 1	
Select one Focus Area and complete its two listed courses:		*6*
Construction		
CVEN 3256 & AREN 4506	Construction Equipment and Methods and Pre-construction Estimating and Scheduling	
Environmental		
CVEN 3424 & CVEN 4474	Water and Wastewater Treatment and Hazardous and Industrial Waste Management	
or CVEN 3434	Introduction to Applied Ecology	
or CVEN 4404	Water Chemistry	
or CVEN 4484	Introduction to Environmental Microbiology	
Geotechnical		
CVEN 3718 & CVEN 4728	Geotechnical Engineering 2 and Foundation Engineering	
Structures		
CVEN 4545 & CVEN 4555	Steel Design and Reinforced Concrete Design	
Water Resources		
CVEN 4333 & CVEN 4353	Engineering Hydrology and Groundwater Engineering	
CVEN 4899	Civil Engineering Senior Project Design [1]	4
Concentration Requirement [2]		**12**
Math and Science Requirement		
APPM 1350	Calculus 1 for Engineers	4

or MATH 1300	Calculus 1	
or APPM 1345	Calculus 1 with Algebra, Part B	
APPM 1360	Calculus 2 for Engineers	4
or MATH 2300	Calculus 2	
APPM 2350	Calculus 3 for Engineers	4
or MATH 2400	Calculus 3	
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
or MATH 2130 & MATH 3430	Introduction to Linear Algebra for Non-Mathematics Majors and Ordinary Differential Equations	
or MATH 2135 & MATH 3430	Introduction to Linear Algebra for Mathematics Majors and Ordinary Differential Equations	
PHYS 1110	General Physics 1	4
or PHYS 1115	General Physics 1 for Majors	
PHYS 1120	General Physics 2	4
or PHYS 1125	General Physics 2 for Majors	
PHYS 1140	Experimental Physics 1	1
CHEN 1201	General Chemistry for Engineers 1	4
or CHEM 1113	General Chemistry 1	
or CHEN 1211	Accelerated Chemistry for Engineers	
CHEM 1114	Laboratory in General Chemistry 1	1
or CHEM 1221	Engineering General Chemistry Lab	
Math or Science Elective [3]		
Humanities, Social Sciences, and Writing		
Complete the College's Humanities, Social Sciences, and Writing requirements. [4]		18
Free Electives		**15**
Fundamentals of Engineering (FE) Exam		
Senior Survey		
Total Credit Hours		**128**

1. IDE students must meet the following requisites to enroll in CVEN 4899: GEEN 2400 and GEEN 3400 and one set of requisites from the following focus areas: Construction: prerequisites CVEN 3256 and AREN 4506; Environmental: prerequisite CVEN 3424 and pre- or co-requisite CVEN 4474 or CVEN 3434 or CVEN 4404 or CVEN 4484; Geotechnical: prerequisite CVEN 3718 and pre- or co-requisite CVEN 4728; Structures: prerequisite CVEN 4555 and pre- or co-requisite CVEN 4545; Water Resources: pre- or co-requisite CVEN 4333 and CVEN 4353.
2. Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.
3. Science Requirement met by listed civil emphasis courses.
4. View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.

Students are allowed to earn a BS in Civil Engineering + BS in Integrated Design Engineering with a civil engineering emphasis.

Electrical Emphasis

Code	Title	Credit Hours
Engineering Requirement		
CSCI 1300	Computer Science 1: Starting Computing	4
or ECEN 1310	C Programming for ECE	
or ASEN 1320	Aerospace Computing and Engineering Applications	
ECEN 1400	Introduction to Digital and Analog Electronics	3
or GEEN 1400	Engineering Projects	
or ASEN 1400	Gateway to Space	
or ASEN 1403	Introduction to Rocket Engineering	
GEEN 2400	Engineering Projects for the Community	3
GEEN 3400	Invention and Innovation	3
GEEN 2851	Statics for Engineers	3
or MCEN 2023	Statics and Structures	
or ASEN 2001		
or ASEN 2401	Statics	
or ASEN 2701	Introduction to Statics, Structures, and Materials	
or CVEN 2121	Analytical Mechanics 1	
GEEN 3024	Materials Science for Engineers	3
or MCEN 2024	Materials Science	
GEEN 3852	Thermodynamics for Engineers	3
or MCEN 3012	Thermodynamics	
or AREN 2110	Thermodynamics	
or ASEN 2002		
or ASEN 2402	Thermodynamics	
or ASEN 2702	Introduction to Thermodynamics and Aerodynamics	
GEEN 3853	Data Analysis for Engineers	4
or MCEN 3047	Data Analysis and Experimental Methods	
or CVEN 3227	Probability, Statistics and Decision	
Electrical Requirement		
ECEN 2250	Introduction to Circuits and Electronics	3
ECEN 2260	Circuits as Systems	3
ECEN 2270	Electronics Design Lab	3
ECEN 2350	Digital Logic	4
Choose three Emphasis Electives:		9
ECEN 2360	Programming Digital Systems	
ECEN 2370	Embedded Software Engineering	
ECEN 3250	Microelectronics	
ECEN 3300	Linear Systems	
ECEN 3400	Electromagnetic Fields and Waves	
ECEN 4610	Capstone Laboratory Part 1 [1]	3
ECEN 4620	Capstone Lab, Part 2	3
Concentration Requirement [2]		**12**
Math and Science Requirement		
APPM 1350	Calculus 1 for Engineers	4
or MATH 1300	Calculus 1	
or APPM 1345	Calculus 1 with Algebra, Part B	
APPM 1360	Calculus 2 for Engineers	4
or MATH 2300	Calculus 2	

APPM 2350	Calculus 3 for Engineers	4
or MATH 2400	Calculus 3	
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
or MATH 2130 & MATH 3430	Introduction to Linear Algebra for Non-Mathematics Majors and Ordinary Differential Equations	
or MATH 2135 & MATH 3430	Introduction to Linear Algebra for Mathematics Majors and Ordinary Differential Equations	
PHYS 1110	General Physics 1	4
or PHYS 1115	General Physics 1 for Majors	
PHYS 1120	General Physics 2	4
or PHYS 1125	General Physics 2 for Majors	
PHYS 1140	Experimental Physics 1	1
Math or Science Electives [3]		**5**
Humanities, Social Sciences, and Writing		
Complete the College's Humanities, Social Sciences, and Writing requirements. [4]		18
Free Electives		**14**
Fundamentals of Engineering (FE) Exam		
Senior Survey		
Total Credit Hours		**128**

1 IDE students must meet the following requisites to enroll in ECEN 4610: ECEN 2260 and ECEN 2270 and GEEN 2400 and GEEN 3400 and the three chosen emphasis electives from the list of five above.

2 Select from current list of concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.

3 View the IDE Advising (https://www.colorado.edu/program/ide/academics/advising/) webpage for math or science elective options.

4 View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.

Note: The BS in Integrated Design Engineering with an electrical engineering emphasis cannot be earned in combination with the BS in Electrical Engineering.

Environmental Emphasis

Code	Title	Credit Hours
Engineering Requirement		
CHEN 1310	Introduction to Engineering Computing	3
or CSCI 1300	Computer Science 1: Starting Computing	
or ASEN 1320	Aerospace Computing and Engineering Applications	
or ECEN 1310	C Programming for ECE	
GEEN 1400	Engineering Projects	3
or ASEN 1400	Gateway to Space	
or ASEN 1403	Introduction to Rocket Engineering	
or ECEN 1400	Introduction to Digital and Analog Electronics	
GEEN 2400	Engineering Projects for the Community	3
GEEN 2851	Statics for Engineers	3
or ASEN 2401	Statics	
or ASEN 2701	Introduction to Statics, Structures, and Materials	
or CVEN 2121	Analytical Mechanics 1	
or MCEN 2023	Statics and Structures	
GEEN 3010	Circuits for Engineers	3
or ECEN 3010	Circuits and Electronics for Mechanical Engineers	
or MCEN 3017	Circuits and Electronics for Mechanical Engineers	
GEEN 3024	Materials Science for Engineers	3
or MCEN 2024	Materials Science	
GEEN 3400	Invention and Innovation	3
GEEN 3852	Thermodynamics for Engineers	3
or MCEN 3012	Thermodynamics	
or AREN 2110	Thermodynamics	
or ASEN 2402	Thermodynamics	
or ASEN 2702	Introduction to Thermodynamics and Aerodynamics	
GEEN 3853	Data Analysis for Engineers	4
or CVEN 3227	Probability, Statistics and Decision	
or MCEN 3047	Data Analysis and Experimental Methods	
Environmental Requirement		
CVEN 3313	Theoretical Fluid Mechanics	3
or CHEN 3200	Chemical Engineering Fluid Mechanics	
or MCEN 3021	Fluid Mechanics	
CVEN 3414	Fundamentals of Environmental Engineering	3
CVEN 3323	Hydraulic Engineering	3
EVEN 4434	Environmental Engineering Design [1]	4
or CVEN 4434	Environmental Engineering Design	
EVEN 4464	Environmental Engineering Processes	3
or CVEN 4464	Environmental Engineering Processes	
Choose two Emphasis Electives:		6
CVEN 3424	Water and Wastewater Treatment	
CVEN 3434	Introduction to Applied Ecology	
CVEN 4333	Engineering Hydrology	
CVEN 4474	Hazardous and Industrial Waste Management	
EVEN 4404	Water Chemistry	
or CVEN 4404	Water Chemistry	
EVEN 4484	Introduction to Environmental Microbiology	
MCEN 4131	Air Pollution Control Engineering	
Concentration Requirement [2]		**12**
Math and Science Requirement		
APPM 1350	Calculus 1 for Engineers	4
or MATH 1300	Calculus 1	
or APPM 1345	Calculus 1 with Algebra, Part B	
APPM 1360	Calculus 2 for Engineers	4
or MATH 2300	Calculus 2	
APPM 2350	Calculus 3 for Engineers	4
or MATH 2400	Calculus 3	
APPM 2360	Introduction to Differential Equations with Linear Algebra	4

or MATH 2130 & MATH 3430	Introduction to Linear Algebra for Non-Mathematics Majors and Ordinary Differential Equations	
or MATH 2135 & MATH 3430	Introduction to Linear Algebra for Mathematics Majors and Ordinary Differential Equations	
CHEN 1201	General Chemistry for Engineers 1	4
or CHEM 1113	General Chemistry 1	
CHEN 1203	General Chemistry for Engineers 2	2
or CHEN 1211	Accelerated Chemistry for Engineers	
or CHEM 1133	General Chemistry 2	
CHEM 1221	Engineering General Chemistry Lab	1
or CHEM 1134	Laboratory in General Chemistry 2	
PHYS 1110	General Physics 1	4
or PHYS 1115	General Physics 1 for Majors	
PHYS 1120	General Physics 2	4
PHYS 1140	Experimental Physics 1	1
Math or Science Electives [3]		
Humanities, Social Sciences, and Writing		
Complete the College's Humanities, Social Sciences, and Writing requirements. [4]		18
Free Electives		**16**
Fundamentals of Engineering (FE) Exam		
Senior Survey		
Total Credit Hours		**128**

1 IDE students must meet the following requisites to enroll in EVEN 4434: GEEN 2400, GEEN 3400, and EVEN 4464 OR CVEN 3424.

2 Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.

3 Math and Science Requirements met by listed Environmental Emphasis courses.

4 View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.

Mechanical Emphasis

Code	Title	Credit Hours
Engineering Requirement		
CSCI 1300	Computer Science 1: Starting Computing	4
or MCEN 1030	Introduction to Engineering Computing	
or ASEN 1320	Aerospace Computing and Engineering Applications	
or CHEN 1310	Introduction to Engineering Computing	
or ECEN 1310	C Programming for ECE	
GEEN 1017	Engineering Drawing	3
or MCEN 1025	Computer-Aided Design and Fabrication	
GEEN 1400	Engineering Projects	3
or ASEN 1400	Gateway to Space	
or ASEN 1403	Introduction to Rocket Engineering	
or ECEN 1400	Introduction to Digital and Analog Electronics	
GEEN 2400	Engineering Projects for the Community	3
GEEN 3400	Invention and Innovation	3
GEEN 2851	Statics for Engineers	3
or MCEN 2023	Statics and Structures	
or CVEN 2121	Analytical Mechanics 1	
or ASEN 2701	Introduction to Statics, Structures, and Materials	
or ASEN 2401	Statics	
or ASEN 2001		
GEEN 3010	Circuits for Engineers	3
or ECEN 3010	Circuits and Electronics for Mechanical Engineers	
or MCEN 3017	Circuits and Electronics for Mechanical Engineers	
Mechanical Requirement		
GEEN 3024	Materials Science for Engineers	3
or MCEN 2024	Materials Science	
or ASEN 1022	Materials Science for Aerospace Engineers	
GEEN 3852	Thermodynamics for Engineers	3
or MCEN 3012	Thermodynamics	
or AREN 2110	Thermodynamics	
or ASEN 2402	Thermodynamics	
or EVEN 3012	Thermodynamics for Environmental Science and Engineering	
GEEN 3853	Data Analysis for Engineers	4
or MCEN 3047	Data Analysis and Experimental Methods	
MCEN 2043	Dynamics	3
or CVEN 3111	Analytical Mechanics 2	
or ASEN 2703	Introduction to Dynamics and Systems	
or ASEN 2403	Dynamics	
MCEN 2063	Mechanics of Solids	3
or CVEN 3161	Mechanics of Materials 1	
MCEN 3021	Fluid Mechanics	3
or CHEN 3200	Chemical Engineering Fluid Mechanics	
or CVEN 3313	Theoretical Fluid Mechanics	
MCEN 3025	Component Design	3
MCEN 4043	System Dynamics	3
or ECEN 3300 & ECEN 4138	Linear Systems and Control Systems Analysis	
MCEN 4045	Mechanical Engineering Design Project 1 [1]	3
MCEN 4085	Mechanical Engineering Senior Design Project 2	3
Concentration Requirement [2]		**12**
Math and Science Requirement		
APPM 1350	Calculus 1 for Engineers	4
or MATH 1300	Calculus 1	
or APPM 1345	Calculus 1 with Algebra, Part B	
APPM 1360	Calculus 2 for Engineers	4
or MATH 2300	Calculus 2	
APPM 2350	Calculus 3 for Engineers	4
or MATH 2400	Calculus 3	
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
or MATH 2130 & MATH 3430	Introduction to Linear Algebra for Non-Mathematics Majors and Ordinary Differential Equations	

or MATH 2135 & MATH 3430	Introduction to Linear Algebra for Mathematics Majors and Ordinary Differential Equations	
PHYS 1110	General Physics 1	4
or PHYS 1115	General Physics 1 for Majors	
PHYS 1120	General Physics 2	4
or PHYS 1125	General Physics 2 for Majors	
PHYS 1140	Experimental Physics 1	1
MCEN 1024	Chemistry for Energy and Materials Science	3
or CHEN 1201	General Chemistry for Engineers 1	
or CHEN 1211	Accelerated Chemistry for Engineers	
or CHEM 1113	General Chemistry 1	
Math or Science Electives [3]		**2**
Humanities, Social Sciences, and Writing		
Complete the College's Humanities, Social Sciences and Writing requirements. [4]		18
Free Electives		**15**
FE Exam		
Senior Survey		
Total Credit Hours		**128**

Note: The BS in Integrated Design Engineering with a mechanical engineering emphasis cannot be earned in combination with the BS in Mechanical Engineering.

1 IDE students must meet the following requisites to enroll in MCEN 4045: GEEN 2400, GEEN 3400, GEEN 3010, GEEN 3852, MCEN 3021, MCEN 3025, one of: GEEN 3853 or MCEN 4043. Co-requisites: One of: GEEN 3853 or MCEN 4043, Writing Requirement.

2 Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.

3 View the IDE Advising (https://www.colorado.edu/program/ide/academics/advising/) webpage for math or science elective options.

4 View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.

Sample Four-Year Plans of Study

Aerospace Emphasis

First Year		
Fall Semester		**Credit Hours**
APPM 1350	Calculus 1 for Engineers	4
ASEN 1320	Aerospace Computing and Engineering Applications	4
GEEN 1400	Engineering Projects	3
PHYS 1110	General Physics 1	4
COEN 1830	Special Topics (Engineering First-Year Seminar)	1
	Credit Hours	**16**
Spring Semester		
APPM 1360	Calculus 2 for Engineers	4
MCEN 1024	Chemistry for Energy and Materials Science	3
PHYS 1120	General Physics 2	4
PHYS 1140	Experimental Physics 1	1
Humanities or Social Sciences Elective [1]		2
	Credit Hours	**14**
Second Year		
Fall Semester		
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
GEEN 2400	Engineering Projects for the Community	3
GEEN 2851	Statics for Engineers	3
GEEN 3852	Thermodynamics for Engineers	3
Humanities or Social Sciences Elective [1]		3
	Credit Hours	**16**
Spring Semester		
APPM 2350	Calculus 3 for Engineers	4
ASEN 2403	Dynamics	3
ASEN 2501	Introduction to Astronautics	3
ASEN 2502	Introduction to Aeronautics	3
Humanities or Social Sciences Elective [1]		3
	Credit Hours	**16**
Third Year		
Fall Semester		
ASEN 3404	Aerospace Dynamics and Control	3
GEEN 3400	Invention and Innovation	3
Emphasis Elective #1		3
Concentration Course [2]		3
Approved Writing Course [1]		3
	Credit Hours	**15**
Spring Semester		
Emphasis Elective #1		3
Emphasis Elective #2		3
Concentration Course		3
Upper Division Humanities or Social Science Elective [1]		3
Free Elective		3
Free Elective		3
	Credit Hours	**18**
Fourth Year		
Fall Semester		
ASEN 4018	Senior Projects 1: Design Synthesis [3]	4
Emphasis Elective #3		3
Concentration Course		3
Free Elective		4
Free Elective		3
	Credit Hours	**17**
Spring Semester		
ASEN 4028	Senior Projects 2: Design Practicum	4
Math or Science Elective [4]		3
Concentration Course		3
Upper Division Humanities or Social Sciences Elective [1]		3

Free Elective		3
	Credit Hours	**16**
	Total Credit Hours	**128**

1. View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/ humanities-social-sciences-and-writing-requirements/) webpage for more information.
2. Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.
3. IDE students must meet the following prerequisites to enroll in ASEN 4018: GEEN 2400, GEEN 3400, ASEN 3404, ASEN 3501 or 3502, and two of the following emphasis electives: ASEN 3401, ASEN 3402, ASEN 3403, ASEN 3503.
4. View the IDE Advising (https://www.colorado.edu/program/ide/academics/advising/) webpage for math or science elective.

Architectural Emphasis

First Year

Fall Semester		**Credit Hours**
APPM 1350	Calculus 1 for Engineers	4
CHEN 1201	General Chemistry for Engineers 1	4
CSCI 1200	Introduction to Computational Thinking	3
COEN 1830	Special Topics (Engineering First-Year Seminar)	1
Humanities or Social Science elective [1]		2
	Credit Hours	**14**
Spring Semester		
APPM 1360	Calculus 2 for Engineers	4
AREN 1027	Engineering Drawing	3
GEEN 1400	Engineering Projects	3
PHYS 1110	General Physics 1	4
Approved Writing Course [1]		3
	Credit Hours	**17**

Second Year

Fall Semester		
APPM 2350	Calculus 3 for Engineers	4
AREN 2050	Building Materials and Systems	3
GEEN 2400	Engineering Projects for the Community	3
GEEN 2851	Statics for Engineers	3
Humanities or Social Science Elective [2]		3
	Credit Hours	**16**
Spring Semester		
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
CVEN 3161	Mechanics of Materials 1	3
PHYS 1120	General Physics 2	4
PHYS 1140	Experimental Physics 1	1
Concentration Course [2]		3
Humanities or Social Science Elective [1]		3
	Credit Hours	**18**

Third Year

Fall Semester		
GEEN 3010	Circuits for Engineers	3
GEEN 3400	Invention and Innovation	3
GEEN 3852	Thermodynamics for Engineers	3
Focus Area Course		3
Upper Division Humanities or Social Science Elective [1]		3
	Credit Hours	**15**
Spring Semester		
Focus Area Course		3
Emphasis Elective		3
Math or Science Elective [3]		1
Concentration Course		3
Free Elective		3
Free Elective		3
	Credit Hours	**16**

Fourth Year

Fall Semester		
AREN 4080	Architectural Design Studio 2	2
AREN 4318	Architectural Engineering Design 1 [4]	3
Concentration Course		3
Upper Division Humanities or Social Science Elective [1]		3
Free Elective		3
Free Elective		3
	Credit Hours	**17**
Spring Semester		
AREN 4319	Architectural Engineering Design 2	2
GEEN 3853	Data Analysis for Engineers	4
Emphasis Elective		3
Concentration Course		3
Free Elective		3
	Credit Hours	**15**
	Total Credit Hours	**128**

1. View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.
2. Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.
3. View the IDE Advising (https://www.colorado.edu/program/ide/academics/advising/)webpage for math or science elective options.
4. IDE students must meet the following prerequisites to enroll in AREN 4318: GEEN 2400 and GEEN 3400 and all required courses from a Focus Area listed above and one of: CVEN 3246 or AREN 3540 or AREN 4570 or AREN 3010 or CVEN 3525.

Civil Emphasis

First Year

Fall Semester		**Credit Hours**
APPM 1350	Calculus 1 for Engineers	4
CHEM 1114	Laboratory in General Chemistry 1	1

CHEN 1201	General Chemistry for Engineers 1	4
CSCI 1200	Introduction to Computational Thinking	3
COEN 1830	Special Topics (Engineering First-Year Seminar)	1
Humanities or Social Sciences Elective [1]		2
	Credit Hours	**15**
Spring Semester		
APPM 1360	Calculus 2 for Engineers	4
AREN 1027	Engineering Drawing	3
GEEN 1400	Engineering Projects	3
PHYS 1110	General Physics 1	4
Humanities or Social Sciences Elective [1]		3
	Credit Hours	**17**
Second Year		
Fall Semester		
APPM 2350	Calculus 3 for Engineers	4
GEEN 2851	Statics for Engineers	3
GEEN 3852	Thermodynamics for Engineers	3
PHYS 1120	General Physics 2	4
PHYS 1140	Experimental Physics 1	1
	Credit Hours	**15**
Spring Semester		
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
CVEN 3161	Mechanics of Materials 1	3
CVEN 3313	Theoretical Fluid Mechanics	3
GEEN 2400	Engineering Projects for the Community	3
Humanities or Social Sciences Elective [1]		3
	Credit Hours	**16**
Third Year		
Fall Semester		
GEEN 3010	Circuits for Engineers	3
GEEN 3400	Invention and Innovation	3
Choose One:		3
CVEN 3323 or CVEN 3708	Hydraulic Engineering or Geotechnical Engineering 1	
Emphasis Elective		3
Concentration Course [2]		3
College-Approved Writing Course [1]		3
	Credit Hours	**18**
Spring Semester		
GEEN 3853	Data Analysis for Engineers	4
Emphasis Elective		3
Focus Area Course		3
Concentration Course [2]		3
Free Elective		3
	Credit Hours	**16**
Fourth Year		
Fall Semester		
Focus Area Course		3
Concentration Course [2]		3
Humanities or Social Science Elective [1]		3
Free Elective		3
Free Elective		3
	Credit Hours	**15**
Spring Semester		
CVEN 4899	Civil Engineering Senior Project Design [3]	4
Concentration Course [2]		3
Humanities or Social Science Elective [1]		3
Free Elective		3
Free Elective		3
	Credit Hours	**16**
	Total Credit Hours	**128**

1. View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.
2. Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.
3. IDE students must meet the following requisites to enroll in CVEN 4899: GEEN 2400 and GEEN 3400 and one set of requisites from the following focus areas: Construction: prerequisites CVEN 3256 and AREN 4506; Environmental: prerequisite CVEN 3424 and pre- or co-requisite CVEN 4474 or CVEN 3434 or CVEN 4404 or CVEN 4484; Geotechnical: prerequisite CVEN 3718 and pre- or co-requisite CVEN 4728; Structures: prerequisite CVEN 4555 and pre- or co-requisite CVEN 4545; Water Resources: pre- or co-requisite CVEN 4333 and CVEN 4353.

Electrical Emphasis

First Year		
Fall Semester		**Credit Hours**
APPM 1350	Calculus 1 for Engineers	4
GEEN 1400	Engineering Projects	3
PHYS 1110	General Physics 1	4
COEN 1830	Special Topics (Engineering First-Year Seminar)	1
Humanities or Social Sciences Elective [1]		2
	Credit Hours	**14**
Spring Semester		
APPM 1360	Calculus 2 for Engineers	4
CSCI 1300	Computer Science 1: Starting Computing	4
PHYS 1120	General Physics 2	4
PHYS 1140	Experimental Physics 1	1
Approved Writing Course [1]		3
	Credit Hours	**16**
Second Year		
Fall Semester		
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
GEEN 2400	Engineering Projects for the Community	3
GEEN 2851	Statics for Engineers	3
Math or Science Elective [2]		5

Humanities or Social Sciences Elective [1]		3
	Credit Hours	**18**
Spring Semester		
APPM 2350	Calculus 3 for Engineers	4
ECEN 2250	Introduction to Circuits and Electronics	3
ECEN 2350	Digital Logic	4
GEEN 3024	Materials Science for Engineers (Or Materials course in emphasis)	3
Humanities or Social Sciences Elective [1]		3
	Credit Hours	**17**
Third Year		
Fall Semester		
ECEN 2260	Circuits as Systems	3
ECEN 2270	Electronics Design Lab	3
GEEN 3400	Invention and Innovation	3
GEEN 3852	Thermodynamics for Engineers	3
Emphasis Elective		3
Concentration Course [3]		3
	Credit Hours	**18**
Spring Semester		
GEEN 3853	Data Analysis for Engineers	4
Emphasis Elective		3
Emphasis Elective		3
Concentration Course		3
Free Elective		2
	Credit Hours	**15**
Fourth Year		
Fall Semester		
ECEN 4610	Capstone Laboratory Part 1 [4]	3
Concentration Course		3
Upper Division Humanities or Social Sciences Elective [1]		3
Free Elective		3
Free Elective		3
	Credit Hours	**15**
Spring Semester		
ECEN 4620	Capstone Lab, Part 2	3
Concentration Course		3
Upper Division Humanities or Social Sciences Elective [1]		3
Free Elective		3
Free Elective		3
	Credit Hours	**15**
	Total Credit Hours	**128**

1. View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.
2. View the IDE Advising (https://www.colorado.edu/program/ide/academics/advising/) webpage for math or science elective options.
3. Select from current list of concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.
4. IDE students must meet the following requisites to enroll in ECEN 4610: ECEN 2260 and ECEN 2270 and GEEN 2400 and GEEN 3400 and the three chosen emphasis electives from the list of five above.

Environmental Emphasis

First Year		
Fall Semester		**Credit Hours**
APPM 1350	Calculus 1 for Engineers	4
GEEN 1400	Engineering Projects	3
PHYS 1110	General Physics 1	4
COEN 1830	Special Topics (First-Year Engineering Seminar)	1
Humanities or Social Sciences Elective [1]		2
	Credit Hours	**14**
Spring Semester		
APPM 1360	Calculus 2 for Engineers	4
CHEN 1310	Introduction to Engineering Computing	3
PHYS 1120	General Physics 2	4
PHYS 1140	Experimental Physics 1	1
Humanities or Social Sciences Elective [1]		3
	Credit Hours	**15**
Second Year		
Fall Semester		
APPM 2350	Calculus 3 for Engineers	4
CHEN 1201	General Chemistry for Engineers 1	4
GEEN 2400	Engineering Projects for the Community	3
GEEN 2851	Statics for Engineers	3
GEEN 3852	Thermodynamics for Engineers	3
	Credit Hours	**17**
Spring Semester		
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
CHEM 1221	Engineering General Chemistry Lab	1
CHEN 1203	General Chemistry for Engineers 2	2
CVEN 3313	Theoretical Fluid Mechanics	3
GEEN 3024	Materials Science for Engineers	3
Free Elective		3
	Credit Hours	**16**
Third Year		
Fall Semester		
CVEN 3323	Hydraulic Engineering	3
CVEN 3414	Fundamentals of Environmental Engineering	3
GEEN 3010	Circuits for Engineers	3
GEEN 3400	Invention and Innovation	3
College-Approved Writing Course [1]		3
Free Elective		3
	Credit Hours	**18**
Spring Semester		
GEEN 3853	Data Analysis for Engineers	4
Emphasis Elective		3
Concentration Course [2]		3

Humanities or Social Sciences Elective [1]		3
Free Elective		3
	Credit Hours	**16**
Fourth Year		
Fall Semester		
EVEN 4464 or CVEN 4464	Environmental Engineering Processes or Environmental Engineering Processes	3
Emphasis Elective		3
Concentration Course [2]		3
Concentration Course [2]		3
Humanities or Social Science Elective [1]		3
Free Elective		1
	Credit Hours	**16**
Spring Semester		
EVEN 4434	Environmental Engineering Design [3]	4
Concentration Course [2]		3
Humanities or Social Sciences Elective [1]		3
Free Elective		3
Free Elective		3
	Credit Hours	**16**
	Total Credit Hours	**128**

1 View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.

2 Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.

3 IDE students must meet the following requisites to enroll in EVEN 4434: GEEN 2400, GEEN 3400, and EVEN 4464 OR CVEN 3424.

Mechanical Emphasis

First Year

Fall Semester		**Credit Hours**
APPM 1350	Calculus 1 for Engineers	4
CSCI 1300	Computer Science 1: Starting Computing	4
PHYS 1110	General Physics 1	4
COEN 1830	Special Topics (Engineering First-Year Seminar)	1
Humanities or Social Sciences Elective [1]		2
	Credit Hours	**15**
Spring Semester		
APPM 1360	Calculus 2 for Engineers	4
MCEN 1024	Chemistry for Energy and Materials Science	3
GEEN 1017	Engineering Drawing	3
GEEN 1400	Engineering Projects	3
Approved Writing Course [1]		3
	Credit Hours	**16**
Second Year		
Fall Semester		
APPM 2350	Calculus 3 for Engineers	4
PHYS 1120	General Physics 2	4
PHYS 1140	Experimental Physics 1	1
GEEN 2851	Statics for Engineers	3
GEEN 3852	Thermodynamics for Engineers	3
Humanities or Social Sciences Elective [1]		3
	Credit Hours	**18**
Spring Semester		
APPM 2360	Introduction to Differential Equations with Linear Algebra	4
MCEN 2043	Dynamics	3
GEEN 2400	Engineering Projects for the Community	3
GEEN 3024	Materials Science for Engineers (Or Materials course in emphasis)	3
Humanities or Social Sciences Elective [1]		3
	Credit Hours	**16**
Third Year		
Fall Semester		
MCEN 2063	Mechanics of Solids	3
GEEN 3010	Circuits for Engineers	3
GEEN 3400	Invention and Innovation	3
Math or Science Elective [2]		2
Concentration Course [3]		3
Free Elective		3
	Credit Hours	**17**
Spring Semester		
MCEN 3021	Fluid Mechanics	3
MCEN 3025	Component Design	3
GEEN 3853	Data Analysis for Engineers	4
Concentration Course [3]		3
Upper Division Humanities or Social Sciences Elective [1]		3
	Credit Hours	**16**
Fourth Year		
Fall Semester		
MCEN 4043	System Dynamics	3
MCEN 4045	Mechanical Engineering Design Project 1 [4]	3
Concentration Course [3]		3
Free Elective		3
Free Elective		3
	Credit Hours	**15**
Spring Semester		
MCEN 4085	Mechanical Engineering Senior Design Project 2	3
Concentration Course [3]		3
Upper Division Humanities or Social Sciences Elective [1]		3
Free Elective		3
Free Elective		3
	Credit Hours	**15**
	Total Credit Hours	**128**

[1] View the College's Humanities, Social Sciences and Writing requirements (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/)webpage for more information.

[2] View the IDE Advising (https://www.colorado.edu/program/ide/academics/advising/) webpage for math or science elective options.

[3] Select from current list of Concentrations (https://www.colorado.edu/program/ide/academics/concentrations/) on the IDE website.

[4] IDE students must meet the following requisites to enroll in MCEN 4045: GEEN 2400, GEEN 3400, GEEN 3010, GEEN 3852, MCEN 3021, MCEN 3025, one of: GEEN 3853 or MCEN 4043. Co-requisites: One of: GEEN 3853 or MCEN 4043, Writing Requirement.

Additional Information

Students who select the CU Teach Engineering Math or Science Concentration will have a ninth semester student teaching experience. There is financial assistance available for these students.

Mission Statement

The mission of the Integrated Design Engineering program is to prepare students to be innovators in a wide range of careers, tackling complex global challenges ethically and creatively by integrating technical engineering knowledge with integrated design thinking and multidisciplinary collaboration skills.

Learning Outcomes

Program Educational Objectives

Within a few years after graduation, graduates of the Integrated Design Engineering program will have:

- Achieved one or more of the following:
  - established themselves in engineering careers or in a professional field in which they apply their engineering mindset;
  - established themselves as STEM educators; and/or
  - earned or be enrolled in a graduate or professional degree program
- Brought an integrated design mindset to the projects, problems and/or systems they worked on.
- Integrated themselves into teams where they champion inclusive practices and diverse thinking.
- Demonstrated professional and personal leadership through continued learning and growth.
- Advanced in professional standing based on their accomplishments and accumulated additional expertise.
- Contributed to the betterment of society.

Student Outcomes

Upon graduation, Integrated Design Engineering students are expected to be able to:

- Identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts.
- Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.