

ENGINEERING PARTNERSHIP PROGRAM

ELECTRICAL AND COMPUTER ENGINEERING

2022 – 2023

coloradomesa.edu/engineering

The Bachelor of Science Degree in Electrical and Computer Engineering obtained through the Engineering Partnership Program is conferred by the University of Colorado Boulder. Lower-division coursework is completed through Colorado Mesa University before applying for admission to the University of Colorado Boulder. The entire program is completed on the campus of Colorado Mesa University. A student may apply for admission to the University of Colorado Boulder through the Engineering Partnership Program when they have satisfied all criteria of one of the following scenarios:

Scenario 1

- Complete a college-level, two-course sequence in calculus with a grade of B– or higher
- Complete one college-level physical science course (calculus-based physics and/or college-level chemistry) with a grade of B– or higher
- Maintain a college-level cumulative GPA of 3.0 or higher

Scenario 2

- Complete the first- and second-year course sequence listed on the current Program Sheet or Degree Plan for the Engineering Partnership Program
- Maintain a college-level cumulative GPA of 3.0 or higher

Student Outcomes. Graduates of this program will have...

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to 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
3. an ability to communicate effectively with a range of audiences
4. an ability to 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
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Program Objectives

Within the first three years after graduation, our alumni will have built on the educational foundation gained through our program by establishing themselves in professional careers and/or pursuing a graduate degree. In addition, within these three years, our alumni should have begun to generate new knowledge and/or exercise leadership in their positions.

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The Bachelor of Science Degree in Electrical and Computer Engineering requires:

- [Transfer](#) to the University of Colorado Boulder of all coursework listed on the plan of study
- At least 45 credits earned from the University of Colorado Boulder ([residency requirement](#))
- A minimum of 128 credits earned to graduate
- A cumulative and major [GPA of at least 2.000](#) (from entirely CU Boulder coursework as a student's GPA does not transfer from non-CU institutions)
- Satisfactory completion of all [Minimum Academic Preparation Standards](#) (MAPS) requirements

AP & IB Credit

Engineering Partnership students must achieve [scores required of CU Boulder](#) for AP and IB credit. An AP score of 5 is required on Physics C: Mechanics to receive credit for PHYS 131 & 131L. This score is higher than the score required for credit at CMU.

English Language and Composition Scores of 4 or 5, despite transferring to CMU as ENGL 111 and 112, do not count toward CEAS humanities and social science requirements (as it is not under the arts and humanities distribution). However, a score of 3, 4, or 5 on the English Literature and Composition exam will count towards CEAS humanities and social science requirement (as it is under the arts and humanities distribution).

MAPS (Minimum Academic Preparation Standards)

MAPS content areas are typically fulfilled by high school coursework, but sometimes students must address "MAPS deficiencies" with college coursework. Typically, one unit equals one year of high school coursework or one semester of college coursework. For engineering students, those who experience a MAPS deficiency most often need to take additional foreign language and/or social science courses. The good news is that these courses can do "double duty" by fulfilling MAPS as well as CEAS humanities and social science requirements. The MAPS requirement for **foreign language is 2 units in a single foreign language**.

What this requirement means is that a student must demonstrate written and oral language proficiency through the *second-level* of a single foreign language, where *second-level* means a second full year of high school or a second semester college-level course that will transfer to CU Boulder.

The MAPS requirement for **social science is 3 units** (at least one of which must be US or world history).

MAPS policies can be found on the [CEAS Degree Requirement website](#).

Academic Calendar

The Engineering Partnership Program follows the calendar of Colorado Mesa University for semester start and end dates as well as breaks. Add, drop, and withdrawal dates may differ and can be found on the [CU Boulder Registrar's Website](#).

Petitions

Students seeking an exception to a [policy or practice](#) (including transfer coursework policies) should first talk to the Partnership Program Director and then [submit a petition](#).

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COURSES

Mathematics & Basic Sciences: 32 semester hours

MATH 135	Engineering Calculus I	4
MATH 136	Engineering Calculus II	4
MATH 253	Calculus III	4
MATH 236	Differential Equations & Linear Algebra	4
MATH 369	Discrete Structures I	3
PHYS 131	Fundamental Mechanics	4
PHYS 131L	Fundamental Mechanics Lab	1
PHYS 132	Electromagnetism & Optics	4
PHYS 132L	Electromagnetism & Optics Lab	1
	Basic Science Elective:	3
	BIOL 209 Human Anatomy and Physiology (3-cr)	
	CHEM 311 Organic Chemistry I (4-cr)	
	MCEN 3012 Thermodynamics (3-cr)	
	PHYS 230 Intermediate Dynamics (3-cr)	
	PHYS 231 Modern Physics (3-cr)	

Computer Science: 8 semester hours

CSCI 112	CS2: Data Structures	4
CSCI 130	Introduction to Engineering Computing	4

Writing: 3 semester hours

ENGL 325	Writing for Engineers	3
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Basic Engineering: 21 semester hours

EECE 225	Intro to Circuits & Electronics	3
EECE 225L	Intro to Circuits & Electronics Lab	1
EECE 226	Circuits as Systems	3
EECE 226L	Circuits as Systems Lab	1
EECE 235	Digital Logic	3
EECE 237	Embedded Software Engineering	3
EECE 244	Applications of Embedded Software	3
ENGR 101	Introduction to Engineering	1
ENGR 140	1st-Year Engineering Projects	3

Core Engineering: 25 semester hours

ECEN 2000	ECE as a Profession	1
ECEN 3250	Microelectronics	3
ECEN 3300	Linear Systems	3
ECEN 3350	Programming of Digital Systems	3
ECEN 3593	Computer Organization	3
ECEN 3753	Real-Time Operating Systems	3
ECEN 3810	Introduction to Probability Theory	3
ECEN 4610	Capstone Laboratory (Part 1)	3
ECEN 4620	Capstone Laboratory (Part 2)	3

Advanced Concentration Electives: 6 semester hours

ECEN ????	List of courses on next page	6
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Technical Electives: 12 semester hours

ECEN ????	Electrical and Computer Electives	12
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Software Elective: 3 semester hours

CSCI ???	Software Elective	3
	(Can be an approved upper-division CMU course or a CU Boulder course)	

Humanities & Social Science Elect: 15 semester hours

	Humanities & Social Sciences	9
	Upper-Division Humanities & Social Sciences	6

Free Electives: 3 semester hours

TOTAL CREDITS 128

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Acceptable Course Substitutions

MATH 151 Calculus I (5-credits) for MATH 135 Engineering Calculus I (4-credits)

MATH 152 Calculus II (5-credits) for MATH 136 Engineering Calculus II (4-credits)

Humanities & Social Science Electives

See: <https://www.coloradomesa.edu/engineering/documents/hssacceptableclasses20220328.pdf>

Advanced Concentration Electives (ACE)

Must complete two approved upper division ECEN courses: ECEN 4138 Control System Analysis and ECEN 4638 Controls Lab, ECEN 4632 Intro to Power Electronics and ECEN 4532 Power Electronics Lab, or ECEN 4797 Intro to Digital Filtering and ECEN 4517 DSP Lab. There is no guarantee that these courses will be offered in a given, or upcoming, semester.

Technical Electives

Students must complete 12 credits of Technical Electives to complete their degree. Technical Electives are 3000- and 4000-level courses that are generally in the fields of science, engineering, and mathematics. In addition, students may count a combination of up to 6 credits of 3000- and 4000-level ECON, BUSM, and EMEN courses towards Technical Electives.

Software Elective

Students must take an upper-division computer science course and are encouraged to take this course from CMU. The following CU Boulder courses are approved as software electives: ECEN 4033, ECEN 4313, ECEN 4322, CSCI 3002, CSCI 3104, CSCI 3287, CSCI 3302, CSCI 3308, CSCI 3753, CSCI 4446, and TLEN 5842.

Free Electives

College-level coursework accepted by CU Boulder not used otherwise to satisfy BSECE degree requirements. Electrical and computer engineering does allow courses counting as free electives to be taken on a pass/fail basis ([however the college limits use to 6 per semester and 16 cumulative](#) and a student must first [submit a petition](#) prior to choosing this option). Use www.transferology.com to verify that courses will transfer to CU Boulder as appropriate equivalencies.

Grade Requirements

The minimum passing grade for prerequisite and co-requisite classes is a C-. This includes courses completed outside the program. The minimum passing grade for standalone classes is a D-. [College of Engineering and Applied Science Academic Expectations and Policies](#) state that if a minimum required grade in a prerequisite course is not achieved, a student is required to repeat a course until the minimum acceptable grade has been earned (maximum of 3 attempts total). If a student takes the advanced (post-requisite) course, this does not remove the obligation to meet the prerequisite course minimum grade requirement, even if the grade earned in the advanced course is acceptable.

Academic Standing

To remain in good academic standing with the College of Engineering and Applied Science, a student must maintain satisfactory academic performance as measured by GPA and progress toward completion of a Bachelor of Science degree. Students must maintain both a cumulative and major CU Boulder GPA of at least 2.000 based entirely on CU Boulder coursework. Courses taken at CMU do not count toward CU Boulder GPA. Failure to meet these requirements results in a student being placed on Academic Alert, Academic Recovery, and/or Academic Suspension. Students in this situation should consult the Partnership Program Director and review the Academic Standing Policies:

<https://www.colorado.edu/engineering-advising/academic-standing>

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Coursework Not Accepted for Transfer Credit

All courses not taken through the University of Colorado will undergo a transfer evaluation and credit will be transferred to CU Boulder as applicable. The following coursework will not be accepted for transfer credit and will not count toward a degree at CU Boulder, as described in the [Campus Transfer Credit Policy](#):

- any courses in which the grade earned is below a C- (1.70)
- courses identified by CU Boulder as remedial, such as remedial English, mathematics, science and developmental reading
- vocational-technical courses that are offered at two-year and proprietary institutions (exceptions may be granted only by the CU Boulder dean responsible for the student's curriculum)
- courses in religion that constitute specialized religious training or that are doctrinal in nature
- credits earned for work experience or through a cooperative education program
- outdoor leadership education coursework
- credits earned in physical education activity courses
- courses or programs identified as college orientation

Credit hours required for graduation that were earned more than ten years prior to transferring into an undergraduate degree program at CU Boulder may not apply to the completion of a student's graduation requirements.

Students are responsible for making up any difference in credit hours between the transfer credit received and the CU Boulder course. This can happen when students transfer in coursework from an institution on a quarter-system, for example. Furthermore, students must have their Academic Advisor approve how the credit shortfall is made up (based on ABET and other program requirements). Students must have a minimum of 128 unique non-duplicative, degree applicable credit hours, along with meeting the specified course and other requirements for a specific bachelor's degree program per [CEAS Transfer Credit Policy](#).