ENGINEERING AND APPLIED SCIENCE

Interdisciplinary programs managed by the College (http://www.colorado.edu/engineering/) are included here. The listing of courses includes College-sponsored courses as well as those offered by the Engineering Honors Program (http://www.cuhonorsengineering.com/), Engineering Leadership Program (https://www.colorado.edu/engineeringleadershipprogram/) and the Energy Engineering Minor (https://www.colorado.edu/engineering/academics/guide-degrees-certificates/minors/energy-engineering-minor/).

Minors

- Energy Engineering - Minor (https://catalog.colorado.edu/undergraduate/colleges-schools/engineering-applied-science/programs-study/engineering-applied-science/energy-engineering-minor/)
- Global Engineering - Minor (https://catalog.colorado.edu/undergraduate/colleges-schools/engineering-applied-science/programs-study/engineering-applied-science/global-engineering-minor/)

Certificates

- Engineering Leadership - Certificate (https://catalog.colorado.edu/undergraduate/colleges-schools/engineering-applied-science/programs-study/engineering-applied-science/engineering-leadership-certificate/)
- Lighting Design - Certificate (https://catalog.colorado.edu/undergraduate/colleges-schools/engineering-applied-science/programs-study/engineering-applied-science/lighting-design-certificate/)

COEN 1500 (1) CEAS Design Lab: Engineering Your Life
Using the Design Your Life framework new students work with their instructor and a Peer Mentor to intentionally understand the nuances of their social identities, discover opportunities that are available to them within the college, plan their future as an engineer, and develop successful study strategies and time management skills early in their educational careers. Allowable only in student's first semester at CU, should not be repeated.
Requisites: Restricted to students with 0-56 (Freshmen) College of Engineering majors only.

COEN 1510 (1) Self Management and Leadership Principles 1
Prepares first-year students for personal and academic success in their transition to college. Focuses on academic success strategies, time and stress management, study skills, S.M.A.R.T. goal setting and developing self-awareness. Students identify their strengths and participate in peer-to-peer interaction to foster collaboration and community. Students will also explore leadership capabilities, professional development, and insights into career interests. Speakers provide students with unique insights into academic and engineering experiences.
Requisites: Restricted to Engineering Goldshirt (PENG) students only.

COEN 1520 (1) Self Management and Leadership Principles 2
Continuation of COEN 1510. Self-management and student development is reiterated. Includes time and stress management, study skills and S.M.A.R.T. goal setting. Leadership skills are explored through group projects. Students complete professional development activities and assignments geared toward preparing students for engineering internships and research opportunities.
Requisites: Requires prerequisite course of COEN 1510 (minimum grade C-). Restricted to Engineering Goldshirt (PENG) students only.

COEN 1550 (1) YOU'RE@CU: Undergraduate Career Seminar
Exposes first or second year undergraduate students to engineering research careers through a partner program (YOU'RE@CU), panel discussions with researchers in academics and industry, and exposure to research labs. Restricted to YOU'RE@CU participants. Department consent required.

COEN 1830 (1-3) Special Topics
Explores topics of interest in engineering. Content varies by instructor and semester.
Repeatable: Repeatable for up to 9.00 total credit hours.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

COEN 2830 (1-3) Special Topics
Explores topics of interest in engineering. Content varies by instructor and semester.
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

COEN 2850 (1-3) Independent Study
Provides opportunities for independent study at the lower-division undergraduate level. Subject and/or project agreed upon by the student and the instructor to fit the needs of the student.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

COEN 2880 (1) Fresh Start for Success
Fresh Start is a class for students in the College of Engineering who want to work toward a Fresh Start! This course focuses on learning the mindsets and skills necessary to achieve academic and personal change goals. Topics include the science of learning (metacognition) and the use of metacognition in everyday life, including strategies supporting mastery of the material in engineering, effective study planning and test-taking, maintaining balance throughout the semester, and the science and creation of sustainable change through habits, support, and resiliency. This class focuses on the actions necessary to reflect deeply and develop awareness and skills to help create change. Enrolled students must engage in the class and commit to applying knowledge and skills acquired during lessons and reflection to their other classes and aspects of their student experience. This course is best suited for students looking for support in the pursuit of success in achieving academic goals.
Repeatable: Repeatable for up to 2.00 total credit hours.
Requisites: Restricted to Engineering Fresh Start (PEEA) students only.

COEN 3051 (2) Leadership Seminar 1: Launching the Leadership Experience
Practicing needs assessment, decision-making and planning skills, students take this seminar to prepare for their Leadership Experience (required for completion of the Engineering Leadership Certificate). Students work in collaboration with each other, their Engineering Leadership Program mentors and campus/community organizations and leaders to lay the foundation for and launch their individually unique Leadership Experiences.
Requisites: Requires a prerequisite course of COEN 2050 (minimum grade C-). Restricted to Engineering Leadership Program (PENL) students only.

COEN 3053 (2) Leadership Seminar 3: ELP Synthesis and Final ePortfolio
Progressing through this course, students complete the ePortfolio that demonstrates fulfillment of the requirements of the Engineering Leadership Certificate, reflecting upon synthesizing and discerning practical applications of the leadership experiences tackled throughout throughout their time at CU.
Requisites: Restricted to Engineering Leadership Program (PENL) students only.

COEN 3100 (1) Engineering Transfer Student Success Seminar
Designed to aid in a successful transition to CU Engineering for students transferring from another two- or four-year institution. Through this course students will learn about college, campus and academic resources, evaluate their skills, explore relevant engineering transfer student issues, build on their strengths and education related to overall career goals, and establish a supportive transfer student community.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

COEN 3210 (3) Climate Change and Engineering
Explores the fundamentals of climate change science, but from an engineering perspective. After learning the fundamentals, the relationship between climate change and different engineering disciplines will be discussed. Topics covered include geoengineering, renewable energy, sustainable engineering, coastal engineering, building design, etc. Career options and entrepreneurial opportunities will also be discussed.
Requisites: Requires prerequisite courses of PHYS 1110 and APPM 1350 (minimum grade D-).

COEN 3930 (1-6) Engineering Internship/Co-op
Students enrolled in this course participate in a pre-approved internship or cooperative education program with an employer that allows them to explore the relationship between theory and practice and demonstrate evidence of significant learning (e.g., academic assignments and employer/sponsor evaluations). Credits may apply towards BS degree program, please check with the department for specifics (even if student has multiple enrollments in this course and/or COEN 4950). Students should contact the CEAS Extracurricular Programs Manager for more information. Minimum 2.00 cumulative GPA is required.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

COEN 4000 (1-3) Global Intensive Studies
Provides a hands-on exploration of a particular engineering/applied science subject area in an overseas setting. Serves as a complement to an existing engineering or applied science course taught at CU. Topic areas will vary.
Equivalent - Duplicate Degree Credit Not Granted: ENES 3844 COEN 5000
Repeatable: Repeatable for up to 6.00 total credit hours.

COEN 4830 (1-3) Special Topics
Explores topics of interest in engineering. Content varies by instructor and semester.
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

COEN 4850 (1-3) Independent Study
Provides opportunities for independent study at the upper-division undergraduate level. Subject and/or project agreed upon by the student and the instructor to fit the needs of the student.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

COEN 4950 (1-6) Global Engineering Internship
Students enrolled in this course participate in a pre-approved global internship with an employer that allows them to explore the relationship between theory and practice and demonstrate evidence of significant learning (e.g., academic assignments and employer/sponsor evaluations). Up to 3 credits may apply towards BS degree program's Free Electives (even if student has multiple enrollments in this course and/or COEN 3930). Students may also earn COEN 4950 credit for international internship facilitated through CU-approved providers that contract with CU's Education Abroad Office. These placements must be pre-approved by the student's department/program to be eligible for credit. Students should contact the CEAS International Programs Director for more information. Minimum 2.75 cumulative GPA required.
Repeatable: Repeatable for up to 6.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

COEN 5000 (1-3) Global Intensive Studies
Provides a hands-on exploration of a particular engineering/applied science subject area in an overseas setting. Serves as a complement to an existing engineering or applied science course taught at CU. Topic areas will vary.
Equivalent - Duplicate Degree Credit Not Granted: ENES 3844 COEN 4000
Repeatable: Repeatable for up to 6.00 total credit hours.

COEN 5830 (1-6) Special Topics
Explores topics of interest in engineering. Content varies by instructor and semester. May be repeated for up to 9 total credit hours.
Repeatable: Repeatable for up to 9.00 total credit hours. Allows multiple enrollment in term.
Requisites: Restricted to College of Engineering graduate students only.
Grading Basis: Letter Grade

COEN 5850 (1-6) Independent Study
Provides opportunities for independent study at the graduate level. Subject and/or project agreed upon by the student and the instructor to fit the needs of the student.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to College of Engineering graduate students only.

EDEN 4147 (3) A Systems Approach to Global Engineering
Introduces engineering students to the global context in which engineers are asked to operate in the 21st century using system dynamics tools and other decision-making tools (network analysis, agent based modeling, etc.) necessary to analyze the uncertainty and complexity inherent in global projects.
Equivalent - Duplicate Degree Credit Not Granted: CVEN 4157, CVEN 5157 and EDEN 5147

EDEN 5001 (1-3) Special Topics in Global Engineering
At the graduate level, covers topics of interest in global engineering. Content varies by section and from semester to semester.
Repeatable: Repeatable for up to 18.00 total credit hours. Allows multiple enrollment in term.

EDEN 5147 (3) A Systems Approach to Global Engineering
Introduces engineering students to the global context in which engineers are asked to operate in the 21st century using system dynamics tools and other decision-making tools (network analysis, agent based modeling, etc.) necessary to analyze the uncertainty and complexity inherent in global projects.
Equivalent - Duplicate Degree Credit Not Granted: EDEN 4147, CVEN 4157 and CVEN 5157

EHON 1151 (3) Critical Encounters
Explores critical, literary and philosophical approaches to the following related problems: 1) how we organize knowledge and construct meaning, and 2) how we locate a sense of self as both individuals and members of various groups amidst the resources and demands of competing interpretations, traditions challenges and circumstances. Department restriction, honors standing or instructor consent required.
Requisites: Restricted to Engineering Honors Program (PEHN) students only.

EHON 1500 (1) Honors Reading Group
Faculty led reading seminars, focusing on specific test or texts chosen by the faculty. Special attention will be paid to group formation and the process of collaborative learning.
Requisites: Restricted to Engineering Honors Program (PEHN) students only.
Additional Information: Engineering Honors Course

EHON 3843 (3) Special Topics
Explores different important themes relative to the Engineering Honors Program. Check with department for specific semester topics.
Repeatable: Repeatable for up to 3.00 total credit hours.
Requisites: Restricted to Engineering Honors Program (PEHN) students only.
Additional Information: Engineering Honors Course

EHON 4051 (1) Dimensions of Leadership
Explores the many dimensions of leadership that exceed technical knowledge: the ethical, societal, cultural, interpersonal, and personal. Through seminars, workshops and exposure to leaders, students will reflect upon their engineering education in light of the multifaceted demands of effective leadership and their own personal career goals. Students will take an active role in shaping the course. Department restriction, honors standing or instructor consent required.
Repeatable: Repeatable for up to 3.00 total credit hours.
Requisites: Restricted to students with 57-180 credits (Juniors or Seniors).

EHON 4151 (3) Critical Encounters 2
Fosters critical reflection on students¿ college experience and rigorous philosophical analysis of personal and professional goals after graduation. Critical Encounters 2 uses literature and philosophy to look both backwards and forwards at the following questions: Who am I and who do I want to be? How do I intentionally cultivate personal and professional values? How am I shaped by tradition and culture? How can I actively shape various cultures to which I belong?
Requisites: Requires prerequisite course of EHON 1151 (minimum grade D-). Restricted to Engineering Honors (PEHN) students only. Restricted to Seniors only.

ENEN 2820 (1-6) Special Topics
Explores topics related to energy engineering. Content will vary by semester and instructor.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

ENEN 4321 (3) Oil and Gas Processing
Provides a foundation in the fundamentals of oil and gas processing, including discovery, extraction and refining. Due to the importance of oil and gas in the current energy infrastructure, this course provides a broad understanding of the industry to students interested in energy engineering.
Requisites: Restricted to students with 57-180 credits (Juniors or Seniors).

ENEN 4600 (3) Interdisciplinary Energy Engineering Projects
Prepares students to analyze energy systems from technical, economic, and policy perspectives with project topics varying by semester. Provides historical and contemporary context of the energy landscape. Emphasizes application of engineering fundamentals for the design and evaluation of real world energy systems. Projects will be completed by working in interdisciplinary teams.
Requisites: Restricted to Energy Engineering Minor (ENMR-MIN) students with 87-180 credits (Seniors).

ENEN 4840 (1-6) Special Topics
Explores topics related to energy engineering. Content will vary by semester and instructor.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.

ENEN 5840 (1-6) Special Topics
Explores topics related to energy engineering. Content will vary by semester and instructor.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to College of Engineering graduate students only.

ENLP 2000 (3) Leadership, Fame and Failure
Examines the ambition, moral character, prudence and grit required for effective leadership. Common causes of leadership failure are also considered. A wide variety of ancient and modern leaders are studied in the disciplines of science and technology, politics, business and military affairs using primary source readings in history, philosophy and literature. Also explores whether leadership is a teachable art.
Requisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) College of Engineering majors only.

ENLP 3000 (3) Intelligent Leadership
Investigates what it means to be a "smart" leader. In small, discussion-based classes, explores science fiction texts and social science research that generate fundamental questions about the dimensions, manifestations and value of intelligence in contexts related to leadership. Students explore social science research about how course themes are reflected in present-day, "real-life" technologies, policies and cultural phenomena.
Requisites: Restricted to College of Engineering undergraduate students only.

ENLP 3052 (2) Leadership Seminar 2: Leadership Experience
Tackling a leadership experience of their own design, students undertake a key component of the Engineering Leadership Program experience and a requirement for the completion of the Engineering Leadership Certificate. Guides students through a process of planning, executing and evaluating their leadership experience and progress toward personalized leadership development goals. Coursework involves working with a mentor, collaborating with peers and conducting research. Formerly COEN 3052.
Requisites: Requires a prerequisite course of COEN 2050 (minimum grade D-). Restricted to Engineering Leadership Program (PENL) students only.

ENLP 3100 (3-4) Complex Leadership Challenges
Approaches leadership as a process of inquiry, empathy, and action, cultivating skills leaders need to understand, communicate about, and generate innovative approaches to complex issues. Each student conducts extensive, principled research about a complex social issue of their choice, investigating its multidimensionality by applying different analytic lenses. Instructor consent required for students not in Engineering Leadership. Formerly COEN 3050.
Requisites: Requires prerequisite course of ENLP 2000 or ENLP 3000 (minimum grade C).

ENLP 3843 (3) Special Topics
Explores different important themes in leadership; check with department for specific semester topics.
Repeatable: Repeatable for up to 6.00 total credit hours.
Requisites: Restricted to students in College of Engineering and Applied Science (ENGR) only.

ENLP 4000 (3) The Empire of Modern Science
Examines science and technology's rise to the status of political, cultural and economic leader of the modern world. Also considers the ambitions and limits of the modern scientific enterprise, and investigates whether scientists are adequately equipped to lead humanity's political, spiritual and evolutionary future. Readings are drawn from primary sources in history, economics politics, philosophy and literature. Recommended restriction: this course is recommended for Sophomores, Juniors, and Seniors.
Requisites: Restricted to College of Engineering (ENGRU) undergraduates only.
Recommended: Prerequisite ENLP 2000 or ENLP 3000.