ENGINEERING (ENGR)

ENGR 1000. Orientation to Engineering. (1 Credit)
A series of orientation lectures on the many fields of engineering, followed by a series of seminars and discussions in engineering discipline-specific sections on engineering topics.
Enrollment Requirements: Not open to juniors or seniors in the College of Engineering.
View Classes (https://classes.uconn.edu/?keyword=ENGR%201000)

ENGR 1025. Engineering for Impact: Emerging Leaders. (1 Credit)
Supports the success of new or emerging engineering leaders for student organizations affiliated with the Vergnano Institute for Inclusion.
Enrollment Requirements: Instructor consent required. Recommended Preparation: Should be a new or rising leader for an engineering student organization that is affiliated with the Vergnano Institute for Inclusion.
May be repeated for a total of 4 credits
View Classes (https://classes.uconn.edu/?keyword=ENGR%201025)

ENGR 1166. Foundations of Engineering. (3 Credits)
Introductory topics in a specific engineering major. Topics selected by Department or Program, or Regional Campus faculty. Students to select section based on their selected or intended major. In the context of the discipline, students would develop skills transferable to other engineering disciplines.
Enrollment Requirements: Not open for credit to juniors or seniors in the School of Engineering.
View Classes (https://classes.uconn.edu/?keyword=ENGR%201166)

ENGR 1195. Special Topics in Engineering. (1-6 Credits)
Classroom and/or laboratory course in special topics as announced in advance for each semester.
Enrollment Requirements: Instructor consent; prerequisites and recommended preparation vary.
May be repeated for a total of 6 credits
View Classes (https://classes.uconn.edu/?keyword=ENGR%201195)

ENGR 2001. AI Literacy. (3 Credits)
Introduction to artificial intelligence tools for learning, creative work, and problem solving. Emphasis on developing effective prompts, incorporating instructor and peer feedback, refining drafts and prototypes, and evaluating AI-generated outputs while maintaining independent judgment and authorship. Consideration of ethical and social issues including privacy, bias, transparency, accuracy, accessibility, and the appropriate role of AI in academic and professional contexts. Coursework includes lectures, hands-on labs with AI systems, case studies from multiple disciplines, and written reflections connecting AI use to students' own learning practices. Open all majors, and no prior experience with AI is required.
Enrollment Requirements: Not open for credit to students who have passed ENGR 1195 when offered as "AI Literacy."
Topics of Inquiry: TOI1:Creativity: Des,Expr,Innv
View Classes (https://classes.uconn.edu/?keyword=ENGR%202001)

ENGR 2195. Special Topics in Engineering. (1-6 Credits)
Classroom and/or laboratory course in special topics as announced in advance for each semester.
Enrollment Requirements: Instructor consent; prerequisites and recommended preparation vary.
May be repeated for a total of 6 credits
View Classes (https://classes.uconn.edu/?keyword=ENGR%202195)

ENGR 2215. Principles of Manufacturing Engineering. (3 Credits)
Introduction to engineering aspects of modern manufacturing processes and systems with a focus on commercial-scale conversion of materials into components and components into products. Casting; forming and shaping; cutting and machining; joining; surface engineering; optical materials engineering; additive manufacturing; computer-integrated manufacturing; automation; and special manufacturing processes such as chemical and biological systems. Includes case studies.
View Classes (https://classes.uconn.edu/?keyword=ENGR%202215)

ENGR 2300E. Engineering for Human Rights. (3 Credits)
(Also offered as HRTS 2300E.) Foundational concepts of human rights and engineering ethics from a global perspective. Discussions of the role of engineering in society from human rights and different ethical perspectives. Principles of "Engineering for human rights" on distributive justice, participation, consideration of duty bearers, accountability, and indivisibility of rights. Case study analysis of engineering projects for human rights impacts.
Skill Codes: COMP. Environmental Literacy
Content Areas: CA2: Social Science
Topics of Inquiry: TOI3: Div, Equity, Soc Just, TOI4: Environmental Literacy
View Classes (https://classes.uconn.edu/?keyword=ENGR%202300E)

ENGR 3020. EDOC: Confidence, Communication and Presentation. (1 Credit)
Builds confidence, communication and presentation skills for engineering students that are imperative for building a successful self, and thus a successful engineer. A deep understanding of cognitive, emotional, and the integration of the two states will be explored. Innovative presentation techniques, communication strategies (written and oral) for varied audiences, and utilization of varied presentation styles, demonstrations, and visual aids will be studied and practiced. Some attention will be given to communication and presentation strategies for effective leadership and networking.
Enrollment Requirements: Not open to students who have passed ENGR 3021.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203020)

ENGR 3021. Engineering Ambassadors: Technical Communication and Presentation. (1 Credit)
Teaches communication and presentation skills for engineering students through service-learning experiences with the Engineering Ambassador organization. Innovative presentation techniques, communication strategies (written and oral) for varied audiences, and utilization of varied presentation styles, demonstrations, and visual aids will be studied and practiced. Engineering Ambassador projects and events provide the context and practice forum for concepts and skills learned in the course. Some attention will be given to communication and presentation strategies for effective leadership and networking.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203021)

ENGR 3022. Intro - Building our Sistas Strength (BOSS) Leveraging Adversity, Diversity and Intellect (LADI). (2 Credits)
This course is designed to build the confidence, communication, and leadership skills of students, particularly for Black and Latine women in STEM so that they have the agency and ability to step into leadership roles (especially in higher levels of management) in varying environments (academia, government, industry, etc.) and know they can affect change. This course will also assist students in preparation for academic success through exposure to resources, guest speakers, and discussions in and outside of class. While this course is designed to support the success of Black and Latine women in STEM, anyone may take this course.
Enrollment Requirements: Instructor consent.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203022)

ENGR 3024. Adv - Building our Sistas Strength (BOSS) Leveraging Adversity, Diversity and Intellect (LADI). (3 Credits)
The course is the second course in the BOSS LADI series. It is intended to continue to build upon the confidence, communication, and leadership skills of students in the course, particularly Black and Latine in STEM so that they have the agency and ability to step into leadership roles (especially in higher levels of management) in varying environments (academia, government, industry, etc.) and know they can affect change. This course will also assist students in preparation for academic success through exposure to resources, guest speakers, and discussions in and outside of class. While this course is designed to support the success of Black and Latine women, anyone can take the course.
Enrollment Requirements: ENGR 3022; instructor consent required.
May be repeated for a total of 9 credits
View Classes (https://classes.uconn.edu/?keyword=ENGR%203024)

ENGR 3025. Engineering for Impact - Advanced Leaders. (1 Credit)
This course is designed to support the success of current leaders of engineering student organizations that are affiliated with the Vergnano Institute for Inclusion.
Enrollment Requirements: Instructor consent. Recommended preparation: For current student leaders in organizations that are affiliated with the Vergnano Institute for Inclusion.
May be repeated for a total of 6 credits
View Classes (https://classes.uconn.edu/?keyword=ENGR%203025)

ENGR 3101. Signals and Systems. (3 Credits)
(Also offered as ECE 3101.) Representation of signals in the time and frequency domains. Fourier series. Fourier and Laplace transform methods for analysis of linear systems. Introduction to state space models. Introduction to sampling and discrete systems analysis via z transforms.
Enrollment Requirements: ECE 2000 or 2001W; open only to students in the School of Engineering. Recommended preparation: ECE 1401.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203101)

ENGR 3109. Navy STEM Professional Development Seminar. (1 Credit)
Seminar series focusing on science, engineering and technology concepts in the design, construction, operation and maintenance of surface ships and submarines. Provides industry-specific knowledge for engineering students interested in pursuing Navy-related careers in the public or private sectors. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory).
May be repeated for a total of 3 credits
View Classes (https://classes.uconn.edu/?keyword=ENGR%203109)

ENGR 3120. LabVIEW Basics for Engineers. (1 Credit)
Introduces LabVIEW programming environment. The fundamentals of using graphical programming to collect, analyze, display and store data are covered. Learn techniques for designing stand alone applications, creating interactive user interfaces and optimizing data flow.
Enrollment Requirements: CSE 1010 or 1100; open only to School of Engineering majors. Not open for credit to students who have passed BME 3120.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203120)

ENGR 3181. EUROTECH Internship Abroad. (0 Credits)
A six-month internship in Germany, Austria, or Switzerland for the EUROTECH Program. The student must arrange with the instructor for this internship at least one year before the intended departure date and participate in the orientation program. To successfully complete this course the student must submit periodic reports in German on the assigned work during the work period and a final report upon return. Students taking this course will be assigned a final grade of S (satisfactory) or U (unsatisfactory.)
View Classes (https://classes.uconn.edu/?keyword=ENGR%203181)

ENGR 3184. Engineering Transition Seminar. (1 Credit)
For transfer students and campus change students in Engineering and exploring Engineering. Topics covered will address the transition to the Storrs campus as an Engineering student.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203184)

ENGR 3193. Foreign Study. (1-6 Credits)
Special engineering topics taken in a foreign study program. May count toward major with consent of advisor and approved plan of study.
May be repeated for credit
View Classes (https://classes.uconn.edu/?keyword=ENGR%203193)

ENGR 3195. Special Topics in Engineering. (1-6 Credits)
Classroom and/or laboratory course in special topics as announced in advance for each semester.
Enrollment Requirements: Prerequisites and recommended preparation vary.
May be repeated for credit
View Classes (https://classes.uconn.edu/?keyword=ENGR%203195)

ENGR 3201. Undergraduate Teaching, Mentoring, and Leadership Seminar. (3 Credits)
Discussion of learning styles, time management, goal setting, ethical behavior, mentoring, and qualities of effective leadership. Students enrolled in this course act as a mentors for students in lower-level engineering coursework, further enhancing their own understanding of the material. Significant student contact with mentees is expected as part of the course. This course is only open to students participating in the Undergraduate Teaching Assistant Program.
Enrollment Requirements: Open only to junior or higher School of Engineering students.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203201)

ENGR 3209E. Sustainable Energy in the 21st Century. (3 Credits)
(Also offered as POLS 3209E, HRTS 3209E.) Political, socioeconomic, environmental, science and engineering challenges of energy sources; comparison of feasibility and sustainability of energy policies around the world.
Enrollment Requirements: Open to juniors or higher.
Skill Codes: COMP. Environmental Literacy
Content Areas: CA3: Science & Technology
Topics of Inquiry: TOI4: Environmental Literacy, TOI6: Science & Empirical Inq
View Classes (https://classes.uconn.edu/?keyword=ENGR%203209E)

ENGR 3215. Statistical Quality Control and Reliability for Manufacturing. (3 Credits)
Foundation of quality control and reliability in manufacturing systems. Probability and statistics, principles and methods of modern quality control in manufacturing, Six Sigma, control charts for measurement and attribute data, development and utilization of control charts, manufacturing process capability studies, ANOVA and linear regression of measurement data, experimental design, response surface and Taguchi methodology, acceptance sampling, reliability prediction and modeling in manufacturing systems.
Enrollment Requirements: MATH 2110Q; open to juniors or higher.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203215)

ENGR 3257. Assessment for Human Rights and Sustainability. (3 Credits)
Foundational concepts of human rights and environmental impacts pertaining to global supply chains. Regulations and voluntary standards in engineering-intensive sectors, including infrastructure, biofuels, electronics. Case study analysis of corporate assessment practices for labor rights protection and environmental impacts.
Enrollment Requirements: Not open for credit to students who have passed or are taking HRTS 3257.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203257)

ENGR 3281. Engineering Internship. (0 Credits)
Provides an opportunity for students to participate in a work environment to gain practical experience and to exercise problem solving skills. Students taking this course will be assigned a grade of S (satisfactory) or U (unsatisfactory).
May be repeated for credit
View Classes (https://classes.uconn.edu/?keyword=ENGR%203281)

ENGR 3283. International Engineering Internship. (1-6 Credits)
With change of employer, may be repeated for credit. May not count toward engineering major requirements but counts toward credit total. Can count towards related courses in additional language major (e.g. structured, dual-degree programs between ENGR and CLAS). Can also count for international engineering internships taken in an approved Experiential Global Learning program. Students taking this course will be assigned a grade of S (satisfactory) or U (unsatisfactory).
May be repeated for credit
View Classes (https://classes.uconn.edu/?keyword=ENGR%203283)

ENGR 3400. Engineering Data Analysis Techniques. (3 Credits)
Introduction to statistics in an engineering context. Core concepts regarding mean, standard deviation, probability density, histograms, cumulative distribution, percentile rank, interquartile range, continuous and discrete distributions (e.g. normal, log normal, exponential, etc.), linear regression, and Bayesian Statistics. Additional topics may be covered based on the engineering discipline of the enrolled students.
Enrollment Requirements: MATH 1132Q.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203400)

ENGR 3500. Technology Innovation and Entrepreneurship. (3 Credits)
An integration of the best engineering and business principles and practices. Identification of customer need, development of technical solution and financial viability. Collaboration between School of Engineering and School of Business, teaching product design process combined with business principals required for any viable startup and enterprise. Experiential nature of course will enable students to go through process of conceiving of a new product, building an MVP, developing a business model and business plan, and testing the market. Students will learn the art of successful pitching and presenting business models to successful entrepreneurs. Taught with MENT 3500.
Enrollment Requirements: Open to juniors and higher. Not open to students who have passed MENT 3500.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203500)

ENGR 3501. Technology Innovation and Entrepreneurship II. (3 Credits)
The product design process combined with business principles required for a viable technology-based startup and enterprise. Students will take proof-of-concept designs from ENGR or MENT 3500 to the point of further iterating a minimum viable product for field testing, with a heavy focus on physical prototyping. Development of a testable business model, successful business pitch strategies. Students will present their business model to entrepreneurs and potential customers.
Enrollment Requirements: ENGR 3500 or MENT 3500; open to juniors or higher. Not open for credit to students who have passed or are taking MENT 3501.
View Classes (https://classes.uconn.edu/?keyword=ENGR%203501)

ENGR 4001. Multidisciplinary Engineering Design I. (3 Credits)
A capstone design experience in Multidisciplinary Engineering (MDE) based on the knowledge and skills acquired in earlier coursework. Students will work on open-ended design projects and consider the public health, safety, and welfare, as well as global, cultural, social, environmental, and economic impacts of their work. Students will propose solutions, consider relevant constraints and engineering standards, and present their findings in both oral and written formats. Students pursuing a specialization within MDE may choose to incorporate relevant elements of their specialization into their project.
Enrollment Requirements: Open to Engineering seniors in the Multidisciplinary Engineering (MDE) major, or with academic advisor and department permission. Recommended preparation: Complete junior year MDE major coursework before attempting this course.
View Classes (https://classes.uconn.edu/?keyword=ENGR%204001)

ENGR 4002W. Multidisciplinary Engineering Design II. (3 Credits)
Continues the capstone design experience from Multidisciplinary Engineering Design I (ENGR 4001). Students continue work on open-ended design projects and consider the public health, safety, and welfare, as well as global, cultural, social, environmental, and economic impacts of their work. Students will propose solutions, consider relevant constraints and engineering standards, and present their findings in both oral and written formats to a range of audiences. Students pursuing a specialization within MDE may choose to incorporate relevant elements of their specialization into their project.
Enrollment Requirements: ENGR 4001; ENGL 1007 or 1010 or 1011; Open to senior Multidisciplinary Engineering majors, other Engineering majors with permission from their academic advisor and department. Recommended preparation: Students should be in the final semester of their engineering program when taking this course.
Skill Codes: COMP. Writing Competency
View Classes (https://classes.uconn.edu/?keyword=ENGR%204002W)

ENGR 4243. Nanoscience and Nanotechnology I. (3 Credits)
(Also offered as ECE 4243.) Fundamentals of electron and hole confinement in quantum well, wire and dot heterostructures, confinement of photons in photonic band gap structures, density of states in quantum wires; transport in quantum wires and dots, and single wells (SWNT) and multi-wall carbon nanotubes; operation of nano field-effect transistors; absorption and emission in quantum wires and dot structures; fabrication methodology to grow and assemble quantum wires and dots including self-assembly techniques for light-emitting diodes, transistors, lasers, and nanoelectromechanical (NEM) structures.
Enrollment Requirements: ECE 4211 or 4225 or PHYS 2300 or 3401 or MSE 4001; CHEM 1127Q or equivalent; open only to students in the School of Engineering.
View Classes (https://classes.uconn.edu/?keyword=ENGR%204243)

ENGR 4244. Nanotechnology II. (3 Credits)
(Also offered as ECE 4244.) Growth and characterization of cladded Si and Ge quantum dots (QDs), carbon nanotube using vapor phase nucleation; characterization using AFM and TEM and dynamic scattering techniques; device processing using nanolithography and QD self-assembly techniques; project work involving fabrication of devices such as quantum dot gate FETs, inverters and SRAMs, QD LEDs, carbon nanotube based FETs, and sensors using self-assembled quantum dots.
Enrollment Requirements: ECE 4211 or 4225 or ECE/ENGR 4243; open only to students in the College of Engineering.
View Classes (https://classes.uconn.edu/?keyword=ENGR%204244)

ENGR 4299. Independent Study. (1-4 Credits)
Designed for students who wish to pursue an interdisciplinary engineering project where the subject matter/content spans more than one field of interest. The program of study is to be approved by the Associate Dean of Undergraduate Education and the instructor before registration is completed.
Enrollment Requirements: Open to seniors in the School of Engineering. May be repeated for credit
View Classes (https://classes.uconn.edu/?keyword=ENGR%204299)

ENGR 4582. Shop Safety Practicum. (0 Credits)
Safety, operating procedures and normal practices of the equipment in the School of Engineering Machine Shop so that students can make and assemble their capstone senior design project and to fabricate equipment to support research. Students taking this course will be assigned a grade of S (satisfactory) or U (unsatisfactory).
Enrollment Requirements: To enroll in the course students must be engaged in their capstone senior desing project or in research.
View Classes (https://classes.uconn.edu/?keyword=ENGR%204582)