EGR-Engineering Courses

Courses

EGR 102. Engineering LLC Seminar. 0 Hours.
The Engineering Living Learning Community (LLC) is designed to strengthen students’ first year of college while fostering a sense of community. The living-learning community extends learning from the classroom into the residence hall where students participate in structured programs built around academics, common interests, and shared goals. This program will provide scholars with a solid foundation for the successful completion of an engineering degree. Programming within the LLC is a partnership between the Office of Student Housing and Residence Life and the UAB School of Engineering.

EGR 110. Introduction to Engineering I. 1 Hour.
Introduction to engineering as a profession, ethics and safety, engineering specialties, educational requirements, and team work; and present and future societal demands on profession. This is the first course in a two-course sequence for first-year students.
Prerequisites: MA 105 [Min Grade: C] (Can be taken Concurrently) or MA 106 [Min Grade: C] (Can be taken Concurrently) or MA 107 [Min Grade: C] (Can be taken Concurrently) or MA 125 [Min Grade: C] (Can be taken Concurrently) or MA 225 [Min Grade: C] (Can be taken Concurrently)

EGR 111. Introduction to Engineering II. 1 Hour.
Introduction to engineering specialties; career opportunities in engineering; introduction to engineering design, technical communication, and team work; and present and future societal demands on profession. This is the second course in a two-course sequence for first-year students.
Prerequisites: EGR 110 [Min Grade: C]

EGR 117. Engineering Innovation I: Design Thinking. 3 Hours.
Learn to produce great designs, be a more effective engineer, and communicate with high emotional and intellectual impact. This project based course gives students the ability to understand, contextualize, and analyze engineering designs and systems. By learning and applying design thinking, students will more effectively solve problems in any domain. Lectures focus on teaching a tested, iterative design process as well as techniques to sharpen creative analysis. Guest lectures from all disciplines illustrate different approaches to design thinking. This course develops students’ skills to conceive, organize, lead, implement, and evaluate successful projects in any engineering discipline. Additionally, students learn how to give compelling in-person presentations.
Prerequisites: MA 106 [Min Grade: C] (Can be taken Concurrently) and EGR 110 [Min Grade: C]

EGR 125R. Engineering Applications of Calculus I. 0 Hours.
An application based course designed to reinforce concepts from MA 125.

EGR 126R. Engineering Applications of Calculus II. 0 Hours.
An application based course designed to reinforce concepts from MA 126.

EGR 150. Computer Methods in Engineering. 3 Hours.
An introduction to engineering computation using MATLAB language and Excel. Basic programming skills using built-in functions is emphasized. Generation and manipulation of vectors and matrices, operations on vectors/matrices, plotting, iterations calculations. If/else and other logical constructs, and data input/output are covered. Engineering applications are used throughout the course.
Prerequisites: (MA 125 [Min Grade: C] or MA 225 [Min Grade: C])

EGR 200. Introduction to Engineering. 2 Hours.
Introduction to the profession of engineering, ethics and safety, engineering specialties, career opportunities, and educational requirements; introduction to engineering design, team work, and technical communication; and present and future societal demands on profession.
Prerequisites: (MA 102 [Min Grade: C] or MA 105 [Min Grade: C] (Can be taken Concurrently) or MA 106 [Min Grade: C] (Can be taken Concurrently) or MA 107 [Min Grade: C] (Can be taken Concurrently) or MA 125 [Min Grade: C] (Can be taken Concurrently) or MA 225 [Min Grade: C] (Can be taken Concurrently)

EGR 217. EGR Design & Innovation II: EGR Design Prototyping. 3 Hours.
Students will learn to design and prototype physical system components and devices that meet design criteria of the intended user. Students will learn how and when to use paper and other low-fidelity prototyping techniques as well as more advanced techniques such as additive manufacturing, machining, and programming.
Prerequisites: EGR 117 [Min Grade: C] and ME 102 [Min Grade: C]

EGR 265. Math Tools for Engineering Problem Solving. 4 Hours.
Designed to allow engineering majors to utilize the terminology and problem-solving approaches inherent to engineering, while completing their mathematical preparation.
Prerequisites: MA 126 [Min Grade: C] or MA 226 [Min Grade: C]

EGR 301. Honors Research I. 1 Hour.
Introduces students to research methodology, ethics, data analysis, and technical communication. Students must be invited into program in order to enroll.
Prerequisites: (MA 227 [Min Grade: C] or EGR 265 [Min Grade: C])

EGR 317. Engineering Innovation III: Project Lab. 3 Hours.
Student teams engineer devices based on client needs. The project team will collaborate with the client to establish an appropriate engineering design to meet user needs. Students are trained in product development, product design, engineering validation and will develop training and documentation market analysis, business plan and a go-to-market strategy as appropriate for the project.
Prerequisites: EGR 217 [Min Grade: C] and (EGR 265 [Min Grade: C] or MA 227 [Min Grade: C]) and CE 210 [Min Grade: C]

EGR 481. Interdisciplinary Project Lab. 3 Hours.
Multidisciplinary student teams (engineering, business, arts) engineer devices based on client needs. The project team will collaborate with the client to establish an appropriate engineering design to meet user needs. Students are trained in product development, product design, engineering validation and will develop training and documentation market analysis, business plan and a go-to-market strategy as appropriate for the project.
Prerequisites: ME 102 [Min Grade: C] and CE 210 [Min Grade: C] and EE 312 [Min Grade: C] or CE 360 [Min Grade: C] or (EE 337 [Min Grade: D] and EE 351 [Min Grade: D]) or (ME 322 [Min Grade: C] and ME 371 [Min Grade: C]) or MSE 281 [Min Grade: D]

EGR 490. Special Topics in Engineering. 1-3 Hour.
Special Topics in Engineering.
**EGR 491. Individual Study in Engineering. 1-6 Hour.**
 Individual Study in Engineering.

**EGR 498. Capstone Design I. 3 Hours.**
Through experiential learning, students go through the early phases of engineering design innovation. Engineering students will work in multi-disciplinary teams to develop design concepts for both a client-based prototype and a commercializable version. Designs take into account client needs as well as legal, regulatory, and marketing requirements. Business ethics are also covered. Emphasis is placed on communication to targeted audiences in both oral and written formats.

**EGR 499. Capstone Design II. 3 Hours.**
Capstone design project; a continuation of EGR 498. Through experiential learning, student teams complete the engineering design process for their client-based prototype incorporating engineering standards and realistic constraints. Student teams develop a business plan to present to potential business partners and product development teams from established companies. Additional skills learned in this part of the design process include: development of business proposals, project planning and scheduling, project execution and resource scheduling, communication of design, and interim and final design reviews. Emphasis is placed on communication of design and design justification in both an oral and written format to targeted audiences.

**Prerequisites:** EGR 498 [Min Grade: C]