

# EGR-Engineering

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## **EGR 500. Special Topics in (Study Away). 0-9 Hours.**

Independent studies in various subject and/or service areas outside the state of Alabama or the continental United States.

## **EGR 510. ESL in Education. 1-6 Hour.**

Course provides students an opportunity to help students in K-12 to analyze and solve problems using engineering concepts and design process to engage and excite them about engineering, science, and technology.

## **EGR 520. Engineers in Service and Learning in EiSAL. 0-6 Hours.**

This course will allow engineering students the opportunity to communicate and live in other cultural environments allowing them to share interdisciplinary engineering design and analysis in a real-world setting. It will also allow them the opportunity to work in multi-cultural groups to solve a common problem.

## **EGR 540. Social Responsibility. 1 Hour.**

This course provides students with an understanding of key social and economic concepts of global health that, together with an understanding of interprofessional collaboration and community partnerships, will enable them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the interprofessional global health service learning program at the University of Alabama at Birmingham.

## **EGR 541. Interprofessional Collaboration (IPC) and Community Partnerships in Global Health. 1 Hour.**

This course provides students with an understanding of principles of interprofessional collaboration and community partnerships that, together with key social and economic concepts of global health, enables them to participate in developing and implementing sustainable global health projects in collaboration with local and international community partners.

## **EGR 542. EGR Service Learning: Interprofessional Global Health Service Learning I: Project Planning. 1 Hour.**

This course provides students with an opportunity to apply principles of interprofessional collaboration, community partnerships, and global health in the development of a plan to address a global health problem in collaboration with a community partner. The course is open to undergraduate and graduate students who are enrolled in two co-requisite courses that are requirements for students participating in the global health service learning program at the University of Alabama at Birmingham.

## **EGR 550. Engineering Service Learning: Teaching Experiences. 1 Hour.**

This course provides engineering students the opportunity to assist engineering faculty and students in a tutorial environment by serving as teaching assistants in engineering service courses.

## **EGR 590. Special Topics in Engineering. 1-3 Hour.**

Special Topics in Engineering.

## **EGR 591. Individual Study in Engineering. 1-6 Hour.**

Individual Study in Engineering.

## **EGR 602. Methods for Engineering Practice I. 3 Hours.**

First of two course sequence oriented toward introducing the student to modern methods in engineering practice including design methodologies to project management and risk analysis; mathematical and statistical methods; data analysis; reliability; fault detection and analysis; and safety analysis methods.

## **EGR 603. Methods for Engineering Practice II. 3 Hours.**

Second of a practical two course sequence that are oriented toward introducing the student to modern methods in engineering practice including design methodologies to project management and risk analysis; mathematical and statistical methods; data analysis; reliability; fault detection and analysis; and safety analysis methods.

## **EGR 610. Introduction to System Safety - Prevention through Design. 3 Hours.**

Best practice in any business sector requires the pursuit of a triple bottom line – protecting people, planet, and profit. This course provides an overview of system safety in general and Prevention through Design in particular and explores their efficacy in helping companies achieve a bottom line that is socially, environmentally, and financially rewarding. Topics of inquiry include the processes of hazard analysis and risk assessment, the concept of "acceptable" risk, the safety decision hierarchy of controls, safety standards (the mandatory minimum vs. the voluntary best practice), safety as a cost control strategy, and the critical elements of a comprehensive, advanced safety program. Course content is presented within the framework of real-world case studies from a variety of industry sectors, including, but not limited to, manufacturing, utilities, and health care and includes several guest lectures by leaders in the profession. Students apply course content to their own business environment. Live participation in a weekly 1.5 hour online forum is required. The EGR 610 forum is typically held on Sunday from 1:30-3:00 CDT. EGR 610 must be taken during the first semester.

## **EGR 614. Engineering Ethics & Acceptable Risk. 3 Hours.**

This course explores the economic, social, and political consequences of safety risk and considers provocative real world dilemmas: What is acceptable risk? Are the fundamental canons of engineering ethics contrary to the concept of acceptable risk? What is the worth of human life? Students will conduct critical reviews of corporate safety and ethics policies from market leaders in all major industries as well as their own company. Real-world case studies provide the framework for exercises in resolving conflicts of interest and avoiding the dilemma of "whistle blowing." Live participation in a weekly 1.5 hour online forum is required. The EGR 614 forum is typically held on Sunday from 3:00-4:30 CDT.

**Prerequisites:** EGR 610 [Min Grade: C](Can be taken Concurrently)

## **EGR 642. Technical Entrepreneurship. 3 Hours.**

## **EGR 690. Special Topics. 1-4 Hour.**

## **EGR 692. Engineering Graduate Project. 3 Hours.**

Students will conduct research and complete project for Plan II MS degree.

## **EGR 695. Innovation-Commercialization Project. 3 Hours.**

Through hands on activities, as well as mentorship by professional engineers and local industrial designers, the students will develop products ready for mass production.

**EGR 696. Internship in Design and Commercialization. 3 Hours.**

An internship is designed to provide real world experiences in a profession of interest. It enables correlation of classroom learning with application in industry; broadens understanding of the types of employment available in the field; helps students discover their individual interests; builds resume credentials for the students; and develops relationships between UAB and industry.

**EGR 697. Engineering Grad Internship. 0-6 Hours.**

Student works in a professional environment reflective of research interests pursuant to graduate degree.

**EGR 698. Non-Thesis Research. 1-12 Hour.**

Research allows the student to explore a topic of interest under the close supervision of a faculty member. The course may include directed readings, applied work, in addition to carrying out individual research in selected area.

**EGR 699. Thesis Research. 1-12 Hour.**

Research allows the student to explore a topic of interest under the close supervision of a faculty member. The course may include directed readings, applied work, in addition to carrying out individual research in selected area.

**EGR 710. Intro to Interdisciplinary EGR. 3 Hours.**

Introduces current trends and cutting-edge research in areas related to engineering that require interdisciplinary approaches.

**EGR 711. Methodology for IEGR Research. 3 Hours.**

Presents a detailed perspective on methods of approach for interdisciplinary problems, including experimental design, laboratory experimentation, physical modeling, simulation, and analysis.

**EGR 790. Special Topics. 1-4 Hour.**

**EGR 791. Independent Study. 1-6 Hour.**

Independent Study in Engineering.

**EGR 792. Interdisciplinary EGR Seminar. 1 Hour.**

Discussions and presentations of research involving engineering in a number of disciplines. Required for graduate students in the interdisciplinary engineering Ph.D. program.

**EGR 796. Journal Club in Interdisciplinary Engineering. 1 Hour.**

Journal club to discuss current research and investigations in areas of interdisciplinary engineering.

**EGR 797. Interdisciplinary Engineering Internship. 1-6 Hour.**

Student works in a professional environment reflective of research interests pursuant to doctoral degree.

**EGR 798. Non-Dissertation Research. 0-12 Hours.**

**EGR 799. Dissertation Research. 1-12 Hour.**

**Prerequisites:** GAC Z