

ENGINEERING (EGR)

EGR 1101 Engineering New Student Experience (1)

Pre-requisite(s): Only open to Pre-Engineering majors
New Student Experience course designed to help students transition to the Baylor Engineering community by focusing on success resources/strategies, involvement opportunities, and professional/social development.

EGR 1120 Energy Literacy Lab (1)

Co-requisite(s): EGR 1320
Calculation and measurement of energy and power, especially in the forms of fuel and electricity. The class will include tours of power plants and other industrial facilities important to the energy sector.

EGR 1301 Introduction to Engineering (3)

Pre-requisite(s): Pre-engineering major
A grade of C or better in MTH 1321 or concurrent enrollment in MTH 1321. Introduction to the engineering profession. Topics include engineering disciplines, ethics, the impact of technology on the world, analysis and design using a team design project, and computer-aided design and problem solving.

EGR 1302 Introduction to Engineering Analysis (3)

Pre-requisite(s): Pre-engineering major
A grade of B or better in EGR 1301 and a grade of C or better in MTH 1321 or concurrent enrollment in MTH 1321. Introduction to fundamental techniques used in engineering analysis.

EGR 1320 Energy Literacy (3)

Pre-requisite(s): Either MTH 1320 with a grade of C or better; or a score of 80 or better on the ALEKS; or a satisfactory score on either the RSAT Math, SAT Math, or ACT Math
The central role of energy in our society will be explored with a view towards understanding how different types of energy are harnessed, delivered, and used. Two forms of energy, fuels and electricity, including those derived from fossil and renewable sources, will be explored in greater detail. Problems involving energy, power, force, torque, and heat will provide insight into these physical phenomenon. The activity of engineering, understood to be finding an optimized compromise between competing criteria, will be applied to the positive and negative aspects of many common prime movers including solar, wind, and fossil sources of energy.

EGR 1V9R Research in Engineering (3)

Pre-requisite(s): Consent of instructor
Undergraduate research supervised by a faculty member. May be taken for a maximum of 6 hours.

EGR 2108 Engineering Economics (1)

Pre-requisite(s): B or better in EGR 1302
Designed to provide an economic foundation for engineering decisions. The course stresses basics, including the application of common discrete compounding formulas, complex problems, cost analysis and estimating, uncertainty, and lease/buy/make decisions.

EGR 2170 Introduction to Computer Aided Design (1)

Pre-requisite(s): B or better in EGR 1302
Introduction to the use of modern computational tools used for solid modeling. Software used is representative of that found in industry.

EGR 2V97 Special Topics or Project (1-3)

Cross-listed as ELC 2V97
See ELC 2V97 for course information.

EGR 2V99 Engineering Research Activities (1-3)

Pre-requisite(s): Consent of department chair
Special topics or projects in engineering research activities. This course provides the opportunity for recognition of supervised academic experiences that are in addition to degree requirements. Registration requires approval by the department chair and sponsoring faculty member. Cannot be used as an engineering elective to satisfy degree requirements.

EGR 2V9R Research in Engineering (3)

Pre-requisite(s): Consent of instructor
Undergraduate research supervised by a faculty member. May be taken for a maximum of 6 hours.

EGR 3115 International Project Experience (1)

Pre-requisite(s): A grade of C or better in EGR 3315
Experience working with an international business and/or organization in a context outside of the United States. Students will work a minimum of 80 hours on project(s) with the goal of gaining experience working in another culture and/or language, and experiencing how the difference in available resources affects the engineering design process.

EGR 3187 Engineering Fellows Capstone Project Planning (1)

Pre-requisite(s): Engineering Fellows only
With consultation from degree mentors, Engineering Fellows with an approved degree plan will develop and submit a proposal for a capstone project. Strategies for conducting interdisciplinary research or product development and designing a cohesive, integrated, manageable project will be discussed.

EGR 3302 Technologies for Developing Countries (3)

Pre-requisite(s): Consent of instructor
Survey of the technologies that impact the socio-economic group known as the bottom of the pyramid. The course will focus on two broad classes of technologies, water and energy, including the application of renewable energy sources such as solar, wind, and hydro power in the developing world. Water well drilling, water pumping and filtration, and other topics regarding water access will be covered. Economic decision-making techniques based on present worth, will be explored.

EGR 3305 Social and Ethical Issues in Engineering (3)

Pre-requisite(s): A grade of B or better in EGR 1302 and ECE, EGR, or ME major
Study of the relationship between engineering, technology, and society. Topics include philosophical perspectives on engineering and technology, technological values, impact of technological change, social and ethical responsibilities of engineers, and public technology policy. Christian responses to these issues will be explored.

EGR 3315 Ethics of International Service (3)

Pre-requisite(s): A grade of B or better in EGR 1302
Study of ethical considerations for professionals working in developing countries, especially those associated with the implementation of technology-oriented or enterprise-oriented development interventions. Topics include the nature and causes of poverty, international development, issues of justice, the influence of culture, the importance of community, humanitarian engineering, microfinance and entrepreneurial solutions to poverty, and preparing for a career in international service. Current theories of development from secular and Christian viewpoints will be explored.

EGR 3380 Engineering Design I (3)

Pre-requisite(s): A grade of C or better in the following: ELC 2320 or ELC 2330, and either ELC 2337 or ME 2321

Introduction to the engineering design process via team-based projects encompassing the design, construction and testing of an engineering device or system. Projects will emphasize oral, written, and graphical engineering communication skills and topics related to engineering professionalism.

EGR 3V95 Internship Experience (1-3)

Pre-requisite(s): Instructor approval required

Summer or semester-long full-time employment in an internship or co-op experience in a departmentally arranged and/or approved engineering-related position, with a report presentation after the employment period.

EGR 3V9R Research in Engineering (3)

Pre-requisite(s): Consent of instructor

Undergraduate research supervised by a faculty member. May be taken for a maximum of 6 hours.

EGR 4187 Engineering Fellows Capstone Project (1)

Pre-requisite(s): Engineering Fellows only; C or better in EGR 3187

An independent study or other creative effort demonstrating the accomplishment of the approved objectives in the Engineering Fellow's degree proposal. Fellows will register for one credit each semester in the last two semesters of their degree program.

EGR 4301 Global Business: Economics and Communication (3)

Pre-requisite(s): Junior standing in the School of Engineering and Computer Science

This is the first course in a two-course sequence that will prepare engineering students to work effectively at the interface between business and engineering in a global economy. This course will focus on engineering economics, written communication, and oral communication for engineers and computer scientists, addressing communication to both technical and non-technical audiences.

EGR 4357 Cardiovascular Engineering and Instrumentation (3)

Cross-listed as BME 4357, ELC 4357, ME 4357

See BME 4357 for course information.

EGR 4360 Renewable Energy Devices (3)

Cross-listed as ME 4360

See ME 4360 for course information.

EGR 4361 Conventional & Alternative Energy Systems (3)

Pre-requisite(s): A grade of C or better in the following: CHE 1301 and PHY 1420, and ME 2345 or CHE 4325 or CHE 4327

This course will provide a broad overview of the issues surrounding the energy systems we presently use or may use at a larger scale in the future to power our current industrial civilization.

EGR 4375 Elements of Nuclear Engineering (3)

Pre-requisite(s): A grade of C or better in PHY 1420 and MTH 1322

Survey of nuclear engineering concepts and applications. Nuclear reactions; radioactivity; radiation interaction with matter; reactor physics; risk and dose assessment; applications in medicine, industry, agriculture, and research.

EGR 4376 Radiation Dosimetry in Nuclear Health Physics (3)

Pre-requisite(s): A grade of C or better in the following: PHY 1408 and 1409 or PHY 1420 and 1430

An introduction to types of radiation relevant to nuclear, medical, scientific, and engineering applications; interaction of radiation with materials; radiation detection mechanisms and detectors; radiation dosimetry; biological effects of ionizing radiation, and medical uses of radiation.

EGR 4390 Engineering Design II (3)

Pre-requisite(s): A grade of C or better in EGR 3380, final Fall or Spring semester before graduation

A capstone design course for emphasizing the decision-making process that must be used by a practicing engineer to apply the basic sciences in order to convert resources optimally to meet stated objectives. Oral and written reports are required.

EGR 4396 Special Topics in Engineering (3)

Pre-requisite(s): Consent of department chair

Study of advanced topics in engineering. This course may be repeated once under a different topic.

EGR 4V97 Special Projects in Engineering (1-6)

Pre-requisite(s): Consent of department chair

Advanced topics and/or special project activities in engineering.

EGR 4V9R Research in Engineering (3)

Pre-requisite(s): Consent of instructor

Undergraduate research supervised by a faculty member. May be taken for a maximum of 6 hours.