EGR 101 INTRODUCTION TO ENGINEERING. (4)
This course introduces the engineering profession and the skills and expectations required for success. Engineering applications of calculus are also presented. Lecture, three hours; laboratory, two hours per week.

#EGR 111 SUCCESS IN ENGINEERING. (1)
EGR 111 reserved for Freshman College of Engineering students who have been admitted into the Engineering Living Learning Community. For registration information contact 859-257-0552.

EGR 120 TECHNOLOGY: BLESSING OR CURSE. (3)
Technology has created the world in which we live. Our wealth, our economy, and the way we live each day have come about due to the emergence of technology over the centuries. The course will examine the relationship between technology and society; how technology influenced the development of society, how society influenced the development of technology, and how people in society view technology. Prereq: Acceptance into SEAM Program.

EGR 199 TOPICS IN ENGINEERING: TITLE TO BE ASSIGNED. (1-6)
An experimental, topical or interdisciplinary course devoted to special topics of interest in engineering. Course offerings must be approved by the Deans and Chairpersons of all cosponsoring academic units. A particular title may only be offered twice under the EGR 199 number. Students may not repeat this course under the same title. May be repeated to a maximum of twelve hours. Prereq: Enrollment in the College of Engineering, or permission of the instructor.

EGR 201 LITERATURE, TECHNOLOGY, AND CULTURE. (3)
EGR 201 focuses on human endeavors in science as refracted through literature. The course brings together two distinct traditions: the study of literature and the practice of technical communication. The course operates from several assumptions: (1) that imaginative treatments of technological subjects offer powerful, useful, and even needed critical perspectives, (2) that authors and engineers both work from written conventions – genres and other tropes – that frame knowledge, (3) that writers benefit from scrutiny of generic conventions, and (4) that creative play with conventional literary genres can inspire engineers to “think outside the box,” to think creatively about their own designs and projects and about innovative ways of presenting their work. Prereq: Students must have successfully completed the first course in the General Education Communication sequence (or its transfer equivalent) and must have completed at least 30 hours of course work.

EGR 240 GLOBAL ENERGY ISSUES. (3)
This is a cross-disciplinary course open to all majors. This course critically examines issues associated with the technical, economic, societal, environmental, and geopolitical aspects of energy. The course is taught through lectures, discussions, and invited speakers.

EGR 390 EXPERIENTIAL LEARNING IN ENGINEERING OR COMPUTER SCIENCE. (0-3)
Project or activity led by an engineering faculty member, designed to provide students the opportunity to apply engineering principles in the context of real-world and multi-disciplinary community-based problems. May be repeated to a maximum of three credits. Prereq: Engineering standing.

EGR 394 BS/MBA SEMINAR. (0-1)
Participation in team development exercises, seminars, company visits, and activities associated with the BS/MBA program. Prereq: Admission to the BS/MBA program.

EGR 399 COOPERATIVE ENGINEERING EDUCATION. (1)
A course designed for undergraduate students who, through the engineering cooperative education office, secure full-time, salaried, career-related positions under the supervision of a sponsoring employer. Enrollment in the course constitutes full-time status. Course may be taken on a pass-fail basis only and may be repeated on a rotational basis to a maximum of six credit hours. Prereq: Approval of Coordinator of Cooperative Engineering Education.

EGR 401 CAREER PLANNING/EMPLOYMENT SEMINAR. (1)
This course will introduce students to the various elements involved in obtaining a position in their chosen field of engineering. Prereq: Engineering standing.
EGR 537 NUMERICAL ANALYSIS. (3)
Floating point arithmetic. Direct methods for the solution of systems of linear algebraic equations. Polynomial and piecewise polynomial approximation, orthogonal polynomials. Numerical integration: Newton Cotes formulas and Gaussian quadrature. Basic methods for initial value problems for ordinary differential equations. The emphasis throughout is on the understanding and use of software packages for the solution of commonly occurring problems in science and engineering. Prereq: CS/MA 321 or equivalent, or graduate standing or consent of instructor. Knowledge of a procedural computer language is required. (Same as CS/MA 537.)

EGR 540 POWER ECONOMICS AND PUBLIC POLICY. (3)
This course provides an introduction to the theories and industry practices related to power economics and power public policy. Topics studied include: U.S. power markets, electric utility business regulation, electric utility environmental regulation, public policy theory, political science theory, development of new electric generation facilities, utility business operation, engineering influence on public policy, and engineering economic analysis. Prereq: Engineering standing, graduate standing, or consent of instructor.

EGR 542 ELECTRIC POWER GENERATION TECHNOLOGIES. (3)
Overview of technologies used for generating electricity from location, recovery, transportation and storage of fuel to the types of technologies used to convert the fuel to electricity. Included is a discussion of the advantages and disadvantages of each technology and how they must adapt to be viable in the future. Technologies covered include coal, natural gas, nuclear, biomass, wind, solar and advanced technologies. Prereq: Engineering standing or consent of instructor. (Same as CME 542.)

EGR 546 ELECTRIC POWER SYSTEM FUNDAMENTALS. (3)
Introduction to power transmission basics, power system components, power flow, fault analysis and protection, control, stability, and economic operation of the power grid. This course will also introduce modern trends such as distributed generation, communications, and cybersecurity. Prereq: Graduate or engineering standing and EE 221, EE 305, or equivalent. (Same as EE 546.)

EGR 553 ENVIRONMENTAL CONSEQUENCES OF ENERGY PRODUCTION. (3)
This course will introduce the relationship of energy, pollution control technology, and the environment. The scientific and engineering aspects of energy production are examined and the associated environmental problems and control technologies are discussed. Prereq: CHE 105, MA 214, and engineering standing or consent of instructor. (Same as CE 553.)

*EGR 599 TOPICS IN ENGINEERING (Subtitle required). (1-3)
An experimental, interdisciplinary course devoted to a topic of interest to students in several departments of the college. Only three credits may be earned under the same title; students may register for more than one section each semester. A particular topic may be offered at most three times under the EGR 599 number. Prereq: Variable, given when topic is identified.

#EGR 601 INTRODUCTION TO RESEARCH IN ENGINEERING. (3)
Introduction to scientific research, applied to engineering. Characterization of scientific research, the definition of a research project, and methodology in research. Discussion includes management, organization and execution of a research project, scientific writing, information related to research ethics and data management, national policies, and intellectual properties. Case studies. Introduction to share research tools such as high performance computing or scanning electron microscopy. Prereq: Graduate standing or consent of instructor.

EGR 611 BOUNDARY ELEMENT METHODS IN ENGINEERING. (3)
Introduction of boundary element methods for use in solving common engineering equations, such as the Laplace equation, the Poisson equation, the wave equation, and the diffusion equation. Both the theoretical and numerical aspects of the boundary element technique are presented. Application areas include heat conduction, potential flow problems, acoustic wave propagation, general diffusion, and stress analysis. Prereq: EGR 537 or consent of instructor. (Same as ME 611.)

EGR 649 POWER AND ENERGY EXPERIENCES. (3)
This course will provide unique experiences through visit to a variety of energy-related sites and presentations from topical experts. Each week there will be planned full day field trips to selected energy related sites such as: pumped storage site, coal mine, coal- and gas-fired and nuclear power plants, power operations center, wind farm, hydroelectric generation, landfill gas site, smart grid demonstration center, solar farm, high efficiency building, etc. More than simply tours, these visits will be prepared for through individual reading assignments and summarized by journals. Prereq: EGR 542, EGR 546, admittance to PEIK Certificate Program, and EGR 540 concurrent; or consent of instructor.