ENGR 101. Introduction to the Engineering Profession. (1 Credit)
Introduces students to the engineering profession. The engineering disciplines, problem solving approaches, design processes, professional practices, licensure, engineering ethics, and teamwork will be explored through discussion, reading, research, and guest visits by practicing engineers. The importance of the liberal arts and the impact of faith on the practice of engineering will be explored. Freshmen and sophomores only.

ENGR 105. Fundamentals of Engineering Graphics. (2 Credits)
Introduces students to engineering graphics, the means by which engineers communicate design and fabrication information. Topics cover: utilization of engineering graphics; information on graphics; use of the basic graphic tools; orthographic views in both third and first angle projections; auxiliary, section, isometric, and perspective views. This course acquaints students with the processes that are automated within Computer Aided Drafting and Design (CADD) software and expectations for CADD work product. Lab fee. (lin)

ENGR 125. Introduction to AutoCAD. (2 Credits)
Intro to AutoCAD with emphasis on the fundamentals of Computer- Aided Drafting and Design (CADD). Introduces concepts, techniques and procedures necessary to facilitate a basic functional understanding of AutoCAD and the process of using AutoCAD tools to create, dimension, and annotate basic engineering drawings. Lab fee. (lin)

ENGR 201. Engineering Mechanics 1 - Statics. (4 Credits)
Systems of units; gravitation; Newton's laws of motion; equilibrium and free-body diagrams; particles, forces and moments; structures in equilibrium; centroids and center of mass; moments of inertia; friction; beam loadings; cables; fluids; virtual work and potential energy; particle kinematics; and, rotating bodies. Prerequisite: PHYS 231. Pre or Co-requisite: PHYS 334.

Topics include: kinematics and kinetics of particles; Newton's laws of motion; energy, momentum, systems of particles; rigid bodies; free-body diagrams; mass, acceleration, and force; plane motion of rigid bodies; and, conservation of energy and momentum. Prerequisite: ENGR 201. Pre or Corequisite: MATH 333.

ENGR 204. Innovative Design in Engineering. (4 Credits)
Provides the student engineer with firsthand experience in moving from a stated need to a developed and proof-tested product. Topics include project logbooks and plans, evaluating concepts and selecting a design, preparing design documents, fabrication, development and testing of prototypes, stewardship of the environment, preparation of engineering reports, and principles of contract, engineering, and patent law. Prerequisites: ENGR 201.

ENGR 223. Strength of Materials. (4 Credits)
Provides a broad range of knowledge of the behavior of materials under load. Topics include: mechanical properties; plane stress and strain; stress and strain relations; axially loaded members; Mohr's circle; stress transformation; torsion of shafts; bending and normal and shear stresses in beams; beam deflection; and combined loading. Prerequisite: ENGR 201.

ENGR 225. Materials Science. (4 Credits)
 Presents the scientific principles underlying the structural analysis of ceramic, composite, metallic (including semiconductors), and polymeric materials. Topics include atomic bonding and structure, electronic structure, micro- and macrostructure. Principles of structural effects on the chemical, mechanical, and physical properties of material are also addressed. Prerequisites: ENGR 201 and CHEM 231.

ENGR 394. Engineering Ethics Capstone. (2 Credits)
Engineering ethics and vocation; connections between the liberal arts educational experience and the practice of engineering. Prerequisite: Junior standing in the major. Seminar format meeting once per week for the full semester. (lin)

General Education: SHAR