ENG 091, 092/Engineering Seminar I, II **0 course unit**
Students in the first year are expected to engage in appropriate professional and service activities over two semesters. Activities such as attendance at technical presentations, professional society functions, service activities, and professional membership are required. (graded P/U)

ENG 093, 094/Engineering Seminar III, IV **0 course unit**
The requirement for professional and/or service activities (ENG 091, 092) is repeated for students in the junior year. (graded P/U)

ENG 095/Introduction to Engineering **0 course unit**
(fall semester)
The course provides an introduction to the engineering profession. Students are provided with an orientation to the program as well as the engineering specializations offered by the department. Areas of study include academic success strategies, time management, and the development of skills needed for successful group work. (graded P/U)

ENG 098/Fundamentals of Engineering Review **0 course unit**
(spring semester)
Prerequisite: Senior standing
A review of engineering principles in preparation for the Fundamentals of Engineering (FE) certification examination. (graded P/U)

ENG 099/Senior Professional Seminar **0 course unit**
(fall semester)
Prerequisite: Senior standing
Orientation course to aid students making the transition from college to graduate school/industry. Topics include career planning, resume preparation, interviewing techniques, professional responsibilities, ethics, graduate, and continuing education. (graded P/U)

ENG 142/Fundamentals of Engineering Design **1 course unit**
(with design hour)
(every semester)
An introduction to the study of engineering design as set within the graphical context of computer-aided engineering software and the procedural context of reverse engineering. Activities include the graphical analysis of the engineering design of products for visualization and communication, utilizing parametric solid modeling and also reverse engineering problems requiring the adaptation of an existing design.

ENG 152/Engineering Materials Science **1 course unit**
(every semester)
Corequisite: CHE 201
Fundamentals of metallurgy and properties of engineering materials, including ferrous and nonferrous metals, plastics, wood, and ceramics.

ENG 212/Circuit Analysis **1 course unit**
(every semester)
Prerequisite: PHY 202
Corequisite: ENG 272
Electric circuit concepts, Kirchoff's laws, node and mesh analysis, network theorems, natural and forced response, steady state analysis, phasor notation, balanced 3 phase, Fourier series, and frequency selective networks.

ENG 214/Circuit Analysis Laboratory **0.5 course unit**
(every semester)
Corequisite: ENG 212
A practical laboratory experience designing, simulating, breadboarding, and testing electric circuits to complement the theory in ENG 212.

ENG 222/Statics **1 course unit**
(every semester)
Prerequisites: PHY 201, MAT 127
Analysis of force systems and applications to structural analysis. Force analysis of plane trusses and frames, friction effects, centroids and moments, and products of inertia of plane areas and curves.

ENG 232/Manufacturing Processes **1 course unit**
(with laboratory)
(every semester)
An introduction to the basic tools, processes, and materials of manufacturing. The manufacturing enterprise is examined with special attention to key organizational systems including production and inventory control, quality control, marketing, and finance. In addition, fundamental processes of the metals and plastics industries are treated in depth.

ENG 262/Dynamics **1 course unit**
(every semester)
Prerequisite: ENG 222
Displacement, velocity, and acceleration of a particle. Dynamics of particles and rigid bodies. Work-energy and impulse momentum methods for particles and rigid bodies.

ENG 272/Advanced Engineering Mathematics I **1 course unit**
(every semester)
Prerequisite: MAT 128
Integrated introduction to matrix algebra and standard topics in differential equations and basic linear algebra. Topics include: linear systems, basis, vectors, matrices, eigenvalue-eigenvector problems, and experimental design with computer applications for engineering.

ENG 312/Digital Circuits and Microprocessors **1 course unit**
(with design hour)
(every semester)
Corequisite: CSC 215 or permission of the instructor
Analysis and design of digital systems including Boolean algebra, combinational and sequential circuit designs, programmable logic devices, VHDL or verilog, CMOS logic circuits, and computer basics.

ENG 322/Thermodynamics I **1 course unit**
(every semester)
Prerequisites: PHY 202, CHE 201, CSC 215, MAT 128
Study of the thermodynamic properties of pure substances, relationship of pressure and temperature to thermodynamic properties, concepts of work and heat. First and second laws of thermodynamics. Process and cycle analysis.

ENG 342/Advanced Engineering Mathematics II **1 course unit**
(every semester)
Prerequisite: ENG 272
Topics include: Probability, continuous and discrete distributions, simple and multiple regression and correlation. Fourier series, periodic functions, functions of arbitrary period, even and odd functions, and half-range expansions. Solutions to second order partial differential equations.

ENG 352/Control Systems **1 course unit**
(every semester)
Prerequisite: ENG 212
A study of theory and applications of electrical analog and digital control systems. Emphasis is on study of specific applications of such control systems to industrial processes and especially their application to electrical, hydraulic, pneumatic, and mechanical systems.

ENG 354/Control Systems Laboratory **.5 course unit**
(every semester)
Corequisite: ENG 352
Designing, modeling, and the simulation of analog and digital controllers.

ENG 372/Engineering Economy **1 course unit**
(every semester)
Prerequisites: MAT 128, ECO 200
Economic and financial considerations in engineering decisions. Topics include decision criteria. Also, cost concepts, financial calculations, capital sources, accounting data, and depreciation. Comparison of alternatives by annual cost, present worth, and discounted cash flow methods. Minimum cost and maximum profit determination. Replacement and economic life, break-even analysis, effect of taxes, intangible factors, and time value of money. Students will also become familiar with the common cost accounting systems and applications, their strengths and weaknesses.

ENG 412/Process and Quality Control **1 course unit**
(occasionally)
Prerequisites: ENG 232, ENG 272 or equivalent
Industrial practices with respect to the control of quality of manufactured products including standards, inspection, organization, sampling, and corrective action. The use of inspection instruments and procedures is included.

ENG 452/Project Management **1 course unit**
(spring semester)
Prerequisite: ENG 372
Techniques of project management at introductory level. Topics include life cycle of a project, project evaluation, project screening and selection, structuring the project, project management and control, project scheduling, project budget, and resource management.

ENG 470/Special Topics in Engineering **1 course unit**
(with design hour)
(occasionally)
Prerequisite: Permission of instructor
Study of advanced topics in engineering chosen by the instructor.