ENGIN 1100
Engineering Orientation
1 Credit Hour
This orientation course explores career options and requirements for various engineering fields. The course covers the interrelationships within and between engineering, technology, and science to allow differentiation between various career choices. It is intended for engineering majors. Prerequisite: Consent of instructor is required. (1 lecture hour)

ENGIN 1101 (IAI EGR 941)
Engineering Graphics and Design
3 Credit Hours
This is an introductory-level course in engineering graphics and design intended for mechanical, civil, and industrial engineering majors. It provides students with skills in basic drafting, spatial visualization, conceptual design, and the latest engineering software. The course's graphics topics include orthographic projection, pictorials, dimensioning, sectioning, tolerances, and assembly drawings utilizing free hand sketching, two-dimensional computer-aided design, and solid modeling. The course's design topics include problem definition, functional analysis, generation of design alternatives, and evaluation. Basic shop operations are introduced. Prerequisite: Mathematics 0482 with a grade of C or better, or equivalent or a qualifying score on the mathematics placement test or a qualifying A.C.T. math score. (2 lecture hour, 3 lab hours)

ENGIN 1820
Selected Topics I
1 to 3 Credit Hours
Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Consent of instructor is required. (1 to 3 lecture hours)

ENGIN 1840
Independent Study
1 to 4 Credit Hours
Exploration and analysis of topics within the discipline to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Consent of instructor is required. (1 to 4 lecture hours)

ENGIN 2201 (IAI EGR 942)
Statics
3 Credit Hours
This course studies the internal forces that develop inside a structure or machine in equilibrium due to applied external forces. The course's topics begin with force vectors, moment vectors, distributed loads, particle equilibrium, and rigid body equilibrium in two and three dimensions. These concepts are applied toward the analysis of trusses, frames, machines, and beams. The course's topics conclude with a study of centroids, moments of inertia, friction, and virtual work. This course is intended for mechanical, civil, and industrial engineering majors. Prerequisite: Mathematics 2231 with a grade of C or better or equivalent and concurrent enrollment in Physics 2111 is required. (3 lecture hours)

ENGIN 2202 (IAI EGR 943)
Dynamics
3 Credit Hours
This is an advanced course that studies the motion of an object or system under the action of forces. The course's topics include kinematics and kinetics of particles and rigid bodies in two and three dimensions, non-Cartesian coordinate systems, absolute and relative motion, force, mass, acceleration, work, energy, impulse, momentum, and vibration. This course is intended for mechanical, civil, and industrial engineering majors. Prerequisite: Engineering 2201 with a grade of C or better or equivalent and Physics 2111 with a grade of C or better or equivalent. (3 lecture hours)

ENGIN 2203 (IAI EGR 945)
Mechanics of Materials
3 Credit Hours
Analysis of stress, strain and deflection in machine and structural elements (axial, shear, torsion and bending loads). Stress and strain transformation using Mohr's Circle. Combined loading, repeated loading, theories of failure, related mechanical properties, and column buckling. Design of shafts, beams and columns. Elementary stress measurement devices. Prerequisite: Engineering 2201. (3 lecture hours)

ENGIN 2205
Engineering Thermodynamics
3 Credit Hours
Analysis of thermodynamic processes and systems. Engineering implications of the properties of ideal and real gases and vapors in thermal systems. Zeroth, first and second laws of thermodynamics, power and refrigeration systems, entropy and vapor power systems. Prerequisite: Mathematics 2233 or college equivalent. (3 lecture hours)

ENGIN 2207
Engineering Economy
3 Credit Hours
Introduction to the economic aspects of engineering decisions. Topics include present and annual worth analysis, rate of return analysis, depreciation, inflation, income tax considerations, break-even analysis, sensitivity analysis, and financial decision making. Intended for mechanical, civil, and industrial engineering majors. Prerequisite: Mathematics 2232 with a grade of C or better, or equivalent. (4 lecture hours)

ENGIN 2210 (IAI EGR 931L)
Circuit Analysis I
4 Credit Hours
This is an introduction to engineering circuit analysis and design. The topics include concepts of electricity and magnetism; circuit variables (units, voltage, inductance, power and energy); circuit elements (R, L, C and operational amplifiers); simple resistive circuits; circuit analysis (node-voltage, mesh-current, equivalents and superposition); transient analysis; and sinusoidal steady state (analysis and power). This course includes a lab component and is intended for electrical and computer engineering majors. Prerequisite: Mathematics 2233 with a grade of C or better, or equivalent and Physics 2112 with a grade of C or better, or equivalent. (3 lecture hours, 3 lab hours)

ENGIN 2213 (IAI EGR 932)
Introduction to Digital Systems
4 Credit Hours
This is an introduction to digital circuit logic and design. The topics include representation of information, binary systems, Boolean
algebra, Karnaugh maps, Quine-McClusky method, combinational switching circuits, multiplexers, decoders, encoders, latches, flip-flops, registers, counters, sequential switching circuits, wired and stored program processor concepts (e.g., ROM), and VHDL. This course includes a lab component and is intended for computer engineering and electrical engineering students. Prerequisite: Mathematics 1431 with a grade of C or better, or equivalent or a qualifying score on the mathematics placement test or a qualifying A.C.T. math score. (3 lecture hours, 3 lab hours)

ENGIN 2220
Circuit Analysis II
4 Credit Hours
This is an advanced course in circuit analysis and design. The topics include three phase circuits, magnetically coupled circuits, frequency response of AC circuits, Laplace transforms, Fourier series, Fourier transforms, active filters, and two port networks. This course includes a lab component and is intended for electrical and computer engineering majors. Prerequisite: Engineering 2210 with a grade of C or better, or equivalent and Mathematics 2270 with a grade of C or better, or equivalent. (3 lecture hours, 3 lab hours)

ENGIN 2223
Microcontrollers
4 Credit Hours
This is an introduction to the structure of microprocessors. The topics include architecture, instruction set, assembly language programming, assembler directives, input/output operations, C language programming for an embedded device, timers, analog-to-digital conversion, interrupts, and timing analysis. The course includes a lab component and is intended for electrical and computer engineering students. Prerequisite: Engineering 2213 with a grade of C or better, or equivalent. (3 lecture hours, 3 lab hours)

ENGIN 2820
Advanced Selected Topics I
1 to 3 Credit Hours
Advanced exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: At least one course in the discipline or consent of instructor. (1 to 3 lecture hours)

ENGIN 2860
Internship (Career & Technical Ed)
1 to 4 Credit Hours
Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Dean from the academic discipline where the student is planning to earn credit.

ENGIN 2870
Internship (Transfer)
1 to 4 Credit Hours
Course requires participation in work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Dean from the academic discipline where the student is planning to earn credit.

ENGIN 2871
Internship - Advanced (Transfer)
1 to 4 Credit Hours
Continuation of Internship (Transfer). Course requires participation in work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Dean from the academic discipline where the student is planning to earn credit.