ENGR 101 | INTRODUCTION TO ENGINEERING
Units: 3  Repeatability: No
Prerequisites: MATH 150 (Can be taken Concurrently)
Introduction to the field of engineering. Students work in small teams to solve open-ended interdisciplinary design problems, including concept generation, analysis, computer aided design (CAD) modeling, construction, testing, development, and documentation. The project work is enhanced with lectures, activities, and reading on design, manufacturing, and engineering tools. Intended for majors in engineering or those exploring careers in engineering. Four hours lecture-laboratory weekly.

ENGR 102 | INTRODUCTION TO ELECTROMECHANICAL SYSTEM DESIGN
Units: 3  Repeatability: No
Prerequisites: ENGR 101 and MATH 150 and MATH 151 (Can be taken Concurrently) and (ENGR 121 or COMP 150) and PHYS 270 (Can be taken Concurrently)
Introduction to the use of sensors, actuators, controllers, and computer interfaces for the use with electro-mechanical systems. Application of the engineering design process culminating in a team-based design project.

ENGR 103 | USER-CENTERED DESIGN
Units: 3  Repeatability: No
Prerequisites: ENGR 101 and MATH 150 and (ENGR 121 or COMP 150) and MATH 151
Introduction to strategies for developing designs that emphasize how users will interact with the final product. Iterative design methods to elicit user requirements, generate alternative designs, develop low-fidelity prototypes, and evaluate designs from the user’s perspective. Individual and collaborative strategies for design thinking, concept development, and functional evaluation.

ENGR 110 | THE DESIGN OF COFFEE
Units: 3  Repeatability: No
This course serves as an introduction to how engineers approach and solve problems, demonstrated by the process of roasting and brewing coffee. Students will be introduced to basic principles of engineering analysis and design, and guided through a series of laboratory experiments testing the effect of design choices on the sensory quality of coffee. Both qualitative and quantitative concepts will be included in the course, along with discussion on the implications of coffee production and harvesting on land use, agriculture industry, labor force, economies, and societies. This course fulfills a Scientific and Technological Inquiry core curriculum requirement for non-majors. Concurrent registration in MATH 115 or higher recommended.

ENGR 121 | ENGINEERING PROGRAMMING
Units: 3  Repeatability: No
Prerequisites: MATH 150 (Can be taken Concurrently)
Fundamentals of computer usage and programming in a structured, high-level language as commonly used in engineering systems development and applications; modular programming principles; use of the operating system and language constructs for program input/output; object-oriented programming. Three hours lecture weekly.

ENGR 294 | SPECIAL TOPICS IN ENGINEERING
Units: 1-4  Repeatability: Yes (Can be repeated for Credit)
Special topics in various areas of engineering science theory and practice, including laboratory. May be used to correct certain deficiencies in transfer work or for special projects.

ENGR 296 | UNDERGRADUATE RESEARCH
Units: 1-3  Repeatability: Yes (Can be repeated for Credit)
Faculty-directed undergraduate research in engineering. Problem selected after consultation with faculty. Written report required. Prior approval by department chair or dean is required.

ENGR 298 | INTERNSHIP/CO-OP EXPERIENCE
Units: 1-3
Directed lower division internship or co-operative experience in an engineering or related activity. Usually involves a three-month summer work assignment with industrial firms or government agencies. Written report required. Credit not applicable to minimum engineering program graduation requirements. May be repeated for credit.

ENGR 311 | ENGINEERING MATERIALS SCIENCE
Units: 3  Repeatability: No
Prerequisites: (CHEM 151 and CHEM 151L) and MATH 151 and PHYS 271
Basic concepts of material structure and its relation to properties; atomic structure; mechanical, electrical, and magnetic properties; engineering applications; introduction to semiconductor physics. Three hours lecture weekly. Fall semester.

ENGR 421 | EMBEDDED SYSTEMS PERFORMANCE
Units: 3  Repeatability: No
Prerequisites: COMP 385
This course will focus on the application of all available processing power to implement system solutions. Parallel processing, core sequestration, processor affinity, CPU programming, DSP programming, and the integration of disparate processing elements via OpenCL will all be addressed in this course. The impact of coherent and non-coherent memory models will be addressed and the notion of data hazards in non-coherent systems will be detailed. We will also consider the application specific impacts of the relative power efficiency of alternative processing models. Every Spring.

ENGR 465 | FORENSIC ENGINEERING
Units: 3
This course deals with the interaction between the engineering and legal communities. Through case studies, students will learn about the legalities associated with being an engineer. The analysis stage of the engineering design process will be dissected and viewed as it is interpreted by the courts. Standard of care and legal standards for review of engineering design will be discussed. Duties of the engineer, the manufacturer, and the end user will be compared and contrasted. Students will perform forensic analyses of product failure cases. Legal concepts will be conveyed via case studies and Law Review articles.

ENGR 494 | SPECIAL TOPICS IN ENGINEERING
Units: 1-3  Repeatability: Yes (Can be repeated for Credit)
ENGR 496 | UNDERGRADUATE RESEARCH
Units: 0.5-3  Repeatability: Yes (Can be repeated for Credit)
Faculty-directed undergraduate research in engineering. Problem proposal must be submitted and approved prior to enrollment. Written report required. Upper division standing in engineering. Prior approval by department chair or dean is required.

ENGR 499 | INDEPENDENT STUDY
Units: 1-3  Repeatability: Yes (Can be repeated for Credit)
Prerequisites: (MATH 130 or MATH 150)