

### **Contemporary Literature**

A study of the modern and contemporary masters from Europe (in translation), England, and America. A scholarly paper is required. Prerequisite: EGL 1023 or equivalent

### **EGL 4493 Composition Theory Three hours**

A study of the history and development of writing as an academic discipline with emphasis on how various aspects and styles of writing are valued, taught, and assessed at different levels of education. Prerequisite: 12 hours of EGL  
Offered fall semester (odd-numbered years)

### **EGL 4611, 4612, 4613 Independent Study/Research One to three hours**

Independent study supervised by a member of the English faculty. A scholarly paper and/or a significant research project is required. Enrollment by permission of the department.

Offered upon sufficient request

### **EGL 4713 Literary Theory Three hours**

A study of the primary texts of literary criticism and aesthetics from Plato to the present. Focuses on developing knowledge and application of the various ideas from the different schools of thought. Prerequisites: EGL 1013, 1023, and one upper-level literature course. Prerequisite or corequisite: RPH 3002  
Offered fall semester (odd-numbered years)

## **EN (Engineering)**

### **EN 1112 Engineering Concepts and Design I Two hours**

A first course in engineering involving basic engineering concepts and the design process. Topics covered include an introduction to the profession, technical sketching, conceptualization, the design process and the use of solvers, simulations, spreadsheets and computer drafting.

Offered fall semester

### **EN 1121 Production Technique Laboratory One hour**

Basic training in the areas of welding, metal fabrication and machine tools. Two two-hour laboratory periods per week.

Offered spring semester

### **EN 1123 Engineering Concepts and Design II Three hours**

A study of introductory concepts in statics, dynamics, thermodynamics, electric circuits, digital logic and engineering design. Attention is given to feasibility, economics, product liability, and patents. Software solvers, simulators, rapid prototyping, and CAD are used. There is a team design project. A Christian perspective of design is developed using design in nature

Offered spring semester

### **EN 2112 Introduction to Microcomputers Two hours**

A basic study of operation and programming. Includes architecture, instruction sets, data manipulation, memory, input/output, some case studies of applications, and design problems. Prerequisite: CS 1113 or equivalent

Offered fall semester

**EN 2222 Instrumentation Laboratory** **Two hours**

An introduction to laboratory procedures, basic instrumentation techniques and reporting of laboratory work. Includes the use of testing apparatus, oscilloscopes, various transducers, statistical analysis of data and uncertainty analysis. One hour lecture-discussion and one three-hour laboratory period per week. Prerequisites: EE 2113, MTH 1144 or equivalent

Offered spring semester

**EN 2322 Engineering Economics** **Two hours**

A study of economics as applied to engineering decision making. Consideration is given to reliability, maintainability and feasibility in comparisons of costing and payback schemes. The economic impact of environmental and safety considerations are explicitly included. The context is a free enterprise system, subject to government regulation and investment capitalization. Prerequisite: MTH 1134

Offered spring semester

**EN 3002 Technology and Society** **Two hours**

A study of the impact of technology upon society. Change, resources and energy, transportation, communication, computers, pollution, shelter, environment, technology assessment and technology transfer. Problem solving techniques from a Christian perspective. Two hours lecture-discussion per week. Prerequisites: EGL 1023, GSC 1023, MTH 1003 or equivalents

Offered each semester

**EN 3093H Honors: Technology and Society** **Three hours**

A study of the impact of technology upon society. Considerations of all aspects of technology assessment and technology transfer. Particular emphasis is given to critical thinking and writing regarding issues assessment and added value sensitivity from the Christian perspective. Prerequisites: EGL 1023, GSC 1023, MTH 1003 (or Honors counterparts), and admission to the Honors Program or permission of the Honors Committee

Offered fall semester (odd-numbered years)

**EN 3103 System Design with Microprocessors** **Three hours**

A study of the application of microcomputers to systems with output related to input. Particular emphasis is given to interfacing techniques. Includes one design project. Prerequisite: EN 2112. Corequisite: EN 2222

Offered upon sufficient request

**EN 3123 Systems Theory** **Three hours**

Methods of modeling systems. Laplace transforms, vector formulation of differential equations, signal flow graphs, state-variable analysis of linear dynamic systems, stability theory, discrete analysis and the Z-transform. Three hours lecture-discussion per week. Prerequisite: EE 2123 and MTH 2114

Offered spring semester

**EN 3213 Engineering Materials Science** **Three hours**

A microscopic study of engineering materials, with emphasis on how structures relate to properties. Three hours lecture-discussion-laboratory per week. Prerequisite: CHM 1124

Offered fall semester

- EN 3222 Design Laboratory** **Two hours**  
 Student works on design projects in a team context. Four hours in laboratory per week. Prerequisites: EN 2222. Co-requisite: ME 2123  
 Offered spring semester
- EN 3224 Engineering Field Theory** **Four hours**  
 An integrated study of electric, magnetic, gravitational, fluid, thermal and other fields. Applications using Gauss's law. Solutions to the Laplace and Poisson equations, with introduction to Maxwell's equations. Numerical and graphical techniques. The laboratory experiences involve both analysis and design. Three hours lecture-discussion and one three-hour laboratory period per week. Prerequisites: PHY 2124  
 Co-requisite: MTH 2123  
 Offered spring semester
- EN 3501, 3502, 3503 Selected Topics** **One to three hours**  
 A study of a special area of engineering. May be used for credit for internship or independent study. Prerequisite: consent of division chair  
 Offered upon sufficient request
- EN 4113 Engineering Design I** **Three hours**  
 A study of specifications, feasibility, modeling, optimization methods, elements of professionalism, and economic analysis. Initiation of the senior design project with written and oral reporting of preliminary work. Two seventy-five minute periods per week. Prerequisites: EN 3222 and MTH 2123  
 Offered fall semester
- EN 4123 Engineering Design II** **Three hours**  
 A capstone course to integrate previous engineering learning experiences in problem formulation and solution. Includes the completion of the major design project initiated in Engineering Design I, with written and oral reporting of the work. Involves supervision of freshman design students. Prerequisite: EN 4113  
 Offered spring semester
- EN 4313 Control Systems** **Three hours**  
 A study of linear, continuous and digital, time-invariant control systems from both the classical transform and modern state-variable points of view. Includes a design project. Three hours lecture-discussion per week. Prerequisite: EN 3123  
 Offered fall semester
- EN 4411 Controls Laboratory** **One hour**  
 A study of various control systems and components using computer simulation and experimentation. Includes system identification, design and evaluation of compensation and use of microcontrollers and PLC's. Three hours laboratory per week. Prerequisite or corequisite: EN 4313  
 Offered fall semester
- EN 4503 Electro-Optics** **Three hours**  
 A study of wave and ray optics, diffraction, reflection, refraction, and polarization in free space and transmission lines, and waveguides. Laboratories include experiments with lasers, detectors, emitters, optical fibers, photovoltaic devices, optical communication and optical instrumentation. Two hours lecture-discussion and one two-hour laboratory per week. Prerequisite: EE 3213. Co-requisite: EN 3224  
 Offered upon sufficient request