available through regular course work. May be repeated two times for a total of up to nine credits.

ENGL 4950
Senior Seminar
3:3:0 **F, Sp**
• Prerequisite(s): ENGL 3090 and Senior Status
Culminates exploration into the cultural impact and standing of English Studies. Further professionalizes students by assisting them with career or graduate school preparation. Includes revision of an existing paper as a scholarly writing sample and creation of a professional portfolio to display knowledge and abilities. Students reflect on career possibilities and develop their own professional network by meeting and visiting successfully employed English graduates.

ENGR—Engineering Science

ENGR 1000
Introduction to Engineering
3:3:0 **F, Sp**
• Prerequisite(s): MAT 1000 or MAT 1010
Introduces the various areas of engineering to pre-engineering majors and others interested in learning more about the contributions engineers make to our modern society. Includes a brief history of engineering and discussions about what engineers really do. Discusses professional ethics, responsibilities, and career opportunities. Emphasizes problem solving skills and the processes and procedures of engineering design. Includes lectures, projects, guest speakers, field trips, and in-class exercises.

ENGR 2010
Engineering Statics
3:3:0 **F, Sp**
• Prerequisite(s): MATH 1210, PHYS 2210
Teaches principles of engineering mechanics as applied to bodies at rest. Discusses the concepts of position and force vectors, free body diagrams, equilibrium, center of gravity, centroids, distributed loading, friction, area and mass moments of inertia. Applies principles learned in the analysis of trusses, frames and machines.

ENGR 2030
Engineering Dynamics
3:3:0 **F, Sp**
• Prerequisite(s): ENGR 2010 and MATH 1220
Teaches principles of engineering mechanics as applied to bodies in motion. Studies kinematics and kinetics of particles and rigid bodies. Develops the concepts of force and acceleration, work, energy, impulse, momentum, impact, and vibration. Utilizes theory and methodology developed in the solution of practical engineering problems.

ENGR 2140
Mechanics of Materials
3:3:0 **F, Sp**
• Prerequisite(s): ENGR 2010
Studies behavior of materials under axial, torsional, flexural, transverse shear and combined loading conditions. Analyzes nature of stress and strain for ductile and brittle materials, stress and strain diagrams, stress concentration, and failure of materials. Includes analysis of repeated and dynamic loading, and basic design techniques related to above topics.

ENGR 2300
Engineering Thermodynamics
3:3:0 **Sp**
• Prerequisite(s): MATH 1220, PHYS 2210
Covers static pressure, phase diagrams, equations of state, and mass balance. Studies the first and second laws of thermodynamics and their application in engineering problem solving. Includes analysis of open and closed systems, steady state, and unsteady flow problems. Studies heat engine, refrigeration, and Carnot cycles. Discusses Entropy and Energy balance.

ENGR 2450
Computational Methods for Engineering Analysis
3:3:0 **F**
• Prerequisite(s): MATH 1210, CS 1400
Discusses computational and symbolic methods for the solution of complex engineering problems. Discusses computer representation of numbers and algorithm error analysis. Covers the solution of algebraic and differential equations. Includes the use of modern software tools.

ENGR 295R
Special Topics
1 to 3:1 to 3:0 **On Sufficient Demand**
• Prerequisite(s): Permission of Department Chair
Presents various engineering topics. Examines current technology, techniques, processes and equipment. Includes oral and written reports. May be repeated for a maximum of 3 credits toward graduation.

ENST—Environmental Studies

ENST 3000
Introduction to Environmental Studies
3:3:0 **F**
Explores the complex relationships of culture, technology, and nature within an interdisciplinary framework of the natural sciences, social sciences, business, and humanities. Addresses the integration of humanity and nature in the age of globalization.

ENVT—Environmental Management

ENVT 1110
Introduction to Environmental Management
3:3:0 **F, Sp**
Surveys environmental issues and the impact of people on the environment. Covers water, air, and soil pollution. Discusses pollution prevention and remediation methods. For majors and any who have an interest in environmental issues.

ENVT 1200
Environmental Worker Safety
3:3:0 **F**
Discusses safety laws, training requirements, and the use of personal protective equipment. Covers management of a safety program and development of a safety culture.

ENVT 1210
Introduction to Water Reclamation
3:3:0
Covers the basic processes used to treat wastewater including primary treatment, biological treatment, and chemical treatment processes. Offers excellent preparation for the state license exam.

ENVT 1270
Environmental Microbiology
3:3:0 **F**
• Prerequisite(s): MICR 2060 recommended
For water managers, public health workers, and environmental managers. Discusses the role microorganisms in water treatment, wastewater treatment, agriculture, environmental change, and others.

ENVT 1300
Environmental Lab and Sampling
3:2:3 **Sp**
Studies basic laboratory techniques used by labs working on environmental projects. Covers safety, pH, dissolved oxygen, BOD, turbidity, organics, and others. Includes opportunities for undergraduate research.

ENVT 1360
Introduction to Water Treatment
3:3:0
Covers coagulation, sedimentation, filtration, water sources, sampling, disinfection, and regulations. Introduces the equipment used to treat water. Discusses the prevention of disease through effective treatment.

ENVT 1510
Hazardous Materials Emergency Response
3:3:0 **F**
Meets the requirements for the OSHA 40 hour training. Includes personal protection, identifying hazardous materials, spill control, and incident management. Completers may obtain OSHA certification for handling hazardous materials.