on specific areas of concentration within the field of gender studies. (Specific areas of focus will change as the instructor and his or her focus or expertise changes.) Analyzes how gender affects and is affected by culture, ideology, socio-economic factors, history, etc. Possible course focuses include: Gender and Popular Culture, Gender and the Canon, and Gender in Literary Theory, among others. May be repeated for up to 6 credits toward graduation.

ENGL 474R
Topics in Folklore
3:3:0 Not 09-10
• Prerequisite(s): ENGL 2210 or instructor/advisor approval
Studies one folk genre, one folk group, or one theme which crosses genres and/or groups. Students will collect folklore related to topic under discussion. Uses discussion, readings, folk events, and students' writings. May be repeated twice with different topics.

ENGL 476G
Multi-ethnic Literature in America
3:3:0 F
• Prerequisite(s): ENGL 2010 or ENGL 2020
Surveys multi-ethnic literature reflecting the rich diversity inherent in American experience. Includes but is not limited to works by Native American, Hispanic American, Asian American, African American authors.

ENGL 481R
Internship
1 to 8:0:5 to 40 Su, F, Sp
• Prerequisite(s): Departmental approval, senior status
For senior English majors and minors. Internships are intended to offer students opportunities to work with instructors and other professionals on task related to the field of English. Students who receive credit for an internship must establish learning objectives with their Faculty Sponsor at the beginning of their internship and reflect on their learning through academic work (i.e. papers, journal, etc.). Students are required to submit an evaluation of their experience at the end of the semester. May be repeated for a maximum of 8 credits toward graduation.

ENGL 486R
Topics in Literature
3:3:0 F, Sp
• Prerequisite(s): ENGL 2010 or ENGL 2020
Studies various topics/themes in fiction, poetry, drama, essay, film, or other art forms such as ethics in literature, queer literature, literature and the environment, literature and war, literature and the civil rights movement, etc. Subject matter will vary each semester. May be repeated twice for different topics.

ENGL 490R
Directed Readings
1 to 3:0:3 to 9 F, Sp
• Prerequisite(s): Department Chair and Instructor Approval
Reading and writing assignments designed in consultation with a faculty member to meet special needs or interests not 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
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, MATH 1220, and PHYS 2210
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 and PHYS 2210
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.

ENST 3520 (Cross-listed with: PSY 3520)
Environmental Psychology
3:3:0
• Prerequisite(s):(ENGL 2010 or ENGL 2020)
Studies relationships between behavior and experience and the built and natural environments. Studies perspectives and problems unique to the field. Analyzes psychological research as it applies to humans and the environment. This is a service learning course with community-based research.

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.

ENVT 2560
Environmental Health
3:3:0 Sp
• Prerequisite(s): BIOL 1010 and CHEM 1110 recommended
Presents how environmental protection and proper sanitation can protect the public. Covers control of infectious and noninfectious diseases, safe water supplies, housing safety, radiation hazards, and air pollution.

ENVT 2600
Skills for Humanitarian Projects
3:3:0 F
For students interested in participating in humanitarian projects. Covers water supplies, adobe stoves, drip irrigation systems, photoelectric lighting, and rules for safety in unfamiliar surroundings.

ENVT 2710
Environmental Careers
1:1:0 Sp
For all students interested in environmental careers. Explores the career opportunities in environmental areas. Covers resumes, letters of inquiry, networking, and other methods of job seeking.

ENVT 2730
Introduction to Soils
3:3:0 Sp
Covers soil-water relations, soil classification, soil conservation, fertility, and soil chemistry. Discusses impacts such as agriculture and recreation upon soil quality.

ENVT 282R
Environmental Internship
1 to 5:0:3 to 15 Su, F, Sp
• Prerequisite(s): Instructor permission
Allows students practical experience working at an environmentally related job. May be repeated for a maximum of five credits toward graduation.

ENVT 3000
GIS and GPS Applications for the Earth Sciences
3:3:0
• Prerequisite(s):ENVT 1110 or GEO 1010
Introduces students to the basic applications of GIS and GPS now often needed to carry out environmental and geological projects. Teaches how to operate hand held and survey grade GPS systems. Introduces students to the latest version of Arcview software and they are asked to carry out a sample GIS project.

ENVT 3010
Environmental Toxicology
3:3:0 F
• Prerequisite(s): BIOL 1010 and CHEM 1110 recommended
For environmental managers and safety managers. Discusses safe levels of exposure, safe industrial practices and regulations. Reviews standards for toxic substances. Increases awareness of toxins commonly found on job sites.

ENVT 3280
Environmental Law
3:3:0 F
• Prerequisite(s): ENGL 1010 and ENGL 2020 recommended
Covers the Clean Water Act, the Safe Drinking Water Act, and the Clean Air Act. Reviews the Toxic Substances Control Act, the Resource Conservation and Recovery Act, the Superfund law, DOT regulations, and OSHA regulations.

ENVT 3290
Environmental Permits and Reports
3:3:0 On Sufficient Demand
• Prerequisite(s): ENGL 1010 and ENGL 2020 recommended
For students interested in becoming environmental managers. Covers the permits and reports that are required by the EPA, OSHA, state and local agencies that relate to air, water, and hazardous materials. Includes the preparation of sample permit applications and monthly operational reports.

ENVT 3320
Hydraulics of Water
3:3:0 On Sufficient Demand
• Prerequisite(s): MAT 1010
Prepares students to analyze the flow of water. Includes the continuity equation, Hazen-Williams formula, and the Bernoulli Theorem. Completers will be better able to interact with engineers and operate water equipment in a professional manner.

ENVT 3330
Water Resources Management
3:3:0
Examines the broad issues that affect water quality and supply. Covers watershed management, limnology, stormwater management, and wetlands. Discusses the biological and physical processes that occur and the legal constraints that affect management decisions.

ENVT 3530
Environmental Management Systems
3:3:0 On Sufficient Demand
• Prerequisite(s): ENGL 1010 and ENGL 2020 recommended
For those interested in the interaction between industry and the environment. Covers the systems and organization necessary to effectively manage environmental issues. Discusses the ISO 14000 standard and its effect upon management practices.

ENVT 3550
Site Investigation
3:3:0 On Sufficient Demand
• Prerequisite(s): CHEM 1110 (recommended)
Covers the investigation and preliminary cleanup of a contaminated site. Includes planning, training, site characterization, sampling, and site control. Completers should have a basic understanding of the process used to remediate an environmentally damaged site.

ENVT 3630 (Cross-listed with: GEOG 3630)
Introduction to Geographic Information Systems
4:3:2 Su, F, Sp
Introduces the operation of Geographic Information Systems (GIS). Focuses on GIS software and basic theory of geographic information science. Offers valuable preparation for careers in geography, planning, surveying, marketing, environmental technology, biology, engineering, and other related fields.

ENVT 3700
Current Topics in Environmental Management
3:3:0 Sp
• Prerequisite(s): ENVT 1110 recommended
Studies local environmental issues, new technologies, and the challenges faced by environmental managers. Issues discussed will vary with the semester. Prepares students for a thoughtful discussion of environmental issues.

ENVT 3750
Land Use Planning
3:3:0 F
• Prerequisite(s): ENVT 3280 recommended
Covers key issues in land use planning and how they affect the environment. Includes multiple use concepts, focused uses, zoning, mapping, and the political processes used in planning. Discusses the importance of strategic planning and public relations.

ENVT 3770
Natural Resources Management
3:3:0 On Sufficient Demand
- Prerequisite(s): BIOL 1010 recommended

For students in the Environmental Management program and others interested in natural resource issues. Introduces the management and conservation of natural resources. Discusses forestry, range management, wildlife management, and outdoor recreation.

ENVT 3790
Hydrology
3:3:0 On Sufficient Demand
- Prerequisite(s): MAT 1010 and DGM 201D recommended

Presents a comprehensive review of the role of water in the environment. Discusses precipitation, runoff, surface flow, groundwater movement, effects of vegetation on water cycles, and human impacts. Knowledge of spreadsheets recommended.

ENVT 3800 (Cross-listed with: CHEM 3800, PHYS 3800)
Energy Use on Earth
3:3:0 F
- Prerequisite(s): (PHYS 1010 or PHSC 1000 or CHEM 1010 or GEO 1010 or GEO 2040 or METO 1010) and MATH 1050

Covers the science of energy production and consumption. Quantitatively analyzes various methods of energy production, distribution, and end use in all sectors of our society, including transportation, residential living, and industry. Examines the impacts of our energy consumption on the environment and prospects for alternative energy sources. Intended for science majors interested in energy use in society or in an energy related career, and for students in other majors who feel that a technical understanding of energy use will help them to understand and mitigate its impact in our society.

ENVT 3850
Environmental Policy
3:3:0 Su, F, Sp
- Prerequisite(s): ENVT 1110 and ENVT 3280 recommended

For upper-division students with an interest in environmental policy. Discusses the process by which policies are made and the factors that influence policy formation. Includes political factors, economics, international issues, public awareness and others.

ENVT 482R (Cross-listed with: GEO 482R)
Geologic/Environmental Internship
1 to 3:0:5 to 15 Su, F, Sp
- Prerequisite(s): GEO 1010 or ENVT 1110, and 12 credit hours of any GEO, GEOG, or ENVT courses, and declared major in any Earth Science program

Engages students in supervised geologic or environmental work in a professional setting. Requires approval by the Chair of the Department of Earth Science. Includes maintaining a journal of student experiences and preparing a paper summarizing their experience. A maximum of 3 credit hours may be counted toward graduation.

ENVT 495R
Special Projects in Environmental Management
1 to 3:0:3 to 9 Su, F, Sp
- Prerequisite(s): Instructor Permission

Allows students to pursue undergraduate research projects. Includes instructor directed practical research. Students will prepare a report of their findings. May be repeated for a maximum of six credits toward graduation.

ESEC—Emergency Services-Emergency Care

ESEC 1140
Emergency Medical Technician--Basic
9:7:6 Su, F, Sp

For first semester Fire Science students. Prepares students for certification as an Emergency Medical Technician-Basic through the Utah Bureau of EMS. Includes CPR, automatic defibrillation, patient assessment and treatment, legal issues, airway support, medical and trauma emergencies, emergency childbirth, pediatric emergencies and patient movement/transport.

ESEC 1150
EMT Refresher Level I
2:1:2 On Sufficient Demand
- Prerequisite(s): ESEC 1140

Provides in-service refresher information to maintain EMT Level I certification based on the D.O.T. requirements for emergency medical technicians. Focuses on required EMT skill mastery.

ESEC 1160
Emergency Medical Technician--Intermediate
6:4:6 F
- Prerequisite(s): ESEC 1140 or equivalent) or EMT-Basic Certification for one year or six months experience as a Utah EMT-Basic with prior Utah Bureau of Emergency Medical Services approval.

Prepares students for certification as an Emergency Medical Technician-Intermediate through the Utah Bureau of EMS. Includes advanced airway management, intravenous access, medication administration, cardiac rhythm interpretation and other advanced medical skills.

ESEC 3110
Paramedic I
5:5:0 F, Sp
- Prerequisite(s): EMT-Basic Certification for one-year; Departmental approval or completion of the following courses with a grade of C- or higher: ZOOL 1090 or higher, ENGH 0990 or higher, MAT 0990 or higher or ESFO 1350.
- Corequisite(s): ESEC 3120, ESEC 3130, and ESEC 3140

Introduces the Emergency Medical Services system and the role of the paramedic. Covers pre-hospital instruction for the care of the sick and injured including lectures in EMS communication, medical and legal considerations and documentation. Includes anatomy and physiology of the human body as it applies to emergency care. Discusses proper sterile technique, scene evaluations, and patient assessments. Covers acid/base, fluid and electrolytes and fluid resuscitation, patient assessment and emergency treatment of the respiratory and abdominal systems.

ESEC 3120
Paramedic I Lab
3:0:9 F, Sp
- Corequisite(s): ESEC 3110, ESEC 3130, and ESEC 3140

Designed to allow hands-on practice and evaluation of the following skills: IV therapy, IO infusions, IM injections, SQ injections, oral and nasal intubation, thoracotomy, cricothyrotomy, defibrillation, transcutaneous pacing, cardioversion, medication delivery, and patient assessment. Completers should be qualified to progress to the second semester program.

ESEC 3130
Paramedic II
7:6:3 F, Sp
- Corequisite(s): ESEC 3110, ESEC 3120, and ESEC 3140

Discusses the Emergency Medical Services system and the role of the paramedic. Covers pre-hospital instruction for the care of the sick and injured including lectures in pharmacology, cardiac rhythm and monitoring, ACLS, patient assessment and emergency treatment for the cardiac system, central nervous system and musculo-skeletal system. Includes mechanism of injury, burns, and the assessment and treatment of trauma patients. Completers should be qualified to progress to the second semester program.

ESEC 3140
Paramedic III
4:4:0 F, Sp
- Corequisite(s): ESEC 3110, ESEC 3120, and ESEC 3130

Discusses the Emergency Medical Services system and the role of the paramedic. Covers pre-hospital instruction for the care of the sick and injured including lectures in diabetes, alcoholism, overdose and ingestion, and communicable diseases. Includes pediatrics (PALS), obstetrics, childbirth, care of the neonate, geriatrics, incident command system (ICS), interpersonal skills, and critical incident stress. Completers should be qualified to progress to the second semester program.

ESEC 4110
Paramedic IV
6:5:3 Su, Sp
- Prerequisite(s): ESEC 3110, ESEC 3120, ESEC 3130, and ESEC 3140
- Corequisite(s): ESEC 4120

Discusses the Emergency Medical Services (EMS) system and the role of the paramedic within this system. Teaches the terms, definitions, concepts, pre-hospital care life, trauma life support, and skills of a Paramedic through lecture and hands-on experience. Includes landing zones and safety, high angle rescue, Life-Pack 10, street smarts, death, dying and grieving, handling rape and domestic violence, substance abuse, EVO training, auto extrication, and forensic medicine. Successful completers should be able to meet the requirements listed in the National Standard D.O.T. Paramedic curriculum and the qualifications defined in the Utah Paramedic Training Program Accreditation Standards.

ESEC 4120
Paramedic Work Experience
6:0:18 Su, Sp
- Corequisite(s):ESEC 4110

Includes field internships with Paramedic rescue, hospital emergency department, pediatric emergency department, intensive care units, aeromedical service, labor and delivery, and operating room to provide field experience. Successful completers should be able to meet the requirements listed in the National Standard