

GEOGRAPHY, GEOLOGY, AND THE ENVIRONMENT

Chair	Secretary	Location	Department Phone
Dr. Stentor Danielson	Cindy Schnur	319 Advanced Technology and Science Hall	724-738-2048

Department Web Site URL (<https://www.sru.edu/academics/colleges-and-departments/ches/departments/geography-geology-and-the-environment/>)

Department Fact Sheet URL (<https://www.sru.edu/documents/programs/factsheets/undergraduate/gge-fs.pdf>)

The Rock Difference

Geology and Geography are recognized for their contributions to the better understanding of the earth, nature-society relations, and global and regional situations as well as local issues. Our department's educational mission is to advance the perspectives and insights of geology, geography, and environmental science and studies via high quality curricular programs for our majors and high quality liberal studies courses for non-majors. Complementary missions are to extend knowledge in our disciplines through research and to provide service to the university and our region.

The Department of Geography, Geology, and the Environment offers a variety of field based perspectives on the study of the earth and people's relation to it. Students can focus on the physical nature of the earth, on the nature of places on the earth's surface, or on the geographic study of economic, political, and cultural processes. Or students may take a more interdisciplinary approach and integrate knowledge from many disciplines in the study of environmental issues.

Faculty

Patrick Burkhart

Professor
Geography, Geology & Environm
Ph.D., Lehigh University
M.S., Wright State University
B.A., Case Western Reserve

Patricia Campbell

Associate Professor
Geography, Geology & Environm
Ph.D., University of Pittsburgh
M.S., University of Pittsburgh
B.S., University of Pittsburgh

Xianfeng Chen

Associate Professor
Geography, Geology & Environm
Ph.D., West Virginia University
M.S., Institute of Geography Chinese Academy of Sciences
B.S., Xinjian University (China)

Stentor Danielson

Associate Professor
Geography, Geology & Environm
Ph.D., Clark University

B.A., Colgate University

Heike Hartmann

Professor
Geography, Geology & Environm
Ph.D., Justus Liebig University-Germany
M.S., Justus Liebig University-Germany
B.S., University of Wurzburg-Germany

Robert Livingston

Associate Professor
Geography, Geology & Environm
Ph.D., University of Kansas
M.A., University of Kansas
B.A., Augusta College

Tamra Schiappa

Professor
Geography, Geology & Environm
Ph.D., University of Idaho
B.S., State University of New York at Plattsburgh

Langdon Smith

Professor
Geography, Geology & Environm
Ph.D., University of Kansas
B.S., University of Wyoming

Julie Snow

Professor
Geography, Geology & Environm
Ph.D., University of Rhode Island
M.S., University of Rhode Island
B.S., Wittenberg University

Jialing Wang

Associate Professor
Geography, Geology & Environm
Ph.D., Florida State University
M.M.S., Nanjing University (China)
B.S., Nanjing University (China)

Michael Zieg

Professor
Geography, Geology & Environm
Ph.D., John Hopkins University
M.A., John Hopkins University
B.S., Michigan State University

Programs

All first-year students who enter SRU in the Summer and Fall terms of 2019 and after will follow Rock Studies. Students who entered SRU before Spring 2019 will follow Liberal Studies. All new transfer students beginning Summer 2019 and after will follow Liberal Studies. We anticipate that transfer students will begin to enter under Rock Studies during the Summer/Fall term of 2021.

Majors

- Environmental Geoscience, Bachelor of Arts (BA) (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/environmental-geoscience-ba/>)
- Environmental Geoscience, Bachelor of Science (BA) - Pre-Masters of Education (<https://catalog.sru.edu/undergraduate/>)

health-engineering-sciences/geography-geology-environment/environmental-geoscience-ba-pre-masters-education/)

- Environmental Geoscience, Bachelor of Science (BS) - Concentration in Environmental Science (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/environmental-geoscience-bs-concentration-environmental-science/>)
- Environmental Geoscience, Bachelor of Science (BS) - Concentration in Geology (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/environmental-geoscience-bs-concentration-geology/>)
- Geography, Bachelor of Science (BS) - Concentration in Applied Geographic Technology (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/geography-bs-concentration-applied-geographic-technology/>)
- Geography, Bachelor of Science (BS) - Concentration in Environmental Studies & Sustainability (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/geography-bs-concentration-environmental-studies-sustainability/>)
- Geography, Bachelor of Science (BS) - Concentration in Global Studies (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/geography-bs-concentration-global-studies/>)

Minors

- Environmental Science, Minor (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/environmental-science-minor/>)
- Geographic Information Technology, Minor (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/geographic-information-technology-minor/>)
- Geography, Minor (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/geography-minor/>)
- Geology, Minor (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/geology-minor/>)
- Geophysics, Minor (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/geophysics-minor/>)
- Meteorology, Minor (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/meteorology-minor/>)

Certificates

- Geographic Information Science, Certificate (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/geographic-information-certificate/>)
- Sustainability, Certificate (<https://catalog.sru.edu/undergraduate/health-engineering-sciences/geography-geology-environment/sustainability-certificate/>)

Courses

EGEO Courses

EGEO 100 - Environmental Geology

The course examines problems of mineral, energy and water resources, waste disposal, soils and health, geologic hazards, and land use. Resources are the common property of all people. Sustainable use of resources is poised by equitable distribution of cost and benefits among diverse peoples.

Credits: 3

Term(s) Typically Offered: Offered Fall & Spring Terms

Thematic Thread(s): Becoming America, Environmental Problems Toolkit, Sustainable International Development, Sustainability, Transfer Thread Completion Course, Transnational Culture

EGEO 101 - Physical Geology

Emphasis is placed upon those processes acting to create earth materials, landforms, and structures in and on the earth.

Credits: 3

Term(s) Typically Offered: Offered as Needed

EGEO 110 - Environmental Geology Lab

Complement to EGEO 100; laboratory study of geologic hazards and geologic resources with a focus on local environmental issues. Course may require a weekend field trip.

Prerequisite: EGEO 100 (may be taken concurrently)^D
^D Requires minimum grade of D.

Credits: 1

Term(s) Typically Offered: Offered Fall & Spring Terms

EGEO 111 - Physical Geology Lab

Complement to EGEO 101; laboratory studies of minerals and rocks illustrate the concepts of EGEO 101.

Prerequisite: EGEO 101 (may be taken concurrently)^D
^D Requires minimum grade of D.

Credits: 1

Term(s) Typically Offered: Offered as Needed

EGEO 121 - Meteorology/Lab

Introduction to principles controlling weather and their effect on people and the environment. Includes lab.

Credits: 4

Term(s) Typically Offered: Offered Fall & Spring Terms

EGEO 131 - Oceanography

Introduction to the physical, chemical and biological aspects of the marine environment.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Thematic Thread(s): Sustainability, Transfer Thread Completion Course

EGEO 139 - University Seminar

University Seminar serves as the entry point to the Slippery Rock University general education program. With its strong faculty-student interaction, the course promotes intellectual inquiry, critical and creative thinking, and academic excellence. Through varied content, the course introduces students to academic discourse and information literacy while exploring topics such as diversity and inclusion and global awareness. This course will set students along the path to becoming engaged with issues and scholarship important to a 21st century education while they learn about themselves and their place in the world.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Enrollment limited to students with a semester level of Freshman 1 or Freshman 2.

Enrollment limited to students with the ROCK STUDIES STUDENT attribute.

EGEO 190 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

EGEO 195 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

EGEO 198 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

EGEO 201 - Earth Materials and Processes/Lab

Overview of the composition and structure of Earth. Introduction to fundamental physical and chemical Earth processes. Identification of rocks and minerals based on observation and study of physical properties. Includes lab.

Credits: 4

Term(s) Typically Offered: Offered Fall Terms

EGEO 202 - Earth History/Lab

The evolutionary history of the earth and its life. Two Saturday field trips required.

Prerequisite: EGEO 201^D

^D Requires minimum grade of D.

Credits: 4

Term(s) Typically Offered: Offered Spring Terms

EGEO 203 - Quantitative Methods

Review of mathematical techniques and principles. Training in the application of quantitative methods to the understanding and analysis of geological and environmental problems. Students will apply a variety of mathematical techniques to a range of geological and environmental problems. Emphasis will be placed on practical applications of quantitative methodology and the development and use of spreadsheets to manage, analyze, and present data sets.

Prerequisites: EGEO 202^D and (MATH 125^D or MATH 225^D or MATH 230^D)
^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

EGEO 221 - Weather and Climate Forecasting

An analysis and use of local and regional computer-collected surface and upper air weather data to forecast weather. A study of past records of climate as clues to future changes. Includes lab.

Prerequisite: EGEO 121^D

^D Requires minimum grade of D.

Credits: 3

EGEO 231 - Aerial Photography Interpretation

Introduction to photogrammetry, remote sensing, and interpretation of geologic and cultural imagery.

Prerequisites: EGEO 101^D or EGEO 201^D

^D Requires minimum grade of D.

Credits: 3

EGEO 251 - Aviation Meteorology

This course is a study of weather conditions commonly encountered in aviation. The subject is treated from the viewpoint of the forecaster and the pilot. Includes lab.

Prerequisite: EGEO 121^D

^D Requires minimum grade of D.

Credits: 3

EGEO 271 - Geotechniques: Lab

Training in laboratory techniques and instruments for geological, geophysical and environmental surveys.

Credits: 2

EGEO 272 - Introduction to Georeports/Lab

Training in the grammatical and stylistic conventions of technical writing in environmental, geoscientific and geographical disciplines.

Prerequisite: ENGL 102^D

^D Requires minimum grade of D.

Credits: 1

Term(s) Typically Offered: Offered Spring Terms

EGEO 290 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

EGEO 295 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

EGEO 298 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

EGEO 303 - Paleontology/Lab

An introduction to the fossil record and evolution of life through earth history, including the nature of science, marine and land dwelling organisms and basic theories of evolution and extinction of organisms.

Prerequisites: EGEO 201^D and EGEO 202^D

^D Requires minimum grade of D.

Credits: 4

Term(s) Typically Offered: Offered Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 323 - Planetary Geology

Systematic study of geological processes that have operated on the planets, natural satellites, and minor bodies in the Solar System. Course will cover solar system formation and evolution, planetary interiors, surficial processes, the structure and history of individual planetary bodies. Quantitative techniques will be used to examine data from current and historic exploration missions.

Prerequisites: EGEO 202^D and EGEO 203^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 327 - Structural Geology

Origin and description of primary and secondary structures of sedimentary, igneous, and metamorphic rocks.

Prerequisites: EGEO 201^D and (EGEO 202^D or PNGE 201^D)

^D Requires minimum grade of D.

Credits: 4

Term(s) Typically Offered: Offered Fall Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 328 - Plate Tectonics

Plate tectonics is the study of the motion of the lithosphere and deformation of the earth's crust on a regional scale. The course will evaluate the plate tectonic paradigm in terms of its historical evolution and modern application to understanding earth processes. The course examines a broad range of tectonic phenomena and considers the specific geological and geophysical processes involved. Topics covered include the uplift, deformation and metamorphism of mountain belts, the formation of ocean basins, the subsidence of sedimentary basins, the collision of continents and volcanic arcs, earthquake seismology of plate boundaries, magmatism related to plate processes, and tectonics and landscapes.

Prerequisite: EGEO 202^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 340 - Air Pollution Meteorology

A study of meteorological parameters of air pollution concentration, dispersion, and removal. Includes air pollution forecasting and modeling.

Prerequisite: EGEO 121^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 341 - Geomorphology/Lab

A study of landforms, their origin and relation to geologic processes, structure and climate.

Prerequisites: EGEO 201^D or GES 150^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 342 - Glacial Geology/Lab

A study of erosional and depositional landforms left by glaciers and their meltwaters. Glacial landforms and soils are examined on maps, air photos and in the field.

Prerequisites: GES 150^D or EGEO 202^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 351 - Mineralogy/Lab

Systematic crystallography, crystal chemistry, physics, genesis, occurrence, and identification of minerals.

Prerequisites: EGEO 201^D and CHEM 108^D and CHEM 112^D

^D Requires minimum grade of D.

Credits: 4

Term(s) Typically Offered: Offered Fall Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 352 - Petrology/Lab

Classification, occurrence, and genesis of igneous, sedimentary and metamorphic rocks. Identification using hand specimens and polarizing microscope (thin sections).

Prerequisite: EGEO 351^D

^D Requires minimum grade of D.

Credits: 4

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 358 - Introduction to Geophysics/Lab

An introduction to geophysics and geophysical methods and their use in the study of Earth's interior. Emphasis will be placed on illuminating subsurface geological features and applications in fields such as groundwater studies, development of energy resources and environmental studies.

Prerequisites: PHYS 211^C and MATH 225^C and EGEO 201^C

^C Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 360 - Introduction to Hydrology/Lab

A study of the occurrence and movement of water and human's effect on this basic resource.

Prerequisites: EGEO 101^D and EGEO 201^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 362 - Stratigraphy/Lab

Principles of stratigraphy, stratigraphic mapping, and graphic techniques used in stratigraphic interpretation. Two Saturday field trips may be required.

Prerequisites: EGEO 201^D and EGEO 202^D

^D Requires minimum grade of D.

Credits: 4

Term(s) Typically Offered: Offered Fall Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 368 - Women in Science

This course will explore the issues of women in science. Specifically it will address the issues of gender in relation to the theory and practice of science and technology. The course content will use case studies to explore women that have made significant contributions to science despite barriers limiting their access to education and professional organizations. The content will cover topics including how the development of educational systems and professions affected women over the centuries, how scientific approaches have evolved, and how women meet challenges in today's scientific community. The case studies will provide students with the opportunity to analyze and synthesize the information presented into an understanding on the evolution of scientific thought and women's roles in science.

Credits: 3

Term(s) Typically Offered: Offered Winter Terms

Thematic Thread(s): Gender and Diversity, Transfer Thread Completion Course

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 390 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 395 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 398 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 399 - Field Camp

Field Camp is a final requirement and is usually conducted at a field study location.

Credits: 1-9

Term(s) Typically Offered: Offered as Needed

EGEO 448 - X-ray Spectrometry

Concepts of x-ray production and interaction with crystalline materials. Application of x-ray diffraction methods for identification of minerals, and x-ray fluorescence techniques for chemical analysis. One lecture and one two-hour laboratory per week.

Prerequisites: EGEO 201^D and CHEM 107^D

^D Requires minimum grade of D.

Credits: 3

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 450 - Internship

Supervised placement and research in selected public and private agencies. Permission of chairperson.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 451 - Geochemistry/Lab

Basic thermodynamics applied to the geochemistry of natural systems. The course will focus on low temperature inorganic reactions that are important for the environmental fate and transport of contaminants in the environment. The course will require the use of computer spreadsheets and models to solve geochemical problems covered in lecture. Three hours of lecture and one hour of computer lab.

Prerequisites: EGEO 201^D and CHEM 108^D and CHEM 112^D

^D Requires minimum grade of D.

Credits: 4

Term(s) Typically Offered: Offered Fall Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 453 - Geotechniques: Geochemistry

Laboratory and field experiments to study the geochemistry of local environmental systems. Field sampling, in-field and laboratory analysis, and construction of experimental systems will be conducted. Field trips for sample collection will occur weekly.

Prerequisite: EGEO 451^D

^D Requires minimum grade of D.

Credits: 1

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 458 - Geophysical Field Methods/Lab

An introduction to seismic field methods and their use in the study of Earth's interior. Emphasis will be placed on the use of seismic methods to characterize subsurface geological features and applications in fields such as groundwater studies, development of energy resources and environmental studies.

Prerequisite: EGEO 358^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 460 - Hydrogeology

A study of the quantitative and qualitative interrelationships of geologic materials and processes with ground water.

Prerequisite: EGEO 360^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 469 - Field Investigations in the Geosciences

This course will provide students with the opportunity to practice the nature of fieldwork by observing, interpreting, collecting data and analyzing physical and human landscapes, and the natural, cultural and economic forces that are shaping them.

Credits: 1-3

Term(s) Typically Offered: Offered Summer Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 476 - Geotechniques: Geophysics

Lab and field techniques.

Prerequisite: EGEO 460 (may be taken concurrently)^D

^D Requires minimum grade of D.

Corequisite(s): EGEO 327

Credits: 1

Enrollment limited to students with a semester level of Senior 1 or Senior 2.

EGEO 481 - Geologic Map Interpretation

A seminar for advanced undergraduates in whom students and staff participate in map interpretation. One two-hour lab per week. Senior standing or permission of the instructor.

Corequisite(s): EGEO 362

Credits: 1

Enrollment limited to students with a semester level of Senior 1 or Senior 2.

EGEO 482 - Senior Seminar

A seminar for advanced undergraduates in which students and staff participate in discussions concerning classical and current geological problems. Senior standing or permission of the instructor.

Credits: 1

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 490 - Independent Study

Independent work on a topic in the earth sciences selected by the student with permission and advice of the instructor. Independent Study courses give students the opportunity to pursue research and/or studies that are not part of the university's traditional course offerings. Students work one on one or in small groups with faculty guidance and are typically required to submit a final paper or project as determined by the supervising professor.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 495 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

EGEO 498 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS Courses**ENVS 139 - University Seminar**

University Seminar serves as the entry point to the Slippery Rock University general education program. With its strong faculty-student interaction, the course promotes intellectual inquiry, critical and creative thinking, and academic excellence. Through varied content, the course introduces students to academic discourse and information literacy while exploring topics such as diversity and inclusion and global awareness. This course will set students along the path to becoming engaged with issues and scholarship important to a 21st century education while they learn about themselves and their place in the world.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with a semester level of Freshman 1 or Freshman 2.

ENVS 190 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

ENVS 195 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

ENVS 198 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

ENVS 290 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

ENVS 295 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

ENVS 298 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

ENVS 311 - Environmental Monitoring and Sampling

The course will focus on the development and implementation of successful sampling plans for water, soil and sediment. Basic sampling and analysis methods will be presented followed by hands-on field exercises employing these techniques. Field notebook documentation and report preparation will be emphasized. At least one field trip will be scheduled for a Saturday during the semester to give students hands-on experience with collection of environmental sample

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2, Sophomore 1 or Sophomore 2 may **not** enroll.

Enrollment limited to students with department of Chemistry, Geography, Geology & Environm or Biology.

ENVS 390 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS 395 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS 398 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS 440 - Science, Technology and the Environment

A scientific study of interactions of global systems in the geosphere and biosphere. Selected global problems, such as waste production and disposal, energy use, atmospheric warming, ozone depletion, and acid deposition are analyzed along with possible alternatives. Four courses completed in the natural sciences and mathematics area of the liberal studies program.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS 450 - Environmental Science Internship

Academic credit may be earned through a practicum experience, working for an agency or business. A minimum of 16 credits completed in the major and approval of the agency or business, the program director and the advisor.

Credits: 1-12

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS 480 - Environmental Systems Analysis

The student will investigate an environmental problem in conjunction with an appropriate faculty member as a research project. A minimum of 16 credits completed in the major and the approval of the program director and the advisor.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS 490 - Independent Study

Independent Study courses give students the opportunity to pursue research and/or studies that are not part of the university's traditional course offerings. Students work one on one or in small groups with faculty guidance and are typically required to submit a final paper or project as determined by the supervising professor.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS 495 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

ENVS 498 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES Courses

GES 100 - Discover Geography

An inquiry course that examines why people live differently in different parts of the world, with respect to political and economic systems, culture, demographics, and relationships with the natural world. This course introduces students to topics and methods of human geography, and enables students to apply them to addressing important global, regional, and local social issues.

Credits: 3

Term(s) Typically Offered: Offered Every Term

GES 105 - World Regional Geography

This course provides an introduction to the regional concept, classification of major culture regions throughout the world and a description of the physiocultural character of those regions.

Credits: 3

Term(s) Typically Offered: Offered as Needed

GES 115 - Introduction to Geospatial Technologies

Provides fundamental concepts and basic skills regarding map use and interpretation. Overview of major geospatial technologies, including geographic information systems, global positioning systems, spatial visualization, and remote sensing.

Credits: 3

Term(s) Typically Offered: Offered Fall & Spring Terms

Thematic Thread(s): Sustainable International Development, Transfer Thread Completion Course

GES 135 - Introduction to Environmental Problems

An introduction to some of the more crucial environmental problems and alternative solutions that are available.

Credits: 3

Term(s) Typically Offered: Offered Every Term

Thematic Thread(s): Environmental Problems Toolkit, Healthy Body, Mind & Environment, Sustainable International Development, Sustainability, Transfer Thread Completion Course

GES 139 - University Seminar

University Seminar serves as the entry point to the Slippery Rock University general education program. With its strong faculty-student interaction, the course promotes intellectual inquiry, critical and creative thinking, and academic excellence. Through varied content, the course introduces students to academic discourse and information literacy while exploring topics such as diversity and inclusion and global awareness. This course will set students along the path to becoming engaged with issues and scholarship important to a 21st century education while they learn about themselves and their place in the world.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Enrollment limited to students with a semester level of Freshman 1 or Freshman 2.

Enrollment limited to students with the ROCK STUDIES STUDENT attribute.

GES 150 - The Natural Environment

An introduction to interrelationships among the physical elements of the environment, including the study of vegetation, soils and landforms.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Enrollment is limited to students with a program in Geography or Geography.

GES 190 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

GES 195 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

GES 198 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

GES 201 - Latin America and the Caribbean

Consideration is given to physical, historical, cultural, political, and economic patterns in Latin America and the Caribbean.

Credits: 3

Term(s) Typically Offered: Offered as Needed

GES 202 - United States and Canada

An introductory course that surveys the patterns, connections, and evolution of environments, cultures, and economies of the U.S. and Canada.

Credits: 3

Term(s) Typically Offered: Offered as Needed

GES 204 - Post-Soviet Union

Study of the Soviet Union and Soviet-bloc nations with emphasis on economic, physical, political, and cultural aspects.

Credits: 3

Term(s) Typically Offered: Offered as Needed

GES 205 - Cultural Geography

This course serves as an introduction to human, social and cultural geography. Course content will cover cultural landscapes and place identity, discourses and cultural interpretation of the environment, the cultural and spatial impacts of demographic and economic changes, and cultural contestation over space and place.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms Odd

GES 215 - Planning for Sustainable Communities

An introduction to social and physical planning for rural areas, towns and cities.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Thematic Thread(s): Environmental Problems Toolkit, Sustainability, Transfer Thread Completion Course

GES 220 - General Methods of Fieldwork

A survey of how field research is done in geography, including designing a research question, data collection techniques, and qualitative and quantitative data analysis.

Prerequisite: GES 115 (may be taken concurrently)^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

GES 235 - Conservation

An examination of the earth's complex resource base which places special emphasis on the geographic location of resources and on conservation/preservation practices.

Prerequisite: GES 135^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Thematic Thread(s): Sustainability, Transfer Thread Completion Course

GES 242 - Geography of Religion

The distribution and arrangement of world religions, giving consideration to the comparative influence of religion on the cultural landscape and on regional development.

Credits: 3

GES 245 - Population and Resources

Basic demographic principles and their relationship to regional development.

Credits: 3

GES 290 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

GES 295 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

GES 298 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

GES 301 - Geography of Rural Areas

Analyzes the structure and primary functional patterns of rural areas, with an emphasis on agricultural and industrial land use, problems of rural development, and population shifts.

Credits: 3

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 303 - Asia

A survey of the major regions of Asia emphasizing their physical, cultural, and political characteristics. Several countries are selected for special emphasis.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Thematic Thread(s): Transfer Thread Completion Course, Transnational Culture

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 305 - Environmental Economic Geography

Environmental economic geography takes a geographical approach to the interface between nature and the economy, with an emphasis on patterns and trends in environmental services and resource management.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 307 - Australia

This course will introduce students to the environments and peoples of Australia. Australia's natural environment, Aboriginal and white culture, economy, politics, and major current public issues will be covered.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 308 - Europe

The evolution of nations, the cultural landscape, and the spatial-economic organization of Europe.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 309 - Africa

This course surveys the patterns, connections, and evolution of environments, cultures, nations, and economies of Africa, with an emphasis on maps, regions, and images.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 310 - Urban Geography

The course is designed to provide insights into the nature of cities and smaller urban places.

Credits: 3

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 315 - Cartography I

Basic elements of computer-assisted thematic map design are discussed. Cartographic projects serve as a means of applying major concepts such as map projections, data classification, color theory, and qualitative/quantitative symbology. Includes a lab.

Prerequisite: GES 115^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 321 - Introduction to UAS for Remote Sensing and Monitoring

This course introduces students to Unmanned Aerial Systems and their use in acquisition of remotely sensed data. Course content will cover topics necessary for students to sit for the FAA Part 107 Commercial Remote Pilot Certification examination. Students will also be introduced to basic concepts of remote sensing and aerial imaging, UAS mission planning and spatial data processing.

Prerequisite: GES 115^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Students with a semester level of Freshman 1 or Freshman 2 may **not** enroll.

GES 324 - Environmental Law and Policy

The study of political control of the environment. Focus on the roles played by individuals and groups. Cross-listed with POLS 324.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Thematic Thread(s): Being American, Environmental Problems Toolkit, Sustainability, Transfer Thread Completion Course

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 325 - Introduction to Geographic Information Science

This course introduces students to integrated computer tools for the capture, storage, manipulation, analysis, and printout of earth-referenced data. Computers are used to store maps, analyze maps, and produce new maps along with their attributes to address societal issues. Includes a lab.

Prerequisite: GES 115^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Fall & Spring Terms

Thematic Thread(s): Environmental Problems Toolkit, Fighting Social Problems, Transfer Thread Completion Course

Students with a semester level of Freshman 1 or Freshman 2 may **not** enroll.

GES 330 - Political Geography

The effects of politics on geography and the effects of geographic factors on politics.

Credits: 3

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 331 - Economic Geography

Examines human use and economic organization of the earth.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Thematic Thread(s): Transfer Thread Completion Course, Violence

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 344 - Environmental Justice

This course will teach students to evaluate situations as just or unjust according to well-understood principles of environmental justice.

Students will apply this analysis to important environmental justice topics such as unequal distribution of environmental harms and resources, treatment of indigenous people, animal and ecosystem rights and international environmental negotiations.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Thematic Thread(s): African-American Studies, Civil Rights & Social Movements, Environmental Problems Toolkit, Food, Wellness & Environment Across Cultures, Sustainability, Transfer Thread Completion Course, Transnational Culture, Violence

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 345 - Population Analysis

A study of the techniques of population analysis with respect to growth, distribution, fertility, migration, and other demographic characteristics. Some background in algebra or statistics.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 355 - Earth's Changing Climate

This course examines the interrelationship between climate and human activities. We will study the processes that control Earth's climate with a focus on the flow of energy through the Earth system and a study of the interactions between the atmosphere, the ocean, and the land surface. We will investigate climate change on variable time scales with a focus on how climate affects humans and the environment. Further, we will examine which factors influence society's decisions in response to climate change.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Thematic Thread(s): Global Citizenship, Healthy Body, Mind & Environment, International Business, Revolutions, Sustainability, Transfer Thread Completion Course

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 356 - Earth's Changing Climate Laboratory

This course examines Earth's climate changes through an investigation of climate data and climate models. We will investigate climate change on variable time scales and in different geographic regions with a quantitative focus.

Prerequisites: EGEO 121^D and GES 355 (may be taken concurrently)^D
^D Requires minimum grade of D.

Credits: 1

Term(s) Typically Offered: Offered Fall Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Geography, Geology & Environm.

GES 361 - Gender and the Environment

Gender and the Environment will explore the ways that human interaction with the natural environment is shaped by gender roles and gender inequality in cultures around the world. Topics covered will include gender differences in resource access, connections between environmental degradation and women's oppression, cultural metaphors that link nature and gender (e.g. "mother earth") and the way that gender shapes environmental movements.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms Even

Thematic Thread(s): Gender and Diversity, Transfer Thread Completion Course

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 362 - Applications in Sustainability

This course explores the history of the sustainability movement, and the current and emerging science and practices of sustainability. Students will also be introduced to the research tools and methods needed to evaluate the sustainability of energy systems, technology, the built environment and environmental regulations and policy.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Thematic Thread(s): Environmental Problems Toolkit, Sustainable International Development, Sustainability, Transfer Thread Completion Course

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 363 - Energy and Society

Students will develop a working knowledge of energy technologies and policies, and their impacts on both the environment and society. Discussions and case studies will include analysis of current and emerging energy sources and consumption.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 375 - Geography of Intolerance

Analyzes cross-culturally the impact on resource allocation and the spatial implications of gender, racial, religious, political and class discrimination.

Credits: 3

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 390 - Experimental

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 395 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 398 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 410 - Remote Sensing

Covers the electromagnetic and thermal properties of earth objects, principles and operations of sensors, and the practical applications of remote sensing. Lectures will be supplemented with exercises requiring computer processing of satellite data.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 415 - Cartography II

Advanced issues and theory of cartographic design are discussed. Cartographic applications include flow maps, bivariate statistical mapping, cartograms, interactive maps, and map animation. Includes a lab.

Prerequisite: GES 315^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 420 - Historical Geography of Anglo-America

A study of settlement patterns, land utilization, and sequent occupancies for selected periods since 1500. A student is expected to have background in geography and American history.

Credits: 3

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 425 - Advanced Geographic Information Systems

This course investigates and applies advanced Geographic Information Systems (GIS) techniques. Students will learn current techniques for the collection, evaluation, input, analysis, and output of spatial data with various GIS tools. Students will apply these techniques to real world problems in areas such as environmental monitoring, environmental modeling, urban planning, and economic location. Includes a lab.

Prerequisites: (GES 325^D or GES 410^D) and GES 315^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 426 - Environmental Modeling

Environmental models quantify processes such as runoff generation, water pollution, erosion, landscape change, and change of biodiversity. In this course, these models will be applied to real-world examples. Includes a lab.

Prerequisite: GES 325^D

^D Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 435 - Preservation Planning

A study of the American preservation movement as it relates to features of the cultural landscape. The origin and diffusion of building styles and the methods and problems associated with their preservation are emphasized.

Credits: 3

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 444 - World Environmental Cultures

Students will explore and evaluate geographic and environmental ideas from western and non-western cultures.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Thematic Thread(s): Global Citizenship, Transfer Thread Completion Course, Transnational Culture

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 445 - Regional Planning

Deals with planning for the future of regions that are larger than any single local government. Consideration is given to economic development, land use, transportation, and other regional planning concerns. Cross-listed with PUBA 445.

Prerequisites: GES 215^D or PUBA 215^D

^D Requires minimum grade of D.

Credits: 3

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 450 - Internship

Supervised placement and field experience in a selected public or private agency.

Credits: 1-12

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 469 - Field Investigations in the Geosciences

This course will provide students with the opportunity to practice the nature of fieldwork by observing, interpreting, collecting data and analyzing physical and human landscapes, and the natural, cultural and economic forces that are shaping them.

Credits: 1-3

Term(s) Typically Offered: Offered Summer Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 489 - Applied Geospatial Technologies

This course involves the application of geospatial technologies in humanities, social sciences, and natural and environmental sciences.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 490 - Independent Study

In-depth reading and/or research with the guidance of a faculty member in an area selected by the student. Independent Study courses give students the opportunity to pursue research and/or studies that are not part of the university's traditional course offerings. Students work one on one or in small groups with faculty guidance and are typically required to submit a final paper or project as determined by the supervising professor.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

GES 495 - Workshop

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

GES 498 - Selected Topics

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.