

GEOS - GEOSCIENCES (GEOS)

GEOS 101 Introduction to the Geosciences

Credits 0-1. 0-1 Lecture Hours.

Introduction to the geosciences; geography, geology, geophysics, atmospheric sciences and oceanography; areas and opportunities in the various geoscience fields. Open to all freshman and sophomore non-geoscience students interested in geosciences. May be taken three times for credit.

GEOS 105 Introduction to Environmental Geoscience

Credits 3. 3 Lecture Hours.

Key concepts and generalizations of global environmental issues within an Earth systems science framework including climate change, air pollution, land and coastal degradation, water resources and pollution, and habitat loss; environmental ethics, economics and politics; environmental issues in Texas. Enrollment preference will be given to environmental geoscience and environmental studies majors.

GEOS 110 Disasters and Society

Credits 3. 3 Lecture Hours.

Exploration of the science behind disasters; how they occur, the choices society makes that create or affect disasters, how certain populations are privileged during disasters by the decisions society has made and how science informs preparation for and response to future disasters.

GEOS 205 Environmental Geosciences Cornerstone

Credit 1. 1 Lecture Hour.

Professional career options, methods, strategies and skills involved in successful career planning in the environmental sciences; highlights high impact learning opportunities such as study abroad and internships and the development of scientific communication skills.

Prerequisites: ENST and ENGS majors; sophomore classification or approval of instructor.

GEOS 210 Climate Change

Credits 3. 3 Lecture Hours.

Examination of the science of climate change; past and present causes of global-scale climate change; basis for projections of future climate change and its potential impacts; existing and proposed policy responses; critical evaluation of scientific information.

GEOS 289 Special Topics in...

Credits 1 to 4. 1 to 4 Lecture Hours.

.. Selected topics in an identified area of geosciences. May be repeated for credit.

Prerequisite: Approval of instructor.

GEOS 291 Research

Credits 1 to 4. 1 to 4 Other Hours.

Research conducted under the direction of faculty member in the College of Geosciences. May be repeated 2 times for credit. Registration in multiple sections of this course is possible within a given semester provided that the per semester credit hour limit is not exceeded.

Prerequisites: Freshman or sophomore classification and approval of instructor.

GEOS 301 College of Geosciences Study Abroad

Credits 1 to 18. 1 to 18 Other Hours.

For students in approved programs abroad. May be repeated for credit.

Prerequisites: Admission to approved program and approval of academic dean.

GEOS 370 Coastal Processes

Credits 3. 3 Lecture Hours.

Examination of behavior of coastal systems and their response to changing sea level, storm patterns and population pressures, based on our knowledge of the physical processes operating at time scales from seconds to millennia and encompassing areas from a few centimeters to regions hundreds of kilometers long; systems approach to understanding coastal behavior, starting with a geomorphological look at the global distribution of various units that form the coastal landscape, beaches, salt marshes, tidal flats, estuaries and deltas.

Prerequisite: Select two from GEOS 105, GEOG 203, OCNG 251, or GEOL 150.

GEOS 380 Workshop in Environmental Studies

Credits 3. 3 Lecture Hours.

. Successful completion of a project on an environmental topic; inquiry-based, experiential learning providing the opportunity for application of knowledge and informed outlooks, to work on the environmental topic of the semester. May be repeated three times for credit.

GEOS 401 Polar Regions of the Earth: Science, Society and Discovery

Credits 3. 3 Lecture Hours.

Overview of disciplines and topics that define modern polar science in the north and the south; includes history of the Polar Regions, polar geosciences, major polar scientific projects, and special topics; participate as individuals and teams in education, outreach and science projects.

Prerequisite: Junior or senior classification.

GEOS 405 Environmental Geosciences

Credits 3. 2 Lecture Hours. 2 Lab Hours.

Dynamics and human interactions with near-surface environments including land, atmosphere and oceans through problem-based learning; interdisciplinary environmental problem topic, for example, water quality, urbanization, coastal development, or environmental pollution; geoscience techniques used for monitoring human-geosphere interaction.

Prerequisites: GEOS 105; junior or senior classification.

GEOS 410 Global Change

Credits 3. 3 Lecture Hours.

The interaction of the earth, atmosphere, oceans, cryosphere and life, including the impact of human society on the environment and climate; global change modeling; politics, policy and decision making; and personal awareness.

Prerequisite: Junior or senior classification.

GEOS 430 Global Science and Policy Making

Credits 3. 3 Lecture Hours.

Policy making derived from global science and technology; how advice is communicated to the federal government and the public; current and future societal concerns that could affect future policy making; knowledge and information used to set priorities, decide budget allocations, and establish public policy.

Prerequisite: Junior or senior classification or approval of instructor.

GEOS 431 Environmental Regulatory Compliance in Geoscience**Credits 3. 3 Lecture Hours.**

Knowledge and practical experience necessary for analyzing and evaluating environmental protection and stewardship principles; application of evolving environmental laws and regulations to the human business enterprise; exploration of the interplay between stakeholders in the development of sound environmental management and regulatory strategies.

Prerequisites: BESC 367 or approval of instructor; junior or senior classification.

GEOS 442/GEOG 442 Past Climates**Credits 3. 3 Lecture Hours.**

Terrestrial and marine proxy records of past climate variability, including tree rings, coral, and sediments; past climate change events such as the Little Ice Age and Medieval Warm Period; greenhouse gases and global temperature; insight into the nature of climate change and challenges humankind faces in the next few centuries.

Prerequisites: ATMO 201, or GEOG 203, or GEOL 101, or GEOL 104, or OCNG 251; junior or senior classification.

Cross Listing: GEOG 442/GEOS 442.

GEOS 443 Global Biogeochemical Cycles**Credits 3. 3 Lecture Hours.**

Use of biogeochemical cycles to study the Earth system; description of movement and transformation of major elements such as C, N, P and trace elements; flux of material in and out of atmosphere, hydrosphere, pedosphere, and lithosphere; chemical and physical transformations that occur in Earth system.

Prerequisites: CHEM 119 and CHEM 120; select two from ATMO 201, or OCNG 251, or GEOG 203 or GEOG 205, or GEOL 101 or GEOL 104 or GEOL 150.

GEOS 444 The Science and Politics of Global Climate Change**Credits 3. 3 Lecture Hours.**

Examination of the policy and scientific debate over climate change; how scientific debates produce "knowledge"; how political debates produce policies; how policy debates use science; scientific evidence for climate change; impacts of climate change; possible responses to climate change; the political debate over climate change.

Prerequisite: GEOS 210; junior or senior classification or approval of instructor.

GEOS 470 Data Analysis Methods in Geosciences**Credits 4. 3 Lecture Hours. 2 Lab Hours.**

Topics and methods encountered while performing research in the geosciences; conceptualization of a scientific problem, data collection and processing, appropriate analysis techniques and data archiving and management; multi-disciplinary approach with an emphasis on real-world applications from environmental, atmospheric, and oceanographic sciences.

Prerequisite: Junior or senior classification; MATH 151; STAT 211, STAT 301, STAT 302, or STAT 303.

GEOS 471 Data Methods in Geosciences Laboratory**Credit 1. 2 Lab Hours.**

Computational techniques required to perform statistical analysis of geosciences data; probability, confidence intervals, linear regression, analysis of variance and principle component analysis and performing statistical analysis using MATLAB; techniques for visualization and interpretation of results; emphasis on real world problems found in environmental, atmospheric and oceanographic sciences.

Prerequisites: Junior or senior classification; MATH 151; STAT 211, STAT 301, STAT 302, or STAT 303, or concurrent enrollment; concurrent enrollment in GEOS 470; or approval of instructor.

GEOS 481 Seminar**Credit 1. 1 Other Hour.**

Acquaint students with current research themes in the environmental field. May be repeated 4 times for credit.

Prerequisite: Junior or senior classification.

GEOS 483 Service Learning in the Geosciences**Credits 3. 3 Other Hours.**

Integrates community-engaged experiences with academic course content; includes service activities, critical reflection on the relationship between course content and service experience; emphasis on the ethical and civic dimensions of service in geosciences; professional development training. May be taken up to six hours for credit.

Prerequisites: Approval of instructor.

GEOS 484 Internship**Credits 0 to 6. 0 to 6 Other Hours.**

Provides opportunity to gain practical experience in a working situation either during the semester or summer; work experience must have relevance to the degree sought and/or career objectives. Must be taken on a satisfactory/unsatisfactory basis.

Prerequisite: Junior or senior classification and approval of internship agency and departmental director.

GEOS 485 Directed Studies**Credits 1 to 4. 1 to 4 Other Hours.**

Advanced problems in geosciences.

GEOS 489 Special Topics in...**Credits 1 to 4. 1 to 4 Lecture Hours.**

Selected topics in an identified area of geosciences. May be repeated for credit.

GEOS 491 Research**Credits 0 to 4. 0 to 4 Other Hours.**

Research conducted under the direction of a faculty member in the College of Geosciences. Registration in multiple sections of this course is possible within a given semester provided that the per semester credit hour limit is not exceeded.

Prerequisites: Junior or senior classification and approval of instructor.