

GEOLOGY

BOT 5305 Paleobotany 3 Credits

Grading Scheme: Letter Grade

Comparative study of plants through geologic time with attention to morphology and evolution of major groups of land plants, based on the fossil record. Offered spring term in odd-numbered years.

Prerequisite: upper-level course in botany or geology; or consent of instructor.

GLY 5044 Cosmochemistry 3 Credits

Grading Scheme: Letter Grade

Chemistry of early Solar System and planetary processes. Emphasizes planetary materials, and the accretion, differentiation, and magmatic evolution of the terrestrial planets and asteroids.

Prerequisite: Graduate standing.

GLY 5062C Analytical Methods in Earth and Environmental Sciences 1-3 Credits

Grading Scheme: Letter Grade

Provides background knowledge of various analytical methods used in Earth and Environmental Sciences. Teaches practical skills necessary to prepare and analyze research samples.

GLY 5156 Geologic Evolution of North America 3 Credits

Grading Scheme: Letter Grade

Key geological features of North American plate and important aspects of their geological evolution through time. Current and past plate tectonic setting, major geological and geomorphologic provinces, geophysical aspects of North American lithosphere, and natural resources.

Prerequisite: GLY 2010 or 2026; 4400C recommended.

GLY 5245 Hydrogeochemistry 3 Credits

Grading Scheme: Letter Grade

Geological controls on chemical and isotopic composition of natural waters, including meteoric ground water, brines, and sea water; emphasizing thermodynamic and kinetic aspects of fluid-solid reactions.

Prerequisite: inorganic chemistry, calculus, or consent of instructor.

GLY 5246 Geochemistry 3 Credits

Grading Scheme: Letter Grade

The abundance and distribution of the elements and their behavior during various geological processes.

Prerequisite: CHM 2046, GLY 2010C.

GLY 5247 Surface and Ground Water Interactions 3 Credits

Grading Scheme: Letter Grade

Classic and new literature that deals with interactions between surface and ground water. Emphasizes submarine ground water discharge in estuary and coastal zones, hyporheic zones of streams, and karst aquifers.

Prerequisite: geology/hydroecology and undergraduate chemistry and physics.

GLY 5255 Organic Geochemistry and Geobiology 3 Credits

Grading Scheme: Letter Grade

Theory, practice, and methods of organic geochemistry, organic biogeochemistry, and geomicrobiology.

Prerequisite: one year introductory chemistry, one year introductory geology.

GLY 5328 Advanced Igneous Petrology 3 Credits

Grading Scheme: Letter Grade

Compositional variability, phase relations, and petrogenetic history of igneous rocks, volcanic regions, and mantle. Theories of petro-tectonic associations and magmagenesis.

Prerequisite: GLY 4310C or equivalent.

GLY 5455 Introduction to Geophysics and Tectonics 3 Credits

Grading Scheme: Letter Grade

Physics of the Earth. Study of gravity and magnetic fields, seismic waves, thermal history, orogenic belts, and plate tectonic theory.

Prerequisite: GLY 2010C, 2026C, or 4400C and 1 year of college physics or consent of instructor.

GLY 5466 Seismology and Earth Structure 3 Credits

Grading Scheme: Letter Grade

Introduces basic theory of elastic wave propagation in the Earth. Applies seismology as a tool for determining Earth structure and explains relationships between earthquakes and plate tectonics.

Prerequisite: MAP 2302 or GLY 5455 or PHY 2048 or PHY 2060 or consent of instructor.

GLY 5468 Terrestrial Gravity and Magnetism 3 Credits

Grading Scheme: Letter Grade

Survey of potential field theory with applications to gravity and magnetism of the Earth.

Prerequisite: MAP 2302 or PHY 2060, and GLY 5455, or by consent of instructor.

GLY 5558C Sedimentology 3 Credits

Grading Scheme: Letter Grade

Lecture and discussion of major sedimentary processes active in coastal and continental margin settings, focus on relating processes with sedimentary facies. Class work augmented with frequent field trips.

Prerequisite: GLY 2010 or 2026; 4552.

GLY 5576 Continental Margin Stratigraphy 3 Credits

Grading Scheme: Letter Grade

Basic concepts of sequence stratigraphy and to illustrate their application in the study of tectonics, sediment supply, and sea-level change. Emphasizes exploration tools, such as advanced well logging techniques and seismic stratigraphy, used to relate lithology with stratigraphy.

Prerequisite: GLY4552 or equivalent

GLY 5705 Geomorphology 3 Credits

Grading Scheme: Letter Grade

Application of principles of geomorphology to origin and evolution of landscapes.

Prerequisite: GLY 4400C.

GLY 5736 Marine Geology 3 Credits

Grading Scheme: Letter Grade

Detailed introduction to the origin and evolution of ocean basins, ocean margins, and oceanic sediments and microfossils, including a paleoceanographic history of the marine realm.

Prerequisite: GLY 2010C, or 2026C, or OCE 1001.

GLY 5786L Topics in Field Geology 2 Credits

Grading Scheme: Letter Grade

Visits to selected sites and regions of outstanding geologic value and interest.

Prerequisite: graduate standing and consent of instructor.

GLY 5827 Ground Water Geology 3 Credits**Grading Scheme:** Letter Grade

Principles of ground water geology, with special reference to the Coastal Plain and Florida.

Prerequisite: GLY 2010C, or 2026C.**GLY 6046 Survey of Geobiology and Astrobiology 3 Credits****Grading Scheme:** Letter Grade

Survey of the parallel evolution of life and the environment. Covers how chemical and physical processes in the atmosphere, hydrosphere, cryosphere and the solid earth influence life processes. In turn, addresses how life can influence chemical and physical processes on our planet. Explores the concept of life as a geological agent and examines the interaction between biology and the earth system during the roughly 4 billion years since life first appeared.

Prerequisite: Enrollment in a graduate program.**GLY 6075 Global Climate Change: Past, Present, and Future 3 Credits****Grading Scheme:** Letter Grade

Evolution of the Earth's climate through geologic time, including discussion of modern climatology and methods of paleoclimate interpretations.

Prerequisite: GLY 4552C.**GLY 6095 Survival Skills for Academic Careers in Earth and Planetary Sciences 3 Credits****Grading Scheme:** Letter Grade

Introduces skills needed to find, be competitive for, and survive in academic jobs. Topics include finding and securing post-doc positions, skills and tactics for writing academic job applications, interview and negotiation approaches and tips, writing and reviewing proposals, methods for effective course design, and others.

Prerequisite: Consent of the instructor and an undergraduate degree in Geological Sciences, Geology, Earth and Planetary Science, or a related field.**GLY 6256 Chemical Biomarkers in Aquatic Ecosystems 3 Credits****Grading Scheme:** Letter Grade

Examines the origins, fates, and distribution of organic compounds in contemporary aquatic waters as well as in recent and ancient sediments.

Prerequisite: Introduction to Oceanography for undergraduates.**GLY 6297 Topics in Geochemistry 3 Credits, Max 6 Credits****Grading Scheme:** Letter Grade

Applications of geochemical (elemental and isotopic) methods and data to tectonics and petrology).

Prerequisite: GLY 5246.**GLY 6425 Tectonics 3 Credits****Grading Scheme:** Letter Grade

Evolution and formation of mid-ocean ridges, seamounts, hot spots, island arcs, back-arc basins, passive margins, and mountain chains.

Prerequisite: GLY 4400C.**GLY 6519 Stratigraphy and Timescales 3 Credits****Grading Scheme:** Letter Grade

Methods in stratigraphy including biostratigraphy, chemostratigraphy, manetostratigraphy, and cyclostratigraphy and how these tools are integrated to generate geologic timescales in absolute time.

Prerequisite: consent of instructor, or undergraduate degree in geology.**GLY 6738 Estuarine Systems 3 Credits****Grading Scheme:** Letter Grade

Examines estuarine ecosystems around the world, with particular emphasis on the impact of global change on these highly productive systems.

Prerequisite: For undergraduates OCE 1001**GLY 6826 Hydrogeologic Modeling 3 Credits****Grading Scheme:** Letter Grade

Application of computer modeling to hydrogeologic problems through use of analytical and numerical solutions.

GLY 6862 Quantitative Methods in Earth Sciences 3 Credits**Grading Scheme:** Letter Grade

Providing graduate students with a solid introduction to the quantitative methods that are increasingly utilized in the Earth sciences.

Prerequisite: College level Calculus and Physics, or permission of instructor.**GLY 6905 Individual Work 1-4 Credits, Max 12 Credits****Grading Scheme:** Letter Grade

For work beyond that offered in regular courses.

GLY 6931 Seminar 1 Credit, Max 6 Credits**Grading Scheme:** Letter Grade

Reading in special topics.

GLY 6932 Special Topics in Geology 1-3 Credits, Max 21 Credits**Grading Scheme:** Letter Grade

Lectures, conferences, or laboratory sessions covering selected topics of current interest in modern geology.

GLY 6971 Research for Master's Thesis 1-15 Credits**Grading Scheme:** S/U

Research for Master's Thesis

GLY 7979 Advanced Research 1-12 Credits**Grading Scheme:** S/U

Research for doctoral students before admission to candidacy. Designed for students with a master's degree in the field of study or for students who have been accepted for a doctoral program. Not appropriate for students who have been admitted to candidacy.

GLY 7980 Research for Doctoral Dissertation 1-15 Credits**Grading Scheme:** S/U

Research for Doctoral Dissertation

PCB 5307C Limnology 4 Credits**Grading Scheme:** Letter Grade

Biological, chemical, and physical dynamics of inland waters.

Prerequisite: PCB 4044C, CHM 2046.