

## SPRING SEMESTER 2017 COURSES IN GEOLOGICAL SCIENCES

### *100-Level General Introductory Classes*

- **G103 Earth Science Materials and Processes** 3 credits - Introduction to origin and classification of minerals and rocks. Class #6086. Lecture Tuesday/Thursday 1:25-2:15p.m., GY210. Laboratory: GY 214 (5 lab sections).
- **G104 Evolution of the Earth** 3 credits - The Evolution of the Earth is an introductory science course focused on the 5-billion years of Earth history. Class #8266. Lecture Tuesday/Thursday 11:15 a.m.-12:05 p.m., GY 126. Laboratory: GY 220 (3 lab sections).
- **G105 Earth Our Habitable Planet** 3 credits - Introduction to Planet Earth as a dynamic and complex global system. Class #6093. Lecture Monday/Wednesday 2:30-3:20 p.m., GY 126. Laboratory: GY 220 (4 lab sections).
- **G114 Dinosaurs and Their Relatives** 3 credits – Origin and evolution of vertebrates including dinosaurs and their distant relatives such as fish, amphibians, birds, and mammals. Course will focus on dinosaur evolution, paleobiology, paleoecology, and extinction. Class #15200. Lecture Monday/Wednesday 11:15-12:05 p.m., GY 126. Laboratory: GY 522 (4 lab sections).

### *100-Level Focused Introductory Classes*

- **G122 Introduction to Atmospheric Science: Weather and Climate** 3 credits - Geological processes and products on Earth-like planetary bodies and asteroids; evidence from current meteorite, lunar, Martian, and space research. Weekly quizzes/examinations (open book, open notes) on inferences from available evidence. Class #30342. Lecture Monday/Wednesday 10:10 – 11:00 a.m., GY 142. Laboratory: GY 214 (3 lab sections).
- **G131 Oceans and Our Global Environment** 3 credits - Introduction to oceanography, with emphasis on ocean-atmospheric interaction and global climate, plate tectonics and morphology of the ocean basins, marine geology, energy resources, environmental problems due to sea-level rise, coastal erosion, oil spills, and life in the sea. Class #12950. Lecture 100% online course taught by IU Bloomington. No on-campus meetings are required.
- **G144 Extreme Weather and Its Impacts.** 3 credits - What are tornadoes? Why do they happen? Why did Katrina kill over a thousand people in New Orleans? What's the difference between sleet and snow, and why do I care? If you're interested in severe or extreme weather events, and want to learn more about them, come to G144. Class #15344. Lecture Tuesday/Thursday 1:00 - 2:15 p.m., GY143. No Laboratory.
- **G188/190 The Evolving Earth: Volcano Seminar. CASE** This is a 2-week field course in the Sierra Nevada Mountains of California followed by a 2-week independent study research period.

### *200-300-Level Intermediate Classes for Science Majors*

- **G222 Introduction to Petrology** 3 credits - Study of the principal representatives of the major chemical groups of minerals. Emphasis on rock-forming and useful minerals, their crystal structure, chemistry, physical properties, association, and occurrence. Study of major rock types. Class #6098. Lecture Monday/Wednesday/Friday 9:05-9:55 a.m., GY 214. Laboratory: GY 245 (2 Lab sections).
- **G225 Earth Materials** 4 credits - This course sequentially considers minerals, rocks, sediments, and soils; the materials that comprise the solid earth. The distribution and environmental significance of these materials are studied, as are their chemical and physical interactions with groundwater and plants. Class #7249. Lecture Tuesday 11:15 a.m.-12:30 p.m., GY 210; Thursday 11:15 a.m.-12:30 p.m., GY 214. Laboratory: GY 245 (2 lab sections).
- **G323 Structural Geology** 3 credits - Geometry and origin of folds, faults, joints, and cleavage. Modes and principles of rock deformation. Regional tectonics of selected fold-mountain systems. Class #6101. Lecture Monday/Wednesday/Friday 11:15 a.m.-12:05 p.m., GY 522. Laboratory: GY 416 (1 lab section).
- **G332 Atmospheric Thermodynamics** 3 credits - Earth's weather and climate are controlled by how heat and moisture move in the atmosphere. In this course, students learn and apply the basic physical laws that govern those processes. Class #32768. Lecture Monday/Wednesday 11:15 a.m. – 12:30 p.m., BH 149.

- **G341 Natural History of Coral Reefs** 3 credits - Introduction to principles of Biology, Ecology, and Geology of coral reef ecosystems. The course will address the evolutionary history of reef ecosystems through geologic time inclusive of reef composition and global distribution, modern reef development, conservation and management practices, and the persistence of the reef ecosystem through climate change scenarios. We will cover biologic, ecologic, and geologic principles as they pertain to coral reef ecosystems. Class #11762. Lecture Tuesday/Thursday 4:00-5:15 p.m., GY 522. No laboratory.

#### *400-Level Advanced Classes for Geology Majors*

- **G412 Introduction to Vertebrate Paleontology** 3 credits - Geologic occurrence and genesis of economic mineral deposits, including petroleum and coal. Introduction to mining, processing, and exploration methods. Class #32546. Lecture Tuesday/Thursday 1:00-2:15 p.m., GY 522. No laboratory.
- **X420 Regional Geology Field Trip** 1-2 Credits - Field investigation of selected regions of North America for study of mineralogic, lithologic, stratigraphic, structural, paleontologic, geomorphologic, or other geological relationships. Six to 15 days in the field. Class #29834. Class requires permission of instructor. Contact instructor for details.
- **G423 Methods in Applied Geophysics** 4 credits - Application of geophysical principles to field and laboratory experiments, with emphasis on data acquisition, analysis, and geologic interpretation. Experiments include earthquake seismology, electrical resistivity, magnetic and gravity surveys, and reflection and refraction seismology. Class #15665. Lecture Monday/Wednesday/Friday 10:10-11:00 a.m., GY 416. No laboratory.
- **G454 Fundamentals of Plate Tectonics** 3 credits - Synthesis of observations from diverse disciplines of geology leading to the development of modern plate tectonic theory. Applications of plate tectonic principles to fundamental problems of continental and marine geology. Class #13216. Lecture Tuesday/Thursday 11:15 a.m.-12:30 p.m. GY 522. No Laboratory.
- **G474 Topics in Atmospheric Science: Mesoscale Meteorology.** 3 credits - Topics may include surface-vegetation-atmosphere interaction, dynamics of turbulent transport, boundary layer dynamics, turbulent kinetic energy and stability, dimensional analysis and similarity theory, effects of surface inhomogeneity on boundary layer dynamics, patchiness, urbanization, regional aggregation of surface atmosphere exchange, applications to mesoscale modeling, and air pollution dispersion modeling. Class #30356. Lecture Tuesday/Thursday 11:15 a.m. – 12:30 p.m. GY 210. No laboratory.
- **G476 Climate Change Science** 3 credits - Evidence for and theories of climate change over a range of time scales. Sources of natural climate forcing are presented, historical evolution of climate change is quantified, and model tools and climate projections are presented along with analyses of climate change impacts. Class #15667. Lecture Monday/Wednesday 1:00-2:15 p.m., GY 220. No laboratory.