SPRING SEMESTER 2016 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 #4920. Lecture Tuesday/Thursday 5:45-6:35 p.m., GY126. 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 #7243. Lecture Tuesday/Thursday 1:25-2:15 p.m., GY 126. Laboratory: GY 210 (5 lab sections).

- **G105 Earth Our Habitable Planet** 3 credits - Introduction to Planet Earth as a dynamic and complex global system. Class #4927. Lecture Monday/Wednesday 2:30-3:20 p.m., GY 126. Laboratory: GY 220 (4 lab sections).

- **G111 Physical Geology** 3 credits – N&M Breadth of Inquiry credit. Basic concepts of geology. Formation of rocks, erosion and landscape evolution, plate tectonics, interpretation of earth processes from geological data. Class #15903. Lecture Tuesday/Thursday 2:30-3:20 p.m. GY522. Laboratory: GY220 (2 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 #15893. Lecture Monday/Wednesday 11:15-12:05 p.m., GY 126. Laboratory: GY 522 (4 lab sections).

- **G118 Sustainability: Water Resources** 3 credits – N&M Breadth of Inquiry credit. A dependable supply of water is critical to sustaining life but this resource is increasingly at risk because of growing competition among domestic, industrial-commercial, agricultural, and environmental needs. Students will become conversant on the topic of water resources as well as develop an understanding of the key concepts in sustainability and systems thinking. Class #29916. Lecture Tuesday/Thursday 9:00-11:00 a.m. GY 522. No Laboratory.

100-Level Focused Introductory Classes

- **G121 Meteorites and Planets** 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 #10982. Lecture Monday/Wednesday 1:00-2:15 p.m., GY 126. No laboratory.

- **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 #12561. 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 #16122. Lecture Monday/Wednesday 11:15 a.m.-12:30 p.m., GY143. No Laboratory.

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 #4937. Lecture Monday/Wednesday/Friday 9:05-9:55 a.m., GY 143. Lab: 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. Lab: 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 #4940. Lecture Monday/Wednesday/Friday 11:15 a.m.-12:05 p.m., GY 522. Lab: GY 416 (2 lab sections).

• **G341 The 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 #11090. Lecture Tuesday/Thursday 4:00-5:15 p.m., GY 522. No laboratory.

• **G347 Instrumentation for Atmospheric Science** 3 credits - Introduces the principles of atmospheric measurement including sampling strategies, instrumentation and data analysis to quantify atmospheric variables and processes. Covers standard meteorological techniques: ground-based, satellite and airborne remote sensing; atmospheric chemistry and aerosol measurements. Research projects in experimental design will employ field and laboratory equipment to investigate climatological and meteorological principles. Class #29925. Lecture Tuesday/Thursday 9:30-10:45 a.m., GY 210; Thursday 9:30-10:45 a.m. GY 220. No Laboratory.

400-Level Advanced Classes for Geology Majors

• **G416 Economic Geology** 3 credits - Geologic occurrence and genesis of economic mineral deposits, including petroleum and coal. Introduction to mining, processing, and exploration methods. Class #30200. Lecture Tuesday/Thursday 1:00-2:15 p.m., GY 338. No laboratory.

• **G420 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 #9525. 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 #29926. Lecture Monday/Wednesday/Friday 10:10-11:00 a.m., GY 416. No laboratory.

• **G427 Introduction to X-ray Mineralogy** 3 credits - Theory and practice of X-ray powder diffraction. Measurement and analysis of digital diffractometer data, including profile fitting and Rietveld refinement, with applications to geological, environmental, and structural–chemical problems. Class #11091. Lecture Tuesday/Thursday 8:25-9:15 a.m., GY 245. Lab GY 241 (1 lab section).

• **G437 Advanced Synoptic Meteorology and Climatology** 3 credits - Analysis and prediction of synoptic scale weather systems, emphasizing the mid-latitudes. Other topics include severe weather and atmospheric/oceanic teleconnections. Class #29933. Lecture Tuesday/Thursday 1:00-2:15 p.m., GY 522.

• **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 #12883. Lecture Tuesday/Thursday 11:15 a.m.-12:30 p.m. GY 522. 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 #29928. Lecture Monday/Wednesday 1:00-2:15 p.m., GY 220. No laboratory.