ENVIRONMENTAL SCIENCE AND GEOLOGY

Office: 0224 Old Main; 313-577-2506
Chairperson: Mark Baskaran
http://www.clas.wayne.edu/Geology/

BASKARAN, MARK: Ph.D., Physical Research Laboratory, India; M.S., M.K. University; B.S., V.H.N.S.N. College; Professor and Chair
BROWNLEE, SARAH J.: Ph.D., University of California, Berkeley; B.A., Princeton University; Associate Professor
BURDICK, SCOTT: Ph.D., Massachusetts Institute of Technology; B.S., Purdue University; Assistant Professor
HOWARD, JEFFREY L.: Ph.D., University of California, Santa Barbara; M.S., B.S., Virginia Polytechnic Institute and State University; Professor
PAPUGA, SHIRLEY: Ph.D., University of Colorado; B.A., Kalamazoo College; Associate Professor
SPERONE, FELICE G.: M.A., University of Illinois at Chicago; Lecturer

- Geology (M.A.) (http://bulletins.wayne.edu/graduate/college-liberal-arts-sciences/environmental-science-geology/geology-ma)
- Geology (M.S.) (http://bulletins.wayne.edu/graduate/college-liberal-arts-sciences/environmental-science-geology/geology-ms)

GEL 5000 Geological Site Assessment Cr. 4
Geologic methods for Phase I Environmental Site Assessments. Application of geostatistics to site characterization. Offered Every Other Year.
Prerequisites: GEL 1010 with a minimum grade of D- or GEL 1000 with a minimum grade of D-

GEL 5120 Environmental Geochemistry Cr. 4
Survey of some of the geochemical interactions which take place in Earth environments (water, soils, atmosphere, etc.) brought about by natural and human-induced chemical processes. Offered Every Other Year.
Prerequisites: CHM 1000-6XXX with a minimum grade of D- and GEL 1010 with a minimum grade of D-
Course Material Fees: $20

GEL 5150 Soils and Soil Pollution Cr. 4
Prerequisites: CHM 1220 with a minimum grade of D- and CHM 1230 with a minimum grade of D-
Course Material Fees: $40

GEL 5210 Environmental and Applied Geophysics Cr. 4
Introduction to geophysical methods used in characterizing the Earth’s subsurface for environmental, engineering, and exploration applications. Students will learn the basics of near-surface seismic, gravity, magnetic, electrical resistivity, and electromagnetic methods and data analysis. Offered Every Other Year.
Prerequisites: (GEL 1010 with a minimum grade of D- and PHY 2130 with a minimum grade of D-) or (PHY 2170 with a minimum grade of D- and PHY 2180 with a minimum grade of D-) and MAT 2010 with a minimum grade of D-
Course Material Fees: $40

GEL 5360 Hydrology of Natural and Urban Environments Cr. 4
Focuses on surface water processes including how water movement, storage and transformation on the Earth’s surface is influenced by landscape characteristics, including human modifications of those characteristics, and weather. Offered Every Other Year.
Prerequisites: MAT 1800 with a minimum grade of D-
Course Material Fees: $55

GEL 5420 Mathematical Methods in Earth Science Cr. 4
An introduction to mathematical methods in Earth Science focusing on an introduction to programming in Matlab, using statistical methods, Monte Carlo, and building towards finite difference numerical methods. Offered Every Other Year.

GEL 5450 Hydrogeology Cr. 4
Characteristics and behavior of groundwater in earth materials. Principles of groundwater flow and solute transport. Introduction to numerical models and methods. Offered Every Other Year.
Prerequisites: GEL 1010 with a minimum grade of D- and MAT 2010-6XXX with a minimum grade of D-

GEL 5510 Environmental Fate and Transport of Pollutants Cr. 4
Basic principles of chemical behavior in the environment; sources, fate, and transport of contaminants. Offered Winter.
Prerequisites: (CHM 1220 with a minimum grade of D-, CHM 1240 with a minimum grade of D-, CHM 1230 with a minimum grade of D-, or CHM 1250 with a minimum grade of D-) and MAT 2010-6XXX with a minimum grade of D-

GEL 5600 Special Topics in Geology Cr. 4
Subjects of general interest to geology majors. Topics may include: mapping; soil and groundwater pollution; petroleum geology; engineering geology; mathematical methods in Earth Science; or others. Offered Intermittently.
Repeatable for 4 Credits
GEL 5610 Special Topics in Geology Cr. 1
Topics may be related themes such as current events, a specific area of geology or the Earth Sciences, or the development of professional skills relevant to careers in the Earth Sciences. Offered Every Other Year.
Repeatable for 3 Credits

GEL 5650 Applied Geological Mapping Cr. 4
Geographic Information Systems (GIS) is a powerful tool for analyzing spatial datasets, and for this reason it can be applied to many geological problems. This course will provide students the necessary skills to use GIS with an emphasis on geological applications. It will focus on geologic aspects of GIS analysis such as spatial analysis, geologic mapping, topographic analysis, and the importation and interpolation of aerial photos/satellite images and field data. Offered Winter.
Prerequisite: GEL 1010 with a minimum grade of C

GEL 5993 Writing Intensive Course in Geology Cr. 0
Satisfies General Education Requirement: Writing Intensive Competency
Disciplinary writing assignments under the direction of faculty member. Must be selected in conjunction with course designated as corequisite. See section listing in Schedule of Classes for corequisites available each term. Satisfies the University General Education Writing Intensive Course in the Major requirement. Required for all majors. Offered Every Term.
Prerequisites: (AFS 2390 with a minimum grade of C, ENG 2390 with a minimum grade of C, ENG 3010 with a minimum grade of C, ENG 3020 with a minimum grade of C, or ENG 3050 with a minimum grade of C) and (GEL 3160 with a minimum grade of D- (may be taken concurrently), GEL 3300 with a minimum grade of D- (may be taken concurrently), GEL 3400 with a minimum grade of D- (may be taken concurrently), or GEL 3540 with a minimum grade of D- (may be taken concurrently))
Restriction(s): Enrollment is limited to Undergraduate level students.

GEL 6400 Nuclear Geology Cr. 4
Introduction to various physical and chemical age-dating methods applied to geological and cosmological objects. Offered Every Other Year.
Prerequisites: ((PHY 2130 with a minimum grade of D- and PHY 2140 with a minimum grade of D-) or (PHY 2170 with a minimum grade of D- and PHY 2180 with a minimum grade of D-)), (CHM 1220 with a minimum grade of D- and CHM 1230 with a minimum grade of D-), and GEL 1010 with a minimum grade of D-

GEL 6500 Earth Resources and the Environment Cr. 3
Examines the nature of Earth resources, as well as critical issues surrounding these resources. Analyzes the impacts of resource usage on the Earth environment. Covers all major types of Earth resources—energy, metallic, nonmetallic, water, soil. Offered Every Other Year.
Prerequisites: GEL 1010 with a minimum grade of C

GEL 7210 Environmental and Applied Geophysics Cr. 4
Introduction to geophysical methods used in characterizing the Earth's subsurface for environmental, engineering, and exploration applications. Students will learn the basics of near-surface seismic, gravity, magnetic, electrical resistivity, and electromagnetic methods and data analysis. Offered Fall.
Restriction(s): Enrollment is limited to Graduate level students.

GEL 7990 Directed Study in Geology Cr. 2-8
Offered Every Term.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 8 Credits

GEL 7997 Research in Geology Cr. 3-4
Independent work in laboratory or field. Offered Every Term.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 8 Credits

GEL 7999 Master's Essay Direction Cr. 3-5
Offered Every Term.
Restriction(s): Enrollment is limited to Graduate level students.
Repeatable for 5 Credits

GEL 8999 Master's Thesis Research and Direction Cr. 1-8
Offered Every Term.
Restriction(s): Enrollment limited to students with a class of Candidate Masters; enrollment is limited to Graduate level students.
Repeatable for 8 Credits