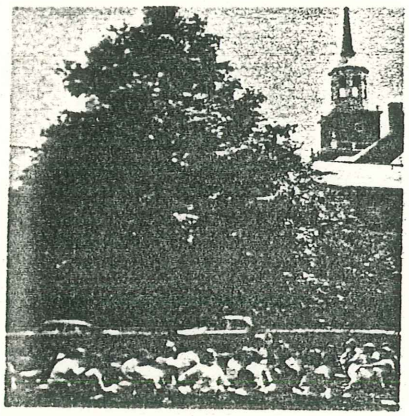
University of Cincinnati Bulletin

1985-86



Courses of Instruction

15-041-731. Man's Physical Environment. 4 gr. cr. Coping with environmental change, both gradual and precipitate; natural hazards; how to prepare Environmental Impact Statements.

15-041-770. Seminar in Environmental Planning. 4 gr. cr. The role of the environment in economic cation decisions. Environmental legislation, and the Environmental Impact Statement (EIS) process.

15-041-771. Seminar in Planned Urban Development. 4 gr. cr. Locational strategies in urban complexes of North America and Western Europe. New towns.

15-041-775. Seminar in Behavioral Geography. 4 gr. cr. How people perceive their geographical environment and respond to it, in homeseeking, travel patterns, and migration; innovation diffusion.

15-041-778. Seminar in Geographic Development. 4 gr. cr. Modernization of traditional societies and economies. Racial and political confrontations over land. Can international agencies help?

15-041-779. Multinational Corporations. 4 gr. cr. Contemporary corporations as change agents in global economic, urban, cultural, and political geography; new developments in location theory.

15-041-782. Seminar in Historical Geography. 4 gr. cr. Settlement origins and dispersals; evolution of regions and urban networks; use of archival maps; preservation of historic landscapes.

15-041-788. Seminar in Manufacturing Geography. 4 gr. cr. Theory and practice of industrial site selection and transport linkages.

15-041-814. Interdisciplinary Seminar: Frontiers of Urban Research. 3 gr. cr. Current research trends and techniques in the shared urban aspects of geography, history, political science, and sociology. For advanced graduate students wanting early reactions to theses or dissertations. Admission only with faculty approval.

15-041-815. Interdisciplinary Seminar: Frontiers of Urban Research. 3 gr. cr. See 15-041-814.

15-041-816. Interdisciplinary Seminar: Frontiers of Urban Research. 3 gr. cr. See 15-041-814.

15-041-878. Seminar in Growth of Geographic Thought. 4 gr. cr. Critical examination of guiding philosophies and research paradigms in the 20th century.

Supervised Individual Research

15-041-701. Geographic Research. Advanced research projects, pursued individually in the library or laboratories, requiring prior faculty approval. Cr. and hrs. to be arranged.

15-041-702. Geographic Research. See 15-041-701.

15-041-703. Geographic Research. See 15-041-701.

15-041-871. Thesis Research. Preparation of the MA thesis, contingent upon faculty approval of a thesis proposal. Credits vary with the research accomplished.

15-041-971. Dissertation Research. Preparation of the PhD dissertation, following completion of Comprehensive Examinations and faculty approval of a dissertation proposal. Credits may vary with the research accomplished.

Geology

15-040-101. Introduction to Geology. 5 ug. cr. A survey of physical and historical geology. Fulfills Natural Science requirement. Lec. and Lab.

15-040-102. Introduction to Geology. 5 ug. cr. See 15-040-101.

15-040-103. Introduction to Geology. 5 ug. cr. See 15-040-101.

15-040-104. Geology of Man's Environment. 3 ug. cr. An introductory course for those not expecting to major in earth sciences. Will satisfy one 9-credit sequence in the Natural Science requirement.

15-040-105. Geology of Man's Environment. 3 ug. cr. See 15-040-104.

15-040-106. Geology of Man's Environment. 3 ug. cr. See 15-040-104.

15-040-107. Geology from Space. 3 ug. cr. Major geologic concepts are explained with the aid of LANDSAT photographs.

The three following topics in geology (Geol. 261,2,4) will satisfy one 9-credit sequence in the Natural Science requirement.

15-040-261. Oceanography. 3 ug. cr. The history of ocean basins, oceanic and atmospheric circulation, deepsea sediments, paleoecology, past and future climate.

15-040-262. Plate Tectonics. 3 ug. cr. The revolutionary concept of Plate Tectonics and its implications as to distribution of earthquakes, volcanoes, hydrocarbons and metallic mineral deposits.

15-040-264. Mineral Resources. 3 ug. cr. A survey of nonrenewable mineral resources: end uses, comsumption, and tectonic settings.

15-040-301. Mineralogy. 4 ug. cr. Crystallography, crystal chemistry, atomic structures, geochemistry, and systematics of the common minerals. Prereq.: College chemistry or perm. of instr.

15-040-302. Mineralogy. 4 ug. cr. See 15-040-301.

15-040-331. Elementary Structural Geology. 3 ug. cr. Description of tectonic structures. Laboratory methods in Structural Geology. Field trip.

15-040-371. Geologic Demonstration Field Trip. 3 ug. cr. A two-week field trip. September 1985. One-hour weekly conference with readings and exercises.

15-040-374. Geology for Engineers. 4 ug. cr. Physical geology pertinent to engineering.

15-040-477. Introduction to Field Geology. 3 ug. cr. An introduction to field mapping techniques, section measurement and geologic sampling.

15-040-487. Individual Work in Geology. Credit depends on amount of work done. May be entered any quarter.

15-040-488. Individual Work in Geology. See 15-040-487.

15-040-489. Individual Work in Geology. See 15-040-487.

15-040-501. Elementary Petrology. 3 ug. or gr. cr. Descriptive petrology of the common rocks; microscope and hand lens. Prereq.: Geol. 301-2-3.

15-040-502. Elementary Petrology. 3 ug. or gr. cr. See 15-040-501.

15-040-504. Geomorphic Processes. 4 ug. or gr. cr. Mechanics of earth surface processes.

15-040-505. Landform Development. 3 ug. or gr. cr. Morphology, origin and development of landforms.

15-040-510. Physical and Chemical Processes in Geology. 3 ug. or gr. cr. Study of interaction of chemicals and mechanical processes in geology. Prereq.: Physics, Chemistry & Calculus.

15-040-511. Physical and Chemical Processes in Geology. 3 ug. or gr. cr. See 15-040-510.

15-040-512. Physical and Chemical Processes in Geology. 3 ug. or gr. cr. See 15-040-510.

15-040-521. Paleontology. 4 ug. or gr. cr. Fundamental concepts; paleobiology and the geological occurrence and significance of fossil organisms.

15-040-522. Paleontology. 4 ug. or gr. cr. See 15-040-521.

15-040-525. Advanced Historical Geology. 3 ug. or gr. cr. History of geological processes emphasizing distinctive petrogenesis of Precambrian rocks, reconstruction of Phanerozoic continent distributions, and influence of biological evolution on the rock record.

15-040-531. Stratigraphy and Sedimentation. 3 ug. or gr. cr. Physical and biological processes, environmental interpretation, facies analysis, stratigraphic analysis, basin analysis, and tectonics.

15-040-532. Stratigraphy and Sedimentation. 3 ug. or gr. cr. See 15-040-531.

15-040-544. Geology of Ore Deposits. 3 ug. or gr. cr. Introduction to geology, geochemistry and tectonic setting of ore deposits related to igneous rocks. Prereq.: 302, 331, 477, 502 or perm. of instr.

15-040-545. Geology of Ore Deposits. 3 ug. or gr. cr. Emphasis on hydrothermal and sedimentary deposits. Prereq.: 15-040-544.

15-040-551. Methods of Engineering Geology. 3 ug. or gr. cr. Introduction to engineering geology through study of engineering projects. Field trips. Prereq.: Geol. 331, 504, or perm. of instr.

15-040-553. Anatomy of Landslides. 3 ug. or gr. cr. Geologic setting, geometry and mechanisms of large, classic landslides throughout the world. Methods of stability analysis.

15-040-555. Engineering Geologic Mapping. 3 ug. or gr. cr. Plane-table mapping of one of the fascinating landslides in Cincinnati.

15-040-576. Advanced Geology Field Trip. 3 ug. or gr. cr. A two-week field excursion during September 1985. Conferences and report in Autumn Quarter. Prereq.: Perm. of instr.

15-040-662. Igneous Petrology. 4 ug. or gr. cr. Geology and petrology of major igneous rock groups. Petrographic demonstrations and exercises. Report. Prereq.: Geol. 501.

15-040-663. Metamorphic Petrology. 4 ug. or gr. cr. Geology and petrology of metamorphic terranes. Petrographic demonstrations and exercises. Report. Prereq.: Geol. 502.

15-040-668. Mineral Chemistry. 3 ug. or gr. cr. Crystal chemistry; mineral solution models; inter- and intracrystalline reactions; controls of mineral stability. Prereq.: Perm. of instr.

15-040-669. The Rock-Forming Minerals. 3 ug. or gr. cr. The crystal chemistry and phase relations of the rock forming minerals and their use as petrogenetic indicators. Prereq.: Geol. 668.

15-040-673. Tectonics I. 3 ug. or gr. cr. Principles of tectonics: plate tectonics; paleomagnetism; extensional, compressional, wrench tectonics; gravity tectonics. Field trip. Prereq.: Geol. 331 or equiv.

15-040-677. Tectonics II. 3 ug. or gr. cr. Tectonic evolution of North America; Canadian shelf; Appalachians; Cordillera. Prereq.: Geol. 673 or perm. of instr.

15-040-678. Applied Structural Geology. 3 ug. or gr. cr. Tectonics of the Alpine-Himalayan mountain belt. Applied structural geology—interpretation of seismic sections. Prereq.: Geol. 331 or 677 or perm. of instr.

15-040-691. The Solid Earth. 3 ug. or gr. cr. Physical and chemical processes of the earth's upper mantle and crust. Phase equilibria of rock systems.

15-040-692. Petrogenesis. 3 ug. or gr. cr. Discussion of research on petrogenetic problems.

15-040-693. Modern Concepts in Oceanography. 3 ug. or gr. cr. Water masses, surface and thermohaline circulation, oceanic-atmospheric interactions, productivity and marine life, deep-sea sediments and geological implications.

15-040-697. Paleoceanography. 3 ug. or gr. cr. Lecture and seminar approach.

Primarily for graduate students

15-040-701. Advanced Sedimentology. 4 gr. cr. Principles of physical and chemical sedimentology.

15-040-702. Advanced Sedimentology. 4 gr. cr. See 15-040-701.

15-040-703. Advanced Sedimentology. 4 gr. cr. Modern and ancient depositional environments.

15-040-705. Geology of the Mid-Continent. 1 gr. cr. Department Fall field trip.

15-040-711. Micropaleontology Seminar. 3 gr. cr.

15-040-712. Micropaleontology Seminar. 3 gr. cr.

15-040-721. Theory and Application of Finite Strain. 3 gr. cr. Analysis and measurement of finite strain. Prereq.: Some mechanics.

15-040-722. Theories of Folding and Density Instability. 3 gr. cr. Folding and diapirism of viscous, powerlaw, elastic, and strain-hardening materials. Prereq.: Geol. 721.

15-040-723. Theories of Fracturing, Jointing and Faulting of Rock. 3 gr. cr. Forms of fractures in porous, ductile and dense, brittle rocks. Foreland thrusting.

15-040-775. Field Studies in Modern and Ancient Depositional Environments. 2 gr. cr. 10 to 14 day field trip in June. Report.

15-040-780. Methods of Geological Instruction. Cr. to be arranged. Offered ea. qtr.

15-040-821. Paleontology Seminar. 3 gr. cr. A graduate seminar dealing with many facets of paleontology; principles, organisms, methods.

15-040-822. Paleontology Seminar. 3 gr. cr. See 15-040-821.

15-040-823. Paleontology Seminar. 3 gr. cr. See 15-040-821.

15-040-833. Sedimentology Seminar. 1 gr. cr.

15-040-834. Sedimentology Seminar. 1 gr. cr.

15-040-835. Sedimentology Seminar. 1 gr. cr.

15-040-873. Economic Geology Seminar. 3 gr. cr.

15-040-881. Research—Special Problems in Geology. Cr. arranged. Offered ea. qtr.

15-040-893. Master's Thesis Research. Cr. arranged. Offered ea. qtr.

15-040-971. Doctoral Dissertation Research. Cr. arranged. Offered ea. qtr. Perm. of adviser required.

Of Special Interest. The Department of Geography and the School of Planning offer a joint MA degree program. Graduate students completing this program will receive an MA (Geography) and an MCP (Master of Community Planning). The joint program normally requires three years of graduate work including an approved internship with a planning agency. Required coursework must be satisfied in both Geography and Planning, but one thesis will satisfy both programs.

Graduate Faculty

Robert B. McNee, *Professor*
PhD, 1953, Syracuse University
Theory of urban and economic geography; institutional decision-making (multinational firms).

Jonathan S. Mesinger, *Assistant Professor*
PhD, 1977, Syracuse University
Urban, cultural, historical; landscape preservation; ethnospace; Europe, U.S.

Wolf Roder, *Professor*
PhD, 1965, University of Chicago
Economic development in Africa; environment and resources management; quantitative techniques.

Bruce Ryan, *Head and Professor*
PhD, 1966, The Australian National University, Australia
Australia; urban historical; architectural diffusion.

Roger Selya, *Associate Professor*
PhD, 1971, University of Minnesota
Economic development of East Asia; history and philosophy of geography; population; medical geography.

Robert B. South, *Associate Professor*
PhD, 1972, University of Maryland
Economic geography; environmental impact; regional economic development; Latin America.

Howard A. Stafford, *Professor*
PhD, 1960, The University of Iowa
Industrial location decision-making; manufacturing; urban and marketing geography; location theory.

Laurence G. Wolf, *Associate Professor*
PhD, 1966, Syracuse University
Cultural, political and urban geography; cartographic design.

For Further Information

Dr. Robert B. South, Director
Graduate Studies
Department of Geography, ML 131
University of Cincinnati
Cincinnati, OH 45221
(513) 475-3421

Geology

Master of Science, Doctor of Philosophy

The Department of Geology offers graduate programs leading to the MS and PhD degrees. Major areas of study and research include Economic Geology, Engineering Geology, Geochemistry, Geomorphology, Igneous and Metamorphic Petrology, Mineralogy, Paleontology, Physical and Chemical Processes in Geology, Sedimentology and Stratigraphy, Structural Geology and Tectonics.

The Department has a strong tradition of emphasis on field studies as the basis for geological instruction and research. In addition, there are modern laboratories and extensive paleontological collections. Field research is being carried out in many areas including Pakistan, Mexico, California, Montana, Utah, Ohio, Pennsylvania, Kentucky, Virginia, West Virginia, and New Mexico.

Admission Requirements. For admission to graduate work, students must have a "B plus" average in their major and satisfactory GRE scores. In addition, students should have passed one-year courses in physics, chemistry, and calculus. A summer field course in geology or its equivalent, such as a summer at a marine biological station for paleontology students, is required either before admission or early in the graduate program.

Degree Requirements.

Master of Science. Students qualify for an MS degree in geology by earning 45 graduate quarter credits (30 of which must be in coursework) and by preparing and successfully defending a Master's thesis.

Doctor of Philosophy. Students qualify for the doctoral degree by obtaining 135 graduate quarter credits, of which 45 may be transferred from a master's degree program of study. After coursework and successful completion of the foreign language examination, students must pass a qualifying examination prior to being admitted to candidacy. Students are expected to prepare and successfully defend a doctoral dissertation showing their capacity for original and independent research.

Financial Aid. In addition to University administered financial assistance, the Geology Department currently offers five fellowships (N. Fenneman, W.G. Meyer, Sohio, Tenneco and Yankee Oil fellowships) which carry the same stipend as teaching assistantships, but have no associated teaching duties. In addition, the Department may provide some funds for thesis research and for travel to professional meetings for the purpose of presenting papers.

Placement. Most MS graduates have been placed with oil companies; others have joined state geological surveys, the United States Geological Survey, or engineering firms. Several of our recent PhD students have accepted teaching positions at academic institutions.

Of Special Interest. The Geology Department Museum houses a large and diverse collection of fossils from worldwide localities which provide unique research and teaching materials. The Department also maintains outstanding collections of minerals and rocks for research and teaching, especially sedimentary rocks.

A 32,000 volume geology library and extensive map collection are also conveniently housed in the Department. The library has an outstanding and well-used collection of over 1,200 guidebooks to the United States, Canada, and Mexico. The map library has long been a repository for the U.S. Geological Survey.

Graduate Faculty

Madeleine Briskin, *Associate Professor*
PhD, 1972, Brown University
Micropaleontology and oceanography.

Kees A. DeJong, *Associate Professor*
PhD, 1969, University of Utrecht, The Netherlands
Tectonics.

Richard D. Durrell, *Professor*
BS, 1936, University of Cincinnati; DSc (Hon.), 1975, Wilmington College
Geomorphology and photogeology.

John E. Grover, *Associate Professor*
PhD, 1972, Yale University
Mineralogy and crystal chemistry.

Warren D. Huff, *Associate Professor*
PhD, 1963, University of Cincinnati
Clay mineralogy.

Arvid M. Johnson, *Professor*
PhD, 1965, The Pennsylvania State University
Geomechanics and engineering geology.

I. Attila Kilinc, *Professor*
PhD, 1969, The Pennsylvania State University
Experimental petrology and geochemistry.

Leonard H. Larsen, *Professor*
PhD, 1956, Columbia University
Igneous and metamorphic petrology.

J. Barry Maynard, *Associate Professor*
PhD, 1972, Harvard University
Sedimentary geochemistry.

David L. Meyer, *Associate Professor*
PhD, 1971, Yale University
Paleontology and paleoecology.

David B. Nash, *Assistant Professor*
PhD, 1977, The University of Michigan
Geomorphology.

Paul Edwin Potter, *Professor*
PhD, 1952, University of Chicago
Sedimentology and sedimentary petrology.

Wayne A. Pryor, *Professor*
PhD, 1959, Rutgers University
Sedimentology and stratigraphy.

Harvey C. Sunderman, *Associate Professor*
PhD, 1951, University of Wisconsin
Optical mineralogy.

For Further Information

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