

168-72

# UNIVERSITY OF CINCINNATI BULLETIN

ANNOUNCEMENT OF THE

## Graduate School of Arts and Sciences



1951-1952

PUBLISHED BY THE UNIVERSITY OF CINCINNATI  
VAN WORMER ADMINISTRATION BUILDING  
CINCINNATI 21, OHIO

## GEOLOGY AND GEOGRAPHY

Head of Department: Professor J. L. RICH, Room 29, Old Tech Building; Professors CASE, BARBOUR, COULTER; Associate Professors RITTENHOUSE\*, CASTER, FREY, —————; Instructors DURRELL, PRICE, BOWERS, FRIEDMAN.

This Department offers work in geology leading to the degrees of Master of Arts, Master of Science, and Doctor of Philosophy, and work in geography leading to the degree of Master of Arts.

Not all students admitted to graduate courses are accepted as candidates for degrees. Personal acquaintance and preliminary examinations are required in order to determine their aptitude for self-directed effort. With an adequate basis of undergraduate study it may be possible to finish the work for a master's degree in one year, but the requirement cannot be stated in terms of time or credits. All graduate students will be required to participate in an annual three- or four-day field trip.

The thesis required for the master's degree may represent either original research, or a compilation and analysis of the literature of the chosen subject, of such a nature as to demonstrate the student's ability to sum up existing knowledge and to organize and express it in an approved manner.

## GEOLOGY

*For Graduate and Advanced Undergraduate Students*

†GEOL. 301, 302. MINERALOGY. Morphological relations of crystals, their physical and chemical properties. The important minerals, their occurrence, properties, and uses. Blowpipe analysis and microchemical testing. Three graduate credits each semester. Tu Th 10:30; M 1:30-4:30. 34 Old Tech. Mr. Friedman.

Prerequisite: High-school or elementary college chemistry.  
(Code: 15040-301, 302.)

†GEOL. 317, 318, 319. GEOLOGIC DEMONSTRATION TRIPS. A two weeks' field excursion, immediately after spring examinations and before Summer School; generally in the Appalachian Highland. Conferences once a week, during the following semester, and the preparation of a comprehensive report to be submitted at the end of the first semester. The three numbers designate different routes followed in successive years. Three graduate credits. Mr. Durrell.

(Code: 15040-317, 318, 319.)

\*Absent on leave.

†Supplementary work is required of graduate students electing these courses.

\*GEOL. 321, 322. PRINCIPLES OF HISTORICAL GEOLOGY. An introduction to the study of the physical and biological history of the earth with particular emphasis on North America. Four graduate credits each semester. Tu Th 8:30; W 1:30-4:30; S 8:30-11:30. 38 Old Tech. Mr. Caster.

Prerequisites: Geol. 101, 102; 111, 112; or equivalents.  
(Code: 15040-321, 322.)

GEOL. 330. ADVANCED GEOLOGY FIELD TRIP. A two weeks' field excursion immediately after spring examinations and before Summer School. Conferences once a week during the following semester, and preparation of a comprehensive report to be submitted at the end of the first semester. For students who have already taken a Geologic Demonstration Trip (Geol. 317, 318, or 319) and Geol. 321, 322 or its equivalent. Three graduate credits. First semester. Mr. Caster.

(Code: 15040-330.)

GEOL. 401, 402. PETROGRAPHY. Principles of crystal optics and recognition of transparent minerals under the microscope. Principles of petrology and classification of igneous rocks. Hand-specimen and thin-section study. Four graduate credits each semester. M W 9:30; Tu Th 1:30-4:30. 32 Old Tech. Mr. Friedman.

Prerequisite: Geol. 301, 302 or equivalent.  
(Code: 15040-401, 402.)

GEOL. 425, 426. INVERTEBRATE PALEONTOLOGY. A systematic survey of the important groups of invertebrate fossils with special emphasis on their zoological character and importance as index fossils. Lectures, laboratory, and conferences. Four graduate credits each semester. M W 11:30; Tu Th 1:30-4:30. 38 Old Tech. Mr. Caster.

Prerequisites: Geol. 101, 102; 111, 112 or equivalents; or a course in biology, zoology, or botany.  
(Code: 15040-425, 426.)

GEOL. 448. WORLD PHYSIOGRAPHY. Study of selected regions in geomorphic terms. Three graduate credits. Second semester, M 1:30-3:30 and additional hours to be arranged. 26 Old Tech. Mr. Barbour.

Prerequisites: Geol. 101, 102; 111, 112; or equivalents.  
Alternates with Geol. 444.  
(Code: 15040-448.)

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\*Supplementary work is required of graduate students electing this course.

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V. Hepple

GEOL. 449. PRINCIPLES OF GEOMORPHOLOGY. The interpretation of landscapes, especially as governed by geologic and climatic conditions. Three graduate credits. First semester, M 1:30-3:30 and additional hours to be arranged. 26 Old Tech. Mr. Barbour.

Prerequisites: Geol. 101, 102; 111, 112; or equivalents.

Alternates with Geol. 443.

(Code: 15040-449.)

\*GEOL. 469. COMMON ROCKS. Use of megascopic characteristics to identify igneous, sedimentary, and metamorphic rocks, and to interpret their conditions of origin and subsequent alteration. Three graduate credits. First semester, Tu Th 9:30; laboratory, Sec. I, F 1:30-4:30; Sec. II, W 1:30-4:30. Each laboratory section limited to seven students. 37 Old Tech. Mr. \_\_\_\_\_.

Prerequisites: Geol. 101, 102; 111, 112; and 301, 302; or equivalents.

(Code: 15040-469.)

GEOL. 470. BASIC SEDIMENTATION. Principles governing the transportation, deposition, and subsequent alteration of sediments, with particular emphasis on the physical and chemical environments of accumulation. Three graduate credits. Second semester, Tu Th 9:30; laboratory, Sec. I, F 1:30-4:30; Sec. II, W 1:30-4:30. Each laboratory section limited to nine students. 37 Old Tech. Mr. \_\_\_\_\_.

Prerequisites: Geol. 101, 102; 111, 112; and 301, 302; or equivalents.

(Code: 15040-470.)

GEOL. 503, 504. SEMINAR. Expected of all advanced students in geology and geography. No additional credit. Th 4:30.

(Code: 15040-503, 504.)

GEOL. 561, 562. ECONOMIC GEOLOGY. Mineral fuels, useful non-metallics, and ore deposits. Two weeks' field trip at end of spring semester. Four graduate credits first semester; five graduate credits second semester, M W 10:30; W 1:30-4:30; F 8:30-11:30. M W, 37 Old Tech; W F, 32 Old Tech. Mr. Rich.

Prerequisite: Geol. 401, 402 or equivalent.

Alternates with Geol. 589 and 980.

(Code: 15040-561, 562.)

\*Supplementary work is required of graduate students electing this course.

*Primarily for Graduate Students*

- GEOL. 910. ADVANCED MINERALOGY. Morphological and mathematical relations of crystals. Systematic survey of important minerals not covered in Courses 301-2. Three graduate credits. Second semester. Hours to be arranged. 32 Old Tech. Mr. Friedman.  
Prerequisite: Geol. 301, 302 or equivalent.  
(Code: 14040-910. Formerly Geol. 249b.)
- GEOL. 921, 922. STRATIGRAPHIC GEOLOGY. Principles of stratigraphy and general stratigraphy of North America. Roundtable seminar course. Three graduate credits each semester. M F 4:30-6:00. Mr. Caster.  
Prerequisites: Geol. 321, 322 and permission of the instructor.  
(Code: 14040-921, 922.)
- GEOL. 925, 926. ADVANCED MEGASCOPIC PALEONTOLOGY. By permission of the instructor. Three graduate credits each semester. Two or three seminar-laboratory meetings per week to be arranged. 38 Old Tech. Mr. Caster.  
Prerequisite: Geol. 425, 426 or a course in zoology.  
(Code: 14040-925, 926.)
- GEOL. 960. GROUND WATER. Principles of ground-water movement; measurement of quantity and quality. Study of supplies in selected localities. Three graduate credits. Second semester. Hours to be arranged. 34 Old Tech. Mr. Frey.  
Prerequisite: Geol. 470; Physics 101, 102; or equivalents.  
(Code: 14040-960.)
- GEOL. 979. GEOPHYSICS. A general course in practical geophysics, stressing geophysical methods used in guiding prospecting for oil and gas and for mineral deposits. The course is intended to give the geologist an understanding of geophysical maps and methods. Three graduate credits. First semester. Hours to be arranged. 32 Old Tech. Permission of the instructor. Mr. Frey.  
(Code: 14040-979.)
- GEOL. 971, 972. ADVANCED INDIVIDUAL WORK IN GEOLOGY. Credit depends on amount of work done. May be entered either semester. Geology Staff.  
(Code: 14040-971, 972.)
- GEOL. 973. FIELD RESEARCH IN GEOLOGY. Summer work in the field under direction of the Staff. One to six graduate credits.  
(Code: 14040-973.)

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UNIVERSITY OF CINCINNATI  
BULLETIN

ANNOUNCEMENT OF THE

*McMicken College of  
Liberal Arts*



1951-1952

PUBLISHED BY THE UNIVERSITY OF CINCINNATI  
VAN WORMER ADMINISTRATION BUILDING  
CINCINNATI 21, OHIO

## GEOLOGY AND GEOGRAPHY

Professors RICH (*Head of Department*, 29 Old Tech), CASE (25 Old Tech), BARBOUR (157 McMicken), COULTER (8 Old Tech); Associate Professors RITTENHOUSE (31 Old Tech), CASTER (2-C Old Tech), FREY (35 Old Tech); Instructors PRICE (23 Old Tech), DURRELL (1 Old Tech), BOWERS (56 Old Tech), FRIEDMAN (33 Old Tech); Museum Curator ———.

*Fields of concentration*, leading to the degree of B.A. or B.S., are offered in geology and in geography. The beginning courses in geology are planned as broad cultural surveys of the earth and its history—the processes which shape its surface and mold its landscapes; minerals and rocks; some of the important mineral resources; and the history of development of life as revealed by the fossil record. Geol. 101-2, 111-2 is the basic course preliminary to the advanced courses in the Department.

The beginning semester of geography (Geog. 100) deals with the basic principles of location, topography, weather and climate, and major vegetational and mineral resources—all desirable for further studies in geography. On completing it, the student is permitted to enter any of the other courses in geography except Geog. 577-8.

A student wishing to major in geology shall present Geol. 101-2, 111-2 or its equivalent. He will then continue with Geol. 301-2, 321-2, 317 (318, 319), and 501-2. Further courses in geology and their sequence will depend upon the plans and the interest of the student. For all students planning geology as a profession, a five- or eight-weeks' summer field course is most strongly recommended.

A student wishing to major in geography shall present Geog. 100 or its equivalent, Geol. 101-2, 111-2 or its equivalent, and Geog. 501-2. Further courses in geography and their sequence will depend upon the plans and the interest of the student.

Among the nongeological courses recommended to students who will concentrate in geology are the following (preference depending in part on fields of concentration): Chem. 101-2, 111-2; Phys. 101-2, 111-2; Zool. 101-2, 111-2, 317, 320; Bot. 101-2, 111-2, 421-2, 553-4; Geog. 410 or one of the regional courses in geography; mathematics through calculus; Astr. 101-2; German 001-2 and 011-2; Econ. 101-2; Phil. 121-2.

Among the nongeographical courses recommended to students who will concentrate in geography are the following: Geol. 449, 443-4, 448, 980; Hist. 107-8, 117, 207-8; Econ. 101-2; Pol. Sc. 471-2; Bot. 221-2, 925, 421-2; Soc. 301-2, 411-2, 340, 230.

Each autumn the Department conducts a three- or four-day field trip which all advanced students in the Department are expected to attend.

*Five-Year Co-ordinated Program in Geology.* Students looking toward a *professional career* in geology are urged to follow a special

co-ordinated program (described on page 54) especially designed to meet their needs, particularly if they intend to seek work involving applications of geology to the search for oil and gas, to mining, or to engineering. In this program, a student receives training in geology, the fundamentals of mathematics through calculus, chemistry through quantitative analysis, physics, mechanics, mechanical drawing, and surveying. Some of the work will be chosen from the "Degree" courses in engineering offered by the Evening College. All courses have been so scheduled as to provide a logical sequence of subjects and produce a uniformly distributed load. A certain latitude of choice is possible, but changes should be made only after consultation with the Head of the Department of Geology. On the satisfactory completion of four years' work, the student will receive the degree of *Bachelor of Science in Geology* and, after an additional year of successful study in the Graduate School, he will receive the degree of Master of Science. (See also page 34.) Students contemplating entering this course should consult in advance the Head of the Department of Geology and Geography who serves as their adviser throughout the course.

For interdepartmental programs including work in geography, see page 31.

#### GEOLOGY

- 101-2. INTRODUCTION TO GEOLOGY. Prerequisite to all other geology courses except Geol. 103-4, 301-2, 109, and 425-6. It is not prerequisite to any geography courses, but is required of geography majors. With Geol. 111-2, it satisfies the Liberal Arts science requirement. Geol. 101-2 and 111-2 form two parts of a single 10-credit course. With the instructor's permission, however, students who do not offer geology in fulfillment of the science requirement may take 101-2 alone. Lecture, M W F 8:30. 6 Old Tech. Mr. Durrell.  
(3 crs. each sem. Code: 15040-101,-102. Formerly Geol. 1.)
- 111-2. INTRODUCTION TO GEOLOGY, LABORATORY. A laboratory course to accompany Geol. 101-2. With the instructor's permission, transfer students and other qualified students may take the course without the lectures (101-2). Sec. I: M W 1:30-4:30; Secs. II, III: T Th 1:30-4:30. 24, 26 Old Tech. Mr. Durrell and assistants.  
(2 crs. each sem. Code: 15040-111,-112. Formerly Geol. 1 Lab.)
- 103-4. GENERAL GEOLOGY. An elementary course for general students not expecting to do further work in the subject; fulfills the Liberal Arts science requirement only if taken in combination with an elementary course in another science. M W 8:30, 50 Old Tech; F 1:30-4:30, 24, 26, 50 Old Tech. Mr. Barbour.  
(3 crs. each sem. Code: 15040-103,-104. Formerly Geol. 3.)



301-2. MINERALOGY. Morphological relations of crystals, their physical and chemical properties. The important minerals, their occurrence, properties, and uses. Blowpipe analysis and microchemical testing. Prerequisite: High-school or elementary college chemistry. T Th 10:30; M 1:30-4:30. 34 Old Tech. Mr. Friedman.

(3 crs. each sem. Code: 15040-301,-302. Formerly Geol. 7.)

317, 318, 319. GEOLOGIC DEMONSTRATION TRIPS. A two weeks' field excursion immediately after spring examinations and before Summer School, generally in the Appalachian highlands. Conferences once a week during the following semester and the preparation of a comprehensive report to be submitted at the end of the first semester. Special work required for graduate credit. The three numbers designate different routes followed in successive years. Prerequisite: Geol. 101-2, 111-2 or equivalent. Mr. Durrell.

(3 crs. Code: 15040-317,-318,-319. Formerly Geol. 21b, 22b, 23b.)

321-2. PRINCIPLES OF HISTORICAL GEOLOGY. An introduction to the study of the physical and biological history of the earth with particular emphasis on North America. Prerequisite: Geol. 101-2, 111-2 or equivalent. T Th 8:30; W 1:30-4:30; S 8:30-11:30. 38 Old Tech. Mr. Caster.

(4 crs. each sem. Code: 15040-321,-322. Formerly Geol. 9.)

330. ADVANCED GEOLOGY FIELD TRIP. A two weeks' field excursion immediately after spring examinations and before Summer School. Conferences once a week during the following semester and preparation of a comprehensive report to be submitted at the end of the first semester. For students who have already taken a Geologic Demonstration Trip (317, 318, 319) and Geol. 321-2 or its equivalent. Mr. Caster.

(3 crs. Code: 15040-330. Formerly Geol. 24b.)

401-2. PETROGRAPHY. Principles of crystal optics and recognition of transparent minerals under the microscope. Principles of petrology and classification of igneous rocks. Hand specimen and thin section study. Prerequisite: Geol. 301-2 or equivalent. M W 9:30; T Th 1:30-4:30. 32 Old Tech. Mr. Friedman.

(4 crs. each sem. Code: 15040-401,-402. Formerly Geol. 12.)

425-6. INVERTEBRATE PALEONTOLOGY. A systematic survey of the important groups of invertebrate fossils with special emphasis on their zoological character and importance as index fossils. Prerequisite: Geol. 101-2, 111-2 or equivalent, or a course in biology, zoology, or botany. M W 11:30; T Th 1:30-4:30. 38 Old Tech. Mr. Caster.

(4 crs. each sem. Code: 15040-425,-426. Formerly Geol. 8.)

448. WORLD PHYSIOGRAPHY. Study of selected regions in geomorphic terms. (Alternates with Geol. 444.) Prerequisite: Geol. 101-2, 111-2 or equivalent. M 1:30-3:30; additional hours to be arranged. 26 Old Tech. Mr. Barbour.  
(2nd sem. 3 crs. Code: 15040-448. Formerly Geol. 18b.)
449. PRINCIPLES OF GEOMORPHOLOGY. The interpretation of landscapes, especially as governed by geologic and climatic conditions. (Alternates with Geol. 443.) Prerequisite: Geol. 101-2, 111-2 or equivalent. M 1:30-3:30; additional hours to be arranged. 26 Old Tech. Mr. Barbour.  
(1st sem. 3 crs. Code: 15040-449. Formerly Geol. 11a.)
469. COMMON ROCKS. Use of megascopic characteristics to identify igneous, sedimentary, and metamorphic rocks and to interpret their conditions of origin and subsequent alteration. Prerequisites: Geol. 101-2, 111-2 and 301-2 or equivalents. Each laboratory section limited to seven students. Lecture, T Th 9:30; laboratory, Sec. I: F 1:30-4:30; Sec. II: W 1:30-4:30. 37 Old Tech. Mr. Rittenhouse.  
(1st sem. 3 crs. Code: 15040-469. Formerly Geol. 48a.)
470. BASIC SEDIMENTATION. Principles governing the transportation, deposition, and subsequent alteration of sediments, with particular emphasis on the physical and chemical environments of accumulation. Prerequisites: Geol. 101-2, 111-2 and 301-2 or equivalents. Each laboratory section limited to nine students. Lecture, T Th 9:30; laboratory, Sec. I: F 1:30-4:30; Sec. II: W 1:30-4:30. 37 Old Tech. Mr. Rittenhouse.  
(2nd sem. 3 crs. Code: 15040-470. Formerly Geol. 57b.)
- 501-2. READINGS FOR SENIORS. Required of all seniors majoring in geology; not open to other students.  
(3 crs. each sem. Code: 15040-501,-502. Formerly Geol. 50.)
- 503-4. SEMINAR. Expected of all advanced students in geology and geography. No additional credit. Th 4:30.  
(Code: 15040-503,-504. Formerly Geol. 70.)
- 561-2. ECONOMIC GEOLOGY. Mineral fuels, useful nonmetallics, and ore deposits. (Alternates with Geol. 589 and 980.) Two-weeks' field trip at end of spring semester. Prerequisite: Geol. 401-2 or equivalent. Lecture, M W 10:30, 37 Old Tech; laboratory, W 1:30-4:30, F 8:30-11:30, 32 Old Tech. Mr. Rich.  
(4 crs 1st sem., 5 crs. 2nd sem. Code: 15040-561,-562. Formerly Geol. 56.)

571-2. INDIVIDUAL WORK IN GEOLOGY. Credit depends on amount of work done. May be entered either semester. Geology Staff.

(Code: 15040-571,-572. Formerly Geol. 71.)

\*910. ADVANCED MINERALOGY. Morphological and mathematical relations of crystals. Systematic survey of important minerals not covered in Geol. 301-2. Prerequisite: Geol. 301-2 or equivalent. Hours to be arranged. 52 Old Tech. Mr. Friedman. (2nd sem. 3 crs. Code: 14040-910. Formerly Geol. 49b.)

921-2. STRATIGRAPHIC GEOLOGY. Principles of stratigraphy and general stratigraphy of North America. Round-table seminar course. Prerequisite: Geol. 321-2; 425-6 desirable but not required. M F 4:30-6:00. 38 Old Tech. Mr. Caster.

(3 crs. each sem. Code: 14040-921,-922. Formerly Geol. 15.)

925-6. ADVANCED MEGASCOPIC PALEONTOLOGY. By the instructor's permission. Prerequisite: Geol. 425-6 or a course in zoology. Two (or three) laboratory meetings per week to be arranged. 38 Old Tech. Mr. Caster.

(3 crs. each sem. Code: 14040-925,-926. Formerly Geol. 13.)

GROUND WATER. Principles of ground-water movement; measurement of quantity and quality. Study of supplies in selected localities. Prerequisites: Geol. 470, Phys. 101-2, or equivalents. Hours to be arranged. 34 Old Tech. Mr. Frey.

(2nd sem. 3 crs. Code: 14040-960. Formerly Geol. 27b.)

\*963-4. ADVANCED SEDIMENTATION. Methods of analyzing sediment samples; application of these methods to the identification and interpretation of sedimentary rocks. Prerequisites: Geol. 470 and 401-2 or equivalents. Limited to ten students. First semester, T 10:30; M 1:30-4:30; and one three-hour laboratory period to be arranged. Second semester, T Th 10:30; M 1:30-4:30. 34 Old Tech. Mr. Rittenhouse.

(3 crs. each sem. Code: 14040-963,-964. Formerly Geol. 58.)

979. GEOPHYSICS. A general course in practical geophysics, stressing geophysical methods used in guiding prospecting for oil and gas and for mineral deposits. The course is intended to give the geologist an understanding of geophysical maps and methods. By instructor's permission. Hours to be arranged. 32 Old Tech. Mr. Frey.

(1st sem. 3 crs. Code: 14040-979. Formerly Geol. 28a.)

\*Primarily for graduate students. May be taken by qualified undergraduates by special permission of the instructor.

Omitted during 1951-52: 109, Ancient Life; 209, Geology of Mineral Resources; 310, Topographic Mapping; 443, Physiography of Eastern United States; 444, Physiography of Western United States; 589, Structural Geology; 906, Petrology of Igneous Rocks; 908, Metamorphic Geology; 980, Interpretation of Aerial Photographs; 982, Glacial Geology.

#### GEOGRAPHY

The following year-courses may be entered in February with the instructor's permission: Geog. 311-2, 577-8.

100. (1st sem., repeated in 2nd sem.) FUNDAMENTALS OF HUMAN GEOGRAPHY. A survey of the natural environment and other factors as they affect human activities. Two field trips. Prerequisite for all other courses in geography except Geog. 307. First semester, M W F 11:30. 6 Old Tech. Second semester, M W F 2:30. 6 Old Tech. Mr. Coulter.  
(3 crs. Code: 15041-100. Formerly Geog. 60Ra, b.)
108. WORLD GEOGRAPHY. An introductory course in regional human geography. Prerequisite: Geog. 100 or equivalent. M W F 11:30. 6 Old Tech. Mr. Coulter.  
(2nd sem. 3 crs. Code: 15041-108. Formerly Geog. 60b.)
307. METEOROLOGY. Weather is studied from the points of view of observation, causes, and current methods of prediction. T Th 10:30-12:00. 26 Old Tech. Mr. Price.  
(1st sem. 3 crs. Code: 15041-307. Formerly Geog. 69a.)
308. CLIMATOLOGY. The major climatic regions of the world. Description, explanation, and distribution of each type. Prerequisite: Geog. 307 or 100. T Th S 10:30. 26 Old Tech. Mr. Price.  
(2nd sem. 3 crs. Code: 15041-308. Formerly Geog. 72b.)
- 311-2. GEOGRAPHY OF NORTH AMERICA. The natural regions of North America; present economic development and future possibilities as related to climate, relief, and resources. Prerequisite: Geog. 100 or equivalent. M W F 2:30. 37 Old Tech. Mr. Case.  
(3 crs. each sem. Code: 15041-311,-312. Formerly Geog. 67.)
317. GEOGRAPHY OF SOUTH AMERICA. Land and peoples; displacement of native cultures by Europeans; economic development of the modern states. Prerequisite: Geog. 100 or equivalent. M W F 11:30. 30 Old Tech. Mr. Price.  
(1st sem. 3 crs. Code: 15041-317. Formerly Geog. 61a.)