

*Examinations*

*Winter Quarter ends*

• Additional calendar items relating to a specific college schedule will be found in Part 2 of the *Bulletin* of that college.  
Calendars of the Evening College and the Summer School will be found in those *Bulletins*.

† See Part 1, page xiv for specific registration regulations.

Thurs.-Tues., Mar. 11-16  
Tues., Mar. 5

SUMMER SCHOOL (Terms—3½ weeks each)

First..... Mon., June 21-Tues., July 13  
Second..... Tues., July 13-Thurs., Aug. 5  
Third..... Thurs., Aug. 5-Fri., Aug. 27  
Summer Quarter-Term..... (see Summer School *Bulletin*)  
Summer Commencement..... Sat., Aug. 28

UNIVERSITY OF CINCINNATI BULLETIN

Announcement

of



*Division of  
Graduate Studies*

1970-1971

Published by the University of Cincinnati  
Van Wormer Administration Building  
Cincinnati, Ohio 45221  
Telephone 513-475-8000

raphic research at the  
quired. 4 gr. cr. Aut.

nodes of urban travel  
8:00-9:15. Mr. Howe.

a theory of geographic  
ns of spatial patterns  
ation. Assessment of  
ge, town, and project  
experience. 4 gr. cr.

tes. Study of quantita-  
tributions, spatial asso-  
rrent literature. 4 gr.  
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conomic and political  
r. Spr. Qtr. W 3:00.

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out 1900: theory and  
sposal of land; public  
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luster. Introduction to  
phy as reflected in the  
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ettings; seminar papers

location theory in rela-  
r. Stafford.

(Evening) Current ap-  
nd inter-urban. 4 gr. cr.

ism as areal classifica-  
. Hours to be arranged.

ation of mathematical  
construction and use of  
terature. 4 gr. cr. Spr.

preparation of thesis or  
d. Staff.

14-041-814,815,816. *Interdisciplinary Seminar: Frontiers of Urban Research.* Current research trends and techniques in the urban aspects of sociology, history, and geography, and the inter-relations among these research strands. For advanced graduate students, especially Ph.D. students. Admission only by permission of instructor. 3 gr. cr. ea. Qtr. Hours to be arranged. Messrs. Carroll, Miller, McNee. (Cross-listed with History and Sociology.)

14-041-871. *Thesis Research.* Independent individual research in the preparation of the thesis for the M.A. degree. Offered ea. Qtr. Hours and credits to be arranged. Staff.

14-041-971. *Dissertation Research.* Preparation of the Ph.D. dissertation. Offered ea. Qtr. Hours and credits to be arranged. Staff.

*Courses Omitted in 1970-1971:* 531-2-3, Advanced Physical Geography; 675, Historical Geography of U. S.; 772, Seminar: Urban Blight; 773, Seminar in Cultural Geographic Theory; 878, Seminar: Growth of Geographic Thought.

Geology

Head: Professor Lattman (20A OT); Professors Caster (4A OT), Jenks (32 OT), Larsen (20 OT), Pryor (25 OT); Associate Professors Durrell (33 OT), Huff (36 OT), Koucky (35 OT), Sunderman (31 OT); Assistant Professors Bullard (B10 OT), Warren (9A OT); Curator and Assistant Professor Davis (2 OT).

The Department offers work leading to the degrees of Master of Science and Doctor of Philosophy.

A student admitted to graduate work in geology is expected to have satisfactorily passed one-year courses in physics and chemistry and an approved course in calculus or statistics. Biology is recommended as preparation for graduate work chiefly in paleontology. A summer field course in geology or its equivalent, such as a summer at a marine biological station for paleontology majors, is required before admission or early in the graduate program.

Interviews and early exploratory conferences are required to help determine the student's prior training and aptitude for advanced studies and independent research.

Laboratories for research in paleontology, mineralogy, petrology, geochemistry, and sedimentology afford modern facilities for study. The Geological Museum provides extensive research collections particularly with respect to Paleozoic biota.

A requirement for either graduate degree is the satisfactory completion of a thesis or dissertation describing the results of the student's research work.

By agreement between the Secretary of the Smithsonian Institution and the President of the University of Cincinnati, graduate students in paleontology may apply for summer internships at the United States National Museum, to work with specialists there on subjects of mutual interest. Such work is commonly related to the subject of the student's dissertation. Academic year fellowships at the Smithsonian are available to outstanding advanced students when the Language and Candidacy examinations at the University are satisfactorily completed. This affords the student opportunity to work under the joint supervision of University and Smithsonian paleontologists. Satisfactory research work under this program carries University graduate credit.



**14-041-771. Seminar in Graduate Research.** Introduction to geographic research at the graduate level; for beginning graduate students; research papers required. 4 gr. cr. Aut. Qtr. M 3:00-5:30. Mr. Stafford.

**14-041-777. Urban Transportation I.** Interrelationships of various modes of urban travel and their impact on urban development. 3 gr. cr. Win. Qtr. TTh 8:00-9:15. Mr. Howe. (Identical with Civil Engr. 20-257-771.)

**14-041-778. Seminar in Geographic Development.** Approaches to a theory of geographic development, emphasizing man-environment relationships in terms of spatial patterns and processes. The roles and importance of resources and population. Assessment of alternative economic and social development. Models on the village, town, and project level, with examples especially from Appalachia and the African experience. 4 gr. cr. Aut. Qtr. MWF 10:00. Mr. Roder.

**14-041-780. Geographic Methods: Advanced Quantitative Techniques.** Study of quantitative methods specifically designed for the analysis of spatial distributions, spatial associations, and spatial series. Problems and applications from the current literature. 4 gr. cr. Win. Qtr. MWF 1:00. Mr. Roder. Prereq.: Math. 107-8-9, or Geog. 680, or consent of instructor.

**14-041-781. Research Seminar in Population Geography.** Problems in the geographic analysis of population distribution; population as related to economic and political geography; studies at local, regional, and global scales. 4 gr. cr. Spr. Qtr. W 3:00. Mr. Wolf.

**14-041-782. Seminar in Historical Geography.** Case studies in the establishment and evolution of Anglo-American rural settlement from 1607 to about 1900: theory and practice of colonization; acquisition, survey-subdivision and disposal of land; public land policies and legislation; small-town planning. 4 gr. cr. Win. Qtr. Hours to be arranged. Mr. Ryan.

**14-041-783. Advanced Geography of the United States.** Research Seminar on selected aspects of the Ohio Valley and other areas in the United States. 4 gr. cr. Aut. Qtr. Hours to be arranged.

**14-041-784,785,786. Seminar in the Location Theory Research Cluster.** Introduction to major current ideas in urban-economic-transportation geography as reflected in the professional literature of the last decade; movement, networks, nodes, hierarchies, surfaces, spatial decision making; perception, and institutional settings; seminar papers required. 4 gr. cr. ea. Qtr. Tu 3:00-5:30. Mr. McNee.

**14-041-788. Seminar: Geography of Manufacturing.** Geographic location theory in relation to secondary production. 4 gr. cr. Win. Qtr. M 3:00. Mr. Stafford.

**14-041-789. Research Seminar: Geography of Transportation. (Evening)** Current approaches in network analysis, at a variety of scales, intra-urban and inter-urban. 4 gr. cr. Win. Qtr. M 7:00-10:00 p.m. Mr. Hebert.

**14-041-791. The Regional Concept and Area Analysis.** Regionalism as areal classification. Intra and inter regional systems analysis. 4 gr. cr. Spr. Qtr. Hours to be arranged.

**14-041-792. Geographic Methods: Research Models.** Application of mathematical methods to relationships indicated by geographic theory. The construction and use of spatial models, especially multi-variate, in current geographic literature. 4 gr. cr. Spr. Qtr. MWF 1:00. Mr. Hebert and Staff.

**14-041-797. Seminar in Graduate Research II.** Research design; preparation of thesis or dissertation proposal. 4 gr. cr. Aut. Qtr. Hours to be arranged. Staff.

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*For Advanced Undergraduate and Graduate Students*

15-040-037,038,039. *Geology Seminar*. Required of all graduate students majoring in geology. No credit. W 4:00-5:00. Staff.

15-040-521,522,523. *Invertebrate Paleontology*. Paleobiology of common invertebrate fossils. 3 gr. cr. ea. Qtr. TTh 9:30; W 1:00-4:00. Mr. Warren. Prereq.: Geol. 321-2-3, or equivalent, or a full course in biology, zoology, or botany.

15-040-531,532,533. *Stratigraphy and Sedimentation*. Principles of stratigraphy and sedimentation. Physical and biological processes, environmental interpretation, facies analysis, correlation, stratigraphic analysis, basin analysis, and tectonics. 3 gr. cr. ea. Qtr. MW 11:00; M 1:00-4:00. Mr. Pryor. Prereq.: Geol. 301-2-3; 321-2-3.

15-040-561,562. *Interpretation of Aerial Photographs*. 3 gr. cr. Aut., Win. Qtrs. MW 9:00; F 8:00-11:00. Mr. Durrell. Prereq.: Geol. 321-2-3.

15-040-576. *Advanced Geology Field Trip*. A two weeks' field excursion during the Summer of 1970. Historical and regional geology. Conferences and report in Aut. Qtr. 3 gr. cr. Aut. Qtr. Mr. Pryor. Prereq.: Permission of instructor.

15-040-578. *World Physiography*. 3 gr. cr. Aut. Qtr. MWF 1:00. Mr. Durrell.

15-040-581. *Basic Photography for the Geological Sciences*. Systematic study of photographic theory and technique for geological research, with emphasis on documentation and illustration. 2 gr. cr. Win. Qtr. M 12:00. 3 laboratory hours to be arranged. Mr. Bullard.

15-040-641,642. *Optical Mineralogy*. Crystal optics, use of the polarizing microscope for recognition of transparent substances in immersion media and thin sections. 4 gr. cr. Aut., Win. Qtrs. W 12:00-4:00; F 1:00-5:00. Mr. Sunderman.

15-040-661,662,663. *Igneous and Metamorphic Petrology*. Advanced study of crystalline rocks: occurrence, genesis, petrography. 5 gr. cr. ea. Qtr. MW 8:00. Lab. to be arranged. Mr. Larsen. Prereq.: Geol. 401-2-3 (or equivalent).

15-040-675. *Geology of Ore Deposits I*. Aut. Qtr. TTh 8:00-9:30; M 1:00-4:00. Mr. Jenks. Prereq.: Geol. 404 (or equivalent).

15-040-676. *Geology of Ore Deposits II*. Win. Qtr. TTh 8:00-9:30; M 1:00-4:00. Mr. Jenks. Prereq.: Geol. 675 (or equivalent).

15-040-677. *Regional Tectonics*. A comparative study of the tectonic development of selected Paleozoic and younger orogenic belts (Appalachian, Alpine, Himalayan, Indonesian, etc.). 3 gr. cr. Win. Qtr. TTh 11:00-12:30; Th 2:00-5:00. Mr. Jenks. Prereq.: Geol. 404 (or equivalent).

15-040-678. *Geotectonics*. A course in global tectonics dealing with geosynclines, ocean floor spreading, continental drift, etc., and leading to a critical appraisal of geotectonic models. 3 gr. cr. Spr. Qtr. TTh 11:00-12:30; Th 2:00-5:00. Mr. Jenks. Prereq.: Geol. 672.

*Primarily for Graduate Students*

14-040-711. *Palynology*. An introduction to the study of organic-walled microfossils, with emphasis on spores, pollen, and dinoflagellates. 3 gr. cr. Aut. Qtr. MW 8:00; Th 2:00-5:00. Mr. Warren. Prereq.: Geol. 521-2-3 (or equivalent).

14-040-712. *Micropaleontology*. Conodonts and Ostracods. Morphology, biology, and geologic occurrence of conodonts and ostracods. 3 gr. cr. Win. Qtr. MW 8:00; Th 2:00-5:00. Mr. Warren. Prereq.: Geol. 521-2-3 (or equivalent).

14-040-713. *Micropaleontology*. Occurrence of fossils during Spring vacation or in J.

14-040-775. *Field Trip*. during Spring vacation or in J.

14-040-776. *Field Trip*. during Spring vacation or in J.

14-040-778. *Field Trip*. during Spring vacation or in J.

14-040-779. *Field Trip*. Report. 2 gr. cr.

14-040-780. *Mineralogy*. Staff.

14-040-811,812. *Mineralogy*. mineral analysis. cr. ea. Qtr. TT

14-040-814,815. *Mineralogy*. groups of sediments. 4 gr. cr. ea. Qtr.

14-040-817,818. *Mineralogy*.

14-040-821. *Mineralogy*. Messrs. Caster

14-040-822,823. *Mineralogy*. and French de. of instructor r

14-040-873. *Mineralogy*. Jenks.

14-040-874. *Mineralogy*. F 1:00-5:00.

14-040-881. *Mineralogy*. Caster, Davis,

14-040-882. *Mineralogy*. Qtr. Messrs.

14-040-883. *Mineralogy*. Mr. Jenks.

14-040-884. *Mineralogy*.

14-040-885. *Mineralogy*. Jenks.

14-040-886. *Mineralogy*. Durrell.

14-040-887. *Mineralogy*. Mr. Pryor.



✓ 14-040-713. *Micropaleontology*. Foraminifera. Morphology, biology, and geologic occurrence of foraminifera. 3 gr. cr. Spr. Qtr. MW 8:00; Th 2:00-5:00. Mr. Warren. Prereq.: Geol. 521-2-3 (or equivalent).

14-040-775. *Field Studies in Stratigraphy and Sedimentation*. 10- to 14-day field trip during Spring vacation or in June. Report. 2 gr. cr. Mr. Pryor.

14-040-776. *Field Studies in Igneous and Metamorphic Petrology*. 10- to 14-day field trip during Spring vacation or in June. Report. 2 gr. cr. Mr. Larsen.

14-040-778. *Field Studies in Structural Geology*. 10- to 14-day field trip during Spring vacation or in June. Report. 2 gr. cr. Mr. Jenks.

14-040-779. *Field Studies in Volcanology*. 2-week field trip in September or December. Report. 2 gr. cr. Mr. Larsen.

14-040-780. *Methods of Geological Instruction*. Credits to be arranged. Offered ea. Qtr. Staff.

✓ 14-040-811,812,813. *Geochemistry*. Advanced theory and techniques in rock and mineral analysis; X-ray fluorescence, flame photometry, electron microscopy, etc. 3 gr. cr. ea. Qtr. TTh 9:30-11:00; M 1:00-4:00. Mr. Koucky.

14-040-814,815,816. *Advanced Sedimentary Petrology*. Advanced study of the major groups of sedimentary rocks, their composition, origins and geological interpretations. 4 gr. cr. ea. Qtr. TTh 8:00-9:30; Tu 1:00-4:00. Mr. Pryor.

14-040-817,818,819. *Seminar in Petrology*. 3 gr. cr. ea. Qtr. MWF 11:00. Mr. Larsen.

14-040-821. *Seminar in Paleontologic Principles*. 3 gr. cr. Aut. Qtr. MWF 9:00. Messrs. Caster, Davis, Warren. Permission of instructors required.

14-040-822,823. *Seminar in Megascopic Paleontology*. Reading knowledge of German and French desirable. 3 gr. cr. Win., Spr. Qtrs. MWF 9:00. Mr. Caster. Permission of instructor required.

14-040-873. *Seminar in Economic Geology*. 3 gr. cr. Spr. Qtr. TTh 9:30-11:00. Mr. Jenks.

14-040-874. *Universal Stage Microscope Studies*. 4 gr. cr. Spr. Qtr. W 12:00-4:00; F 1:00-5:00. Mr. Sunderman.

14-040-881. *Research—Paleontology*. Credit to be arranged. Offered ea. Qtr. Messrs. Caster, Davis, Warren.

14-040-882. *Research—Mineralogy, Geochemistry*. Credit to be arranged. Offered ea. Qtr. Messrs. Bullard, Huff, Koucky, Sunderman.

14-040-883. *Research—Structural Geology*. Credit to be arranged. Offered ea. Qtr. Mr. Jenks.

14-040-884. *Research—Petrology*. Credit to be arranged. Offered ea. Qtr. Mr. Larsen.

14-040-885. *Research—Economic Geology*. Credit to be arranged. Offered ea. Qtr. Mr. Jenks.

14-040-886. *Research—Geomorphology*. Credit to be arranged. Offered ea. Qtr. Mr. Durrell.

14-040-887. *Research—Sedimentary Petrology*. Credit to be arranged. Offered ea. Qtr. Mr. Pryor.



- 14-040-888. *Research—Stratigraphy—Sedimentology*. Credit to be arranged. Offered ea. Qtr. Mr. Pryor.
- 14-040-889. *Research—Clay Mineralogy*. Credit to be arranged. Offered ea. Qtr. Mr. Huff.
- 14-040-891. *Master's Thesis Research—Paleontology*. Credit to be arranged. Offered ea. Qtr. Messrs. Caster, Davis, Warren.
- 14-040-892. *Master's Thesis Research—Mineralogy—Geochemistry*. Credit to be arranged. Offered ea. Qtr. Messrs. Bullard, Huff, Koucky, Sunderman.
- 14-040-893. *Master's Thesis Research—Structural Geology*. Credit to be arranged. Offered ea. Qtr. Mr. Jenks.
- 14-040-894. *Master's Thesis Research—Petrology*. Credit to be arranged. Offered ea. Qtr. Mr. Larsen.
- 14-040-895. *Master's Thesis Research—Economic Geology*. Credit to be arranged. Offered ea. Qtr. Mr. Jenks.
- 14-040-896. *Master's Thesis Research—Geomorphology*. Credit to be arranged. Offered ea. Qtr. Mr. Durrell.
- 14-040-897. *Master's Thesis Research—Sedimentary Petrology*. Credit to be arranged. Offered ea. Qtr. Mr. Pryor.
- 14-040-898. *Master's Thesis Research—Stratigraphy—Sedimentology*. Credit to be arranged. Offered ea. Qtr. Mr. Pryor.
- 14-040-971. *Doctoral Dissertation Research—Paleontology*. Credits to be arranged. Offered ea. Qtr. Permission of adviser required. Mr. Caster.
- 14-040-972. *Doctoral Dissertation Research—Mineralogy—Geochemistry*. Credits to be arranged. Offered ea. Qtr. Permission of adviser required. Messrs. Koucky, Sunderman.
- 14-040-973. *Doctoral Dissertation Research—Structural Geology*. Credits to be arranged. Offered ea. Qtr. Permission of adviser required. Mr. Jenks.
- 14-040-974. *Doctoral Dissertation Research—Petrology*. Credits to be arranged. Offered ea. Qtr. Permission of adviser required. Mr. Larsen.
- 14-040-975. *Doctoral Dissertation Research—Economic Geology*. Credits to be arranged. Offered ea. Qtr. Permission of adviser required. Mr. Jenks.
- 14-040-976. *Doctoral Dissertation Research—Geomorphology*. Credits to be arranged. Offered ea. Qtr. Permission of adviser required. Mr. Durrell.
- 14-040-977. *Doctoral Dissertation Research—Sedimentary Petrology*. Credit to be arranged. Offered ea. Qtr. Permission of adviser required. Mr. Pryor.
- 14-040-978. *Doctoral Dissertation Research—Stratigraphy—Sedimentology*. Credits to be arranged. Offered ea. Qtr. Mr. Pryor.
- Courses Omitted in 1970-1971:* 572, Physiography of Western U. S.; 573, Physiography of Eastern U. S.; 574, Glacial Geology; 575-577, Alternate Advanced Geology Field Trips; 580, Advanced Geomorphology; 672, Elements of Structural Analysis; 673, Advanced Structural Geology; 701-2-3, Advanced Sedimentation; 777, Field Studies in Mining Geology—Ore Deposits; 801-2-3, Advanced Mineralogy I.

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\*Autumn

Holiday, Washington and Lincoln's

Birthday

Classes end

Examinations

Winter Quarter ends

\*Additional calendar items relating to a specific college schedule will be found in Part 2 of the *Bulletin* of that college.  
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†See Part 1, page xiv for specific registration regulations.

Mon., Feb. 15

Tues., M

Thurs.-Tues., Mar. 11-16

Tues., Mar. 16

Examinations

Summer Quarter ends

Fri., Aug. 27

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Summer Quarter-Term . . . . . (see Summer School *Bulletin*)

Summer Commencement . . . . . Sat., Aug. 28

UNIVERSITY OF CINCINNATI BULLETIN

Announcement

of



# McMicken College of Arts and Sciences

1970-1971

Published by the University of Cincinnati  
Van Wormer Administration Building  
Cincinnati, Ohio 45221  
Telephone 513-475-8000



15-041-679. *Field Work and Research Methods.* Training in field study, methods, and techniques, including mapping, air photo use, interviewing, and report writing, with stress on urban areas. 3 ug. cr. Aut. Qtr. F 3:00-5:30.

15-041-680. *Geographic Methods: Quantitative Techniques.* Introduction to basic statistical analysis, including the collection of data and standard statistical techniques. 3 ug. cr. Aut. Qtr. MWF 1:00. Mr. Roder.

*Honors Courses*

15-041-181,182,183. *Introduction to the Study of Geography. (Honors).* The agency of Man on the Earth. Departmental approval required. 3 ug. cr. ea. Qtr. TTh 9:30-11:00. Mr. Ryan.

15-041-194,195,196. *McMicken Scholars on Independent Studies.* Consent of instructor required. Credits and hours to be arranged. Staff.

15-041-198. *Geography Honors Colloquium I: Field Studies in Landscape Change.* An introduction to geography through field work. Three overnight weekend excursions into Kentucky and West Virginia. Limited to McMicken scholars. 3 ug. cr. Aut. Qtr. W 12:00. Mr. Ryan.

15-041-199. *Geography Honors Colloquium II: Appalachia and the Future Environment of North America.* The Appalachian experiment in regional planning and resource deployment; new urban and rural communities; dynamics and directions of environmental change. Limited to McMicken scholars. 3 ug. cr. Spr. Qtr. TTh 9:30-11:00. Mr. Ryan.

15-041-439. *Senior Readings.* Exposure, through assigned readings and discussion, to all major branches of geographic writing, with stress on classic monographs. Required of majors. 3 ug. cr. Spr. Qtr. Hours to be arranged. Staff.

15-041-501,502,503. *Problems in Geography.* Individual research problems. Credit depends on amount of work completed. Staff.

15-041-601,602,603. *Field Projects.* Execution of individual field projects under regular faculty supervision. Credit varies with work completed. Hours arranged. Staff.

*Courses Omitted in 1970-1971:* 382, Middle America; 383, South America; 386, Soviet Union; 388, Middle East; 481, Research Seminar; 531-2-3, Advanced Physical; 675, Historical Geography of the United States.

**Geology**

Professors Lattman (Head, 20 OT), Caster (4A OT), Jenks (32 OT), Larsen (OT), Pryor (25 OT); Associate Professors Durrell (33 OT), Huff (36 OT), Koucky (35 OT), Sunderman (31 OT); Assistant Professors Bullard (B OT), Davis (2 OT), Warren (9A OT).

Entering Freshmen intending to major in Geology may apply for the W. H. Bucher Scholarship (see page 19).

Geol. 101-2-3 and 111-2-3 taken together are preliminary to all advanced courses in geology. Students who have completed 104-5-6 and wish to major in geology may be asked to take 111-2-3.

To qualify for the B.S. degree in geology a student shall include in his program Geol. 037-8-9, 271 (or 272 or 273), 301-2-3, 321-2-3, 401-2-3, 404-5-6, 437-8-9; Chem. 101-2-3, 111-2-3, 9 to 14 credits of Calculus and 9 to 15 credits of

physics or biology. In addition, students must complete at least 18 credits in geology which include 521-2-3 and 531-2-3, and 5 credits in geology fulfilled by German, French, or Latin.

The B.S. major in geology is essential for a professional career. An M.S. degree one year after the B.S. may be obtained from the adviser.

All students entering geology or its equivalent is required to complete a major by summer work at a major university or by summer field experience. This is a requirement of the staff.

Each autumn a four-day field trip and

15-040-101,102,103. *Introduction to Geology.* 3 ug. cr. ea. Qtr. Bullard. Must be taken as a science requirement.

101. Weathering and Geomorphology.

102. Volcanoes; Earthquakes; Seismology.

103. Stratigraphy.

15-040-111,112,113. *Introduction to Geology.* 3 ug. cr. ea. Qtr. 101-2-3. Emphasis on field work, maps and aerial photography. 2:00-5:00. Messrs. Huff and Bullard.

15-040-104,105,106. *Geology.* 3 ug. cr. ea. Qtr. and teachers not expected to be taken as a requirement when taken as a science requirement. Lect., MW 8:00. Two-hour sections: Sec. 4, Tu 8:00-10:00; Sec. 5, Tu 10:00-12:00; Sec. 6, Tu 12:00-2:00; Sec. 7, Tu 2:00-4:00; Sec. 8, Tu 4:00-6:00; Sec. 9, Tu 6:00-8:00; Sec. 10, Th 8:00-10:00; Sec. 11, Th 10:00-12:00; Sec. 12, Th 12:00-2:00; Sec. 13, Th 2:00-4:00; Sec. 14, Th 4:00-6:00; Sec. 15, F 3:00-5:00.

15-040-181,182,183. *Introduction to Geology.* 3 ug. cr. ea. Qtr. Departmental approval required.

15-040-191,192,193. *Introduction to Geology.* 2 ug. cr. ea. Qtr. Departmental approval required.

15-040-194,195,196. *McMicken Scholars on Independent Studies.* Consent of instructor required. Credits and hours to be arranged. Staff.

15-040-199. *Geology Honors Colloquium I: Field Studies in Landscape Change.* An introduction to geography through field work. Three overnight weekend excursions into Kentucky and West Virginia. Limited to McMicken scholars. 3 ug. cr. Spr. Qtr. W 12:00. Mr. Ryan.



physics or biology. In addition to the basic core of geology courses listed above, at least 18 credits in advanced courses in geology must be elected and should include 521-2-3 and 531-2-3 where feasible. The language requirement must be fulfilled by German, French, or Russian prior to the senior year.

The B.S. major may lead to graduate work in geology, usually considered essential for a professional career. A properly planned program may lead to the M.S. degree one year after obtaining the B.S. Typical programs may be obtained from the adviser.

All students are required to take a six to eight weeks' summer field course or its equivalent is required. Alternative acceptable field training may be obtained by summer work at a marine biological station or with one of the geological surveys, or by summer field employment by a mining or oil company, with the approval of the staff.

Each autumn all students majoring in geology are expected to attend a four-day field trip and should anticipate the cost, about \$50.

*15-040-101,102,103. Introduction to Geology.* A survey of physical and historical geology. 3 ug. cr. ea. Qtr. Sec. I, TTh 9:30-11:00; Sec. II, MWF 1:00. Messrs. Huff, Bullard. Must be taken concurrently with Geol. 111-2-3, with which it satisfies the science requirement.

*101.* Weathering; Mass wasting; Streams; Ground Water; Glaciers; Oceanography.

*102.* Volcanoes; Minerals; Rocks; Geologic time; Metamorphism; Sedimentation; Seismology; Mountain building; Ore deposits.

*103.* Stratigraphy; Paleontology; History of North America.

*15-040-111,112,113. Introduction to Geology Laboratory.* Designed to accompany 101-2-3. Emphasis on field trips, rock and mineral study, topographic and geologic maps and aerial photographs. 2 ug. cr. ea. Qtr. Sec. I, MW 2:00-5:00; Sec. II, TTh 2:00-5:00. Messrs. Huff, Bullard and assistants.

*15-040-104,105,106. Geology of Man's Environment.* An elementary course for students and teachers not expecting to major in earth sciences. Design to fulfill the B.A. science requirement when taken with an elementary course in another science. 3 ug. cr. ea. Qtr. Lect., MW 8:00. Two-hour lab., Sec. 1, M 10:00; Sec. 2, M 1:00; Sec. 3, M 3:00; Sec. 4, Tu 8:00; Sec. 5, Tu 10:00; Sec. 6, Tu 2:00; Sec. 7, W 10:00; Sec. 8, W 1:00; Sec. 9, W 3:00; Sec. 10, Th 8:00; Sec. 11, Th 10:00; Sec. 12, Th 2:00; Sec. 13, F 10:00; Sec. 14, F 1:00; Sec. 15, F 3:00. Sec. 16, F 8:00; Sec. 17, Tu 4:00; Sec. 18, Th 4:00. Staff.

*15-040-181,182,183. Introduction to Geology. (Honors).* Departmental approval required. 3 ug. cr. ea. Qtr. TTh 9:30-11:00. Mr. Huff.

*15-040-191,192,193. Introduction to Geology Laboratory. (Honors).* Departmental approval required. 2 ug. cr. ea. Qtr. TTh 2:00-5:00. Mr. Huff.

*15-040-194,195,196. McMicken Scholars on Independent Studies.* Consent of instructor required. Credits and hours to be arranged. Staff.

*15-040-199. Geology Honors Colloquium.* The development of Geological thought as illustrated in the geologic setting of the Cincinnati region. Readings in classical literature, discussions leading to the frontiers of modern Geology. Limited to McMicken scholars. 3 ug. cr. Spr. Qtr. M 2:00-5:00. Mr. Durrell and Staff.



- 15-040-273. *Geologic Demonstration Trip*. A two-weeks' field excursion southeast across Kentucky to the Great Smoky Mountains and the Blue Ridge in North Carolina during September 1970. One-hour conference weekly during the Autumn Quarter and a report at the end of the Quarter. 3 ug. cr. Aut. Qtr. M 12:00. Mr. Koucky.
- 15-040-301,302,303. *Mineralogy*. Crystallography, crystal chemistry, atomic structures, geochemistry, and systematics of the common minerals. 3 ug. cr. ea. Qtr. TTh 11:00; Th 2:00-5:00. Mr. Koucky. Prereq.: College chemistry or permission of instructor.
- 15-040-321,322,323. *Historical Geology*. The physical and biological history of the earth with particular emphasis on North America. Field trips. 4 ug. cr. ea. Qtr. TTh 8:00; Tu 2:00-5:00; S 9:00-12:00. Mr. Caster. Prereq.: Geol. 101-2-3, 111-2-3 or 104-5-6.
- 15-040-401,402,403. *Elementary Petrology*. Aut. Qtr.: The rock cycle, hand lens petrography; Win. Qtr.: Introduction to the polarizing microscope; Spr. Qtr.: Thin section studies of igneous, sedimentary and metamorphic rocks. 3 ug. cr. ea. Qtr. Tu 11:00, TTh 2:00-5:00. Staff. Prereq.: Geol. 303.
- 15-040-404. *Elementary Structural Geology*. Introductory survey covering principles of deformation, faults, folds, lineations, foliation and tectonic significance of structures. 3 ug. cr. Aut. Qtr. MW 10:00, F 2:00-5:00. Prereq.: Geol. 403.
- 15-040-405. *Principles of Geomorphology*. Fundamental concepts in the interpretation of world landscapes. The significance of land forms in terms of lithology, structure and geologic history. 3 ug. cr. Win. Qtr. MW 10:00, F 2:00-5:00. Prereq.: Geol. 404 or permission of instructor. Mr. Durrell.
- 15-040-406. *Major Problems in Geology*. A study of current major problems relating to the interpretation of the origin of the earth's crust such as continental drift, sea floor spreading, crust-mantle petrology, isostasy and geochemical distribution of the elements. 3 ug. cr. Spr. Qtr., MW 10:00, F 2:00-5:00. Staff.
- 15-040-037,038,039. *Geology Seminar*. Required of all juniors and seniors majoring in geology. No credit. W 4:00. Staff.
- 15-040-437,438,439. *Senior Readings and Research*. Required of seniors majoring in geology; not open to other students. 2 ug. cr. ea. Qtr. Hours to be arranged. Staff.
- 15-040-487,488,489. *Individual Work in Geology*. Credit depends on amount of work done. May be entered any Quarter. Staff.
- 15-040-521,522,523. *Invertebrate Paleontology*. Paleobiology of common invertebrate fossils. 3 ug. cr. ea. Qtr. TTh 9:30; W 1:00-4:00. Mr. Warren. Prereq.: Geol. 323 or equivalent, or a full course in biology, zoology, or botany.
- 15-040-531,532,533. *Stratigraphy and Sedimentation*. Principles of stratigraphy and sedimentation. Physical and biological processes, environmental interpretation, facies analysis, correlation, stratigraphic analysis, basin analysis, and tectonics. 3 ug. cr. ea. Qtr. MW 11:00; M 1:00-4:00. Mr. Pryor. Prereq.: Geol. 303; 323.
- 15-040-561,562. *Interpretation of Aerial Photographs*. 3 ug. cr. Aut., Win. Qtrs. MW 9:00; F 8:00-11:00. Mr. Durrell. Prereq.: Geol. 321-2-3.
- 15-040-576. *Advanced Geology Field Trip*. A two weeks' field excursion during September 1970. Conferences and report in Autumn Quarter. 3 ug. cr. Aut. Qtr. Prereq.: Permission of instructor. Mr. Pryor.
- 15-040-578,579. *World Physiography*. 3 ug. cr. Aut., Win. Qtrs. MWF 1:00. Mr. Durrell. Prereq.: Geol. 321-2-3 and a course in Geomorphology or its equivalent.

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**15-040-581. Basic Photography for the Geological Sciences.** Systematic study of photographic theory and technique for geologic research, with emphasis on documentation and illustration. 2 ug. cr. Win. Qtr. M 12:00-1:00. 3 laboratory hours to be arranged. Mr. Bullard. X

**15-040-641,642. Optic Mineralogy.** Crystal optics, use of the polarizing microscope for recognition of transparent substances in immersion media and thin sections. 4 ug. cr. ea. Qtr. Aut., Win. Qtrs. W 12:00-4:00; F 1:00-5:00. Mr. Sunderman. X

**15-040-661,662,663. Igneous and Metamorphic Petrology.** Advanced study of crystalline rocks: occurrence, genesis, petrography. 5 ug. cr. ea. Qtr. MW 8:00, MW 2:00-5:00. Mr. Larsen. Prereq.: Geol. 401-2-3, or equivalent.

**15-040-675. Geology of Ore Deposits I.** Aut. Qtr. 3 ug. cr. TTh 8:00; F 2:00-5:00. Prereq.: Geol. 404 or equivalent. Mr. Jenks. X

**15-040-676. Geology of Ore Deposits II.** Win. Qtr. 3 ug. cr. TTh 8:00; M 1:00-4:00. Prereq.: Geol. 675 or equivalent. Mr. Jenks. X

**15-040-677. Regional Tectonics.** A comparative study of the tectonic development of selected Paleozoic and younger orogenic belts (Appalachian, Alpine, Himalayan, Indonesian, etc.). 3 ug. cr. ~~Win.~~ <sup>Aut.</sup> Qtr. TTh 11:00, Th 2:00-5:00. Mr. Jenks. Prereq.: Geol. 404 or equivalent. X

**15-040-678. Geotectonics.** A course in global tectonics dealing with geosynclines, ocean floor spreading, continental drift, etc., and leading to a critical appraisal of geotectonic models. 3 ug. cr. ~~Spr.~~ <sup>Wint.</sup> Qtr. TTh 11:00, Th 2:00-5:00. Mr. Jenks. Prereq.: Geol. 672. X

**Courses Omitted in 1970-1971:** 271-2, Alternate Routes Geologic Demonstration Field Trip; 572, Physiography of Western U. S.; 573, Physiography of Eastern U. S.; 574, Glacial Geology; 575,577, Alternate Advanced Geology Field Trips; 580, Advanced Geomorphology; 672, Elements of Structural Analysis; 673, Advanced Structural Geology.

**Germanic Languages and Literatures**

Professors Stern (Head, 228 McM), Friedrichsmeyer (229 McM), Merkel (229 McM), Slessarev (231 McM); Visiting Professor H. Neumann (231 McM); Associate Professors Glenn (32 McM), Syring (230 McM); Adjunct Associate Professor Schlawe (32 McM); Assistant Professor Harris (32 McM); Instructors Clark (232 McM), Cobbs (232 McM), Obrath (32 McM), Rudolf (232 McM); Visiting Lecturer G. Neumann (232 McM).

German 101-2-3, 104-5-6, 201-2-3, 204-5-6, and 207-8-9 will not count toward a major in German. German 231-2-3, 401-2-3 or equivalents, 437-8-9, shall be offered as a part of the requirement toward a major in German. In addition, German majors are expected to select German 171-2-3 as one of their elective courses in preparation for Part I (German Culture) of their Comprehensive Examinations.

All advanced courses in German, except Senior Readings (437-8-9), may be entered at the beginning of the Winter or Spring Quarter, with the instructor's permission. To enter 100- and 200-level courses after the Autumn Quarter, students must obtain permission of the Department Head.

**15-001-221,222,223. World Literature.** For description, see page 51.

The Department offers a Work-Study Program in Germany. For details see page 28.