Cincinnati Christian University
Foster School of Biblical Studies, Arts & Sciences

GEOLOGY 1 NSCI 210

Fall 2018, PH 105/102 TH 12:00 p.m. – 1:15 p.m.
3 Semester Credit Hours

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COURSE PLAN

Description: An overview of sedimentary geological materials, processes, and history in the context of nature as creation, involving lectures and a field trip to Mammoth Cave and Cumberland Falls (required).

Geology, NSCI 210, is a holistic consideration of the Sedimentary Materials, Processes and History of Planet Earth. [NSCI 211 (Spring) offers Igneous and Metamorphic Materials, Crust Tectonics, and the other Surface Phenomena in the History of our Planet.] Our philosophy of science is Hebrew/Christian in this course offering.

Rationale: The Fall and Spring courses meet the 6 hour science requirement for certain degree programs, 3 hours with biology in others. Geology NSCI 210 and 211 constitute a full and complete learning experience in the Geological sciences on the fundamentals level. Both are laboratory science courses equal to university instruction.

OBJECTIVES: Genesis Chapter One features the incredible design in Creation; Romans 1:20— The power and divinity of our Creator are seen in the world of nature, the behavior of which is presented throughout the Scriptures; Psalm 19 equates physical Creation with the Word of God. We strive to be able to "READ" the REVELATION OF GOD in Creation.

GEOLOGY WILL:

1. Increase our appreciation for the UNIQUENESS OF THE PLANET EARTH. Consider the fact that "something happened here" to make life possible on this planet which occurred no where else in our solar system (insofar as our present information goes).
2. Help us make our lives more exciting and safe, as we engage the geological world ourselves and with those around us locally and on distant mission fields.
3. Enable us to realize the effective ways in which God is revealing His own Being and Nature to us throughout the physical universe and on this planet specifically.
4. Provide us with understanding that affords joy, appreciation, satisfaction and safety as we travel about this country and over the world.
5. Make us informed and cautious about processes and events which enhance our environment, or conversely, about the unwise environmental activities which are hazardous and/or cause pollution—all of which could have a direct bearing on our personal lives in towns, cities, on farms, in homes and churches.
6. Give us comfort as Christians to understand the harmonious and beneficial relation between science and Christianity, knowledge and faith ("not a leap in the dark").
7. Afford us insights into the methods and tools of science so that we may develop meaningful apologetical concepts and useful illustrations for teaching, preaching, writing, and personal outreach (in historical and archeological research).
8. Provide a valuable data source base upon which we may build and develop vital Christian Camp courses and syllabi on teaching materials with a strong Creation philosophy of education. [Both NSCI 210 & 211 are critical for this work.]
9. **This course will change your life!**

You will have an elementary understanding, and a useful perspective and foundation for certain areas of discussion in this science upon successful completion of this course.

Assessment: Your understanding of the course material and ability to apply that knowledge in every-day life will be assessed in the following ways: 1) knowledge of material including scientific terms, concepts, and examples on quizzes, exams and research report (A&S 1, 2, and 4); 2) analysis of examples and real-life situations on research report and field trips (A&S 1-3); 3) evaluation of geological settings on field trips and road log preparation (A&S 1-4), 4) Awareness and appreciation regarding how God works in time and space (A&S 5).

Outcomes for the Arts & Sciences Department

A&S 1 Communicate effectively in both oral and written forms in a variety of rhetorical contexts, including Standard English

A&S 2 Adeptly utilize modern research and writing tools

A&S 3 Identify decisive events and ideas in the human experience and assess their influences on modern culture and thought

A&S 4 Employ critical and creative thinking and mathematic and scientific principles for problem solving, literary and socio-cultural analysis, intercultural understanding, and research in the sciences and humanities

A&S 5 Demonstrate the integration of academic insights and experiences by constructing and employing a personal framework in which ethical decisions can be made in light of societal values and a Christian worldview

Requirements and Grading

1. Listen attentively and do not tolerate distractions from disinterested students about you. Talking and disturbing others in class or lab will result in grade loss.

2. Daily class attendance is required and expected for "**A**-level" marks. Class cuts result in a grade penalty in Geology as follows:
   0 or l unexcused cut— 1/3 grade letter <u>added</u>
   2 – 3 unexcused cuts— no change
   4 unexcused cuts— <u>loss</u> of 1/3 final grade mark
   D- does not go to F in this rule.
   > 4 absences of any type = dismissal from class

3. Excused absences do not enter into the grade change determinations (unless you have more than 4 absences). Definition: you are physically unable for some valid reason, to be in class. Misfortunes such as traffic and travel problems, family tragedies and doctor and nurse determined illnesses are considered excused. School trips are also excused.

4. Two late arrivals = 1 absence

5. *****Attendance required on our laboratory field trip:**
   **Attendance on our Fall Field Trip (essential for a top mark). Absence will result in 20% grade loss—whatever the final mark.

Learning and Progress Evaluation

Course Grading: 90% - 100% = A-, A
80% - 90% = B-, B, B+
70% - 80% = C-, C, C+
60% - 70% = D-, D, D+
< 60% = F

150 pts = unannounced quizzes (over readings), in class assignments, homework.
150 pts = Lab Exercises (Hamblin & Howard, as assigned)
200 pts = Field Trip
100 pts = Exam 1
100 pts = Exam 2
100 pts = Exam 3
100 pts = Exam 4
100 pts = Research Paper (See below)
1000 pts = 100%

No late work will be accepted
Extra Credit Projects are available. See me for details if you are interested in extra credit.

Geology Research Paper
Select a particular geologic issue or subject and research the topic using traditional and technology resources. Write up your findings using the format indicated below. You may write a lesson series or sermon using geology if you prefer.
(Possible subjects: sedimentary environments, caves, groundwater, shore processes, mineral resources, The Dead Sea, Kentucky geology, rivers, soil formation, toxic waste dump, landslides, floods, water pollution, special interest, etc.)

1. Title Page / Cover Sheet
2. 5 pages of typewritten text
    a. Page numbers
    b. 12 point font
    c. 1" margins
    d. In-text references (author, date) for each paragraph
    e. Introduction → WHO CARES?!!
    f. Conclusion → SO WHAT? What's to be done about it?
3. Supplemental material: graphs, maps, photos, etc
4. Bibliography
    a. Minimum: 5 sources
    b. ***Three sources other than your text or web page**
    c. Class text
    d. Web pages

Schedule: See Daily Agenda

***Any work turned in before the due date earns 10% bonus.**

Research Paper Point Allotment
(No electronic submissions accepted**)**

Specific Topic due (10 points)
Outline (one typed page) and **Bibliography** due (20 points)
Completed Paper (with final bibliography) due (70 points)

TEXTS and PARTIAL BIBLIOGRAPHY ***Required and essential use

***(Tarbuck) Tarbuck and Lutgens. Earth, New York: Macmillan, 2017, 12th edition.
***(Hamblin) Hamblin and Howard, Exercises in Physical Geology. New York: Macmillan, 12th edition./2002.

(Larson) Larson and Birkeland, Putnam's Geology, New York: Oxford, 1982. (optional extra-credit source). [Not a substitute for Tarbuck/Copies Lib. Reserve]

(Dis) Disney's Treasures of the Earth *in series*. Wonderful World of Knowledge. 1982, Vol. 8. [now only on library reserve and one copy in lab]

(Sym) Symes [and the staff of the Natural History Museum, London], Rocks and Minerals. New York: Knoff. 1988.

(Dav) Davis, Richard A. Cincinnati Fossils. An Elementary Guide to the Ordovician Rocks and Fossils of the Cincinnati, Ohio Region, Cincinnati: Cincinnati Museum of Natural History. 1992 [Library Reserve-- also available in the shop of the Cincinnati Museum of Natural History]

(Shel) Shelton Hal, Geology Illustrated. San Francisco: W.H. Freeman. 1966 [Great aerial photographs (library copy on reserve)]

***(Syll) Bullard. Reuben G., Geology Syllabus GSC 210, Cincinnati: Cincinnati Bible College. 2004 [The Geology Syllabus with the Agenda and Learning Specifications is absolutely essential for the course]

Methods and Procedures

Lectures and Laboratory Activities

1. The course Syllabus represents much preparation and **PERSONAL OWNERSHIP IS REQUIRED FOR PASSING**. Our study is accumulative and cramming is totally unacceptable. Advance study before class is the key to success. If necessary in your own case, you may want to outline your readings and keep a preparation notebook. Regular and complete class notations are a must. **Take good class notes**. You will want to use colored pens or pencils.

2. Laboratory activities are designed to complement our lecture work, and are a part of your course mark. We will analytically examine Sedimentary minerals and rocks and study topographic maps and aerial photos of Earth sculpturing processes. Room 102 is kept free of some class scheduling to allow Geology students full opportunity to complete their assignments.
   a. Lab exercises are an integral part of the Geology Course. Failure to complete lab work will register as a substantial grade reduction. See the back table in room 102. Do a little work there at every opportunity.
   b. Personal field work is available for motivated students.

3. Our four-day "Nature Walk" Geology Field Trip has been approved by the Academic Dean and faculty and is required of all students. The field trip will replace two in-class sessions and many of our laboratory sessions, **which cannot be made up** by any student cutting in this off-campus experience.

4. Extra-credit: the Little, Great Miami and White Water Rivers (have coarse point bar sediment deposits composed of Igneous and Metamorphic Rocks in their channels near and north of the Cincinnati area) exhibit many specimens which illustrate many of the main concepts of the semester's study: alluvial sands, and gravels. Studies may be written up this semester on these sites, using your own work in Davis, and photographs, sketches, and samples from which you build your own lab studies. (I DO NOT WANT STUDENTS GOING TO THESE AREAS ALONE—Prof. Bullard)

5. Choir, ensemble, athletic trips and other school and personal preaching points and your home area all afford good opportunities for you to make the growing self-awareness observations in Geology. We want you to design the environmental study of the rest of your life while in class.

6. You may want to do special extra-credit studies such as:
   a. Gemstones of the Bible
   b. The geology and physical geography of the Holy Land
   c. How geology has effected:
      1) Bible History
      2) Roman Empire (e.g. Rome used fantastic building stones!)
   d. The geology of any of our great National Parks.
   e. Do work in the area of Geology and the Bible such as:
      1) Geology and Genesis One
      2) Special creation vs. evolution
      3) Parables of nature which glorify God
      4) Clays, pottery and mud bricks - the buildings of antiquity
      5) The building stones of the Bible' of Egypt, of Greece and of Rome.
      6) The economic geology ores, metals and tools and weapons.
      7) Ancient paints, pigments, and colors from the earth, inks.
      8) The environmental geology and the outcome of ancient battles
      9) "They carved themselves in Stone" - petrography of ancient sculpture.
      10) Geology and ancient architecture
   f. Do a study of the building stones of Cincinnati. Our city is built of polished stone materials from all over the USA, Canada, Europe and the Mediterranean. The buildings await your attention.
   g. Visit the top observation deck of the Carew Tower ($2.00) in down town Cincinnati. You will get a wonderful view of Creation and its "cultural alterations".

Any extra-credit project listed above may be done with the approval of the professor.

Disclaimer: Extenuating circumstances may alter certain aspects of the design and planning of the course set forth above, in Lectures, the Agenda and the Syllabus. Every "good faith" effort will be made, but there are no guarantees.

Academic Support – Students who require academic accommodations due to any documented physical, psychological, or learning disability should request assistance from the Student Services Department within the first two weeks of class. The Student Services Department is located on the upper level of Presidents Hall. You may also contact the office by phone (244-8150). Tutoring services in various subjects are also available.

Geology NSCI 210 - 01 Agenda (Tarbuck 12th)
Fall 2018 TH

DAY	Chapter: page	TOPIC
August 21		Introduction to Course, Earth Systems
August 23	T 1.3	Overview of Geologic Systems and Cycles
August 28	T 3.2, 3.3 LS 1-2, 16	Intro to Chemistry/Elements & Compounds
August 30	T 3.1, 3.4-6; H 1, 2: 10-13 LS 17-18	Mineral Formation and Properties **(Ps. 104 and Romans 1:18-20 write-up due)**
September 4	T 3.7-10; H 2: 13-22 LS 19	Mineral Classification (Favorite Mineral write-up due)
September 6	T 7.1-4, 6,7; H 4:41-45 LS 3-5, 20-21	Sedimentary Rocks Classification
September 11	T 6.1 LS 5-7	Intro to Weathering & Erosion Environment of MC/CF, KY Phys. Prov.
September 13 - 16	**LS 7-13**	**Field Trip**
September 18	T 7.1-4, 6, 7; H 4:41-45	Sedimentary Rocks
September 20	T 7.1-4,6,7; H 4:41-45	Sedimentary Rocks (cont.)
September 25		**EXAM (ch. 1, 3, Mineral ID, LS & Field Trip) *(**Road Log Due)
September 27	T 7.7-7.8; H 4: 45-53 LS 22	Sed. Rocks, Env, & Strat, and Lab
October 2	T 6.1-4 LS 23	Weathering: Physical and Chemical
October 4		**Fall Recess**
October 9	T 6.5-6.8 LS 24-25	Weathering: Soil Formation and Clay *(Research Topic Due)
October 11	T 15; H 10 LS 26-28	Mass Movement: Rapid and Slow
October 16	H 10	Video Hazards & Mass Movement Lab
October 18		**EXAM (ch. 6, 7, 15, Sed Rock ID & LS)**
October 23	H 7 LS 29-31	Visual Tools, Stereo Aerial Photos, Topo Maps Topographic Map Exercise

October 25	T 16.1-5 LS 32-33	Streams: Work of Water, Channel Development *(Research Outline due)
October 30	T 16.6-7; H 9 LS 34-35	Streams: Flood Plains, Deltas, Alluvial Fans
November 1	T 16.8; H 9 LS 36	Floods: Nile R., Johnstown, Cincinnati, Hazards
November 6	T 16.2 H 9; LS 37	Drainage Patterns, Fluvial Cycle & Lab
November 8		**EXAM (H&H 7, Tarbuck 16 & LS)**
November 13	T 17.1-7; H 11; LS 38	Groundwater: Flow, Springs, Hazards ***(Research Paper due)**
November 15	T 17.6,8; LS 39, 40 H 11	Groundwater: Cave Formation, Hot Springs Lab Exercise H 11
November 19-23		**Thanksgiving Break**
November 27	T 20.1-4; H 14 LS 41-42	Shore Processes and Features
November 29	T 20.5- 8; LS 43; H 14	Shore Features, Hazards, & Lab
December 4	T 23.1,2,4,5,7,8 LS 44	God's Handiwork, Earth's Resources
December 6	H 8 LS 7-8, 45-46	Eastern US Physiographic Provinces
December 11		God working in Time and Space
December 13		Review
December 12 or 14		**EXAM (17, 20, 23, & LS)**