

Geo 201

GEO 201 Syllabus of Record

EARTH SCIENCE IN ELEMENTARY EDUCATION

Text: Tarbuck and Lutgens' *Earth Science*, Tenth edition

Lab Manual: GEO 201 Course Pack

Tentative Course Outline:

Week	Topic(s)	Reading	Lab
1	Nature of Science and Geologic Time	Introduction, C10, 11	Generating Hypotheses; Relative Time
SOLID EARTH			
2	Minerals,	C1	Mineral Identification
3	Rocks & Soil	C2, 3	Rock Identification
4	Rocks & Soil	C2, 3	
5	Features & Maps	C4 (rivers)	Reading Topo maps
6		C5	Identifying Features
7	Earthquakes Volcanoes Tectonics	C6, C8 C12, 7	Henry 115: Virtual EQ Volcanic materials Constructing a Global Map
HYDROSPHERE			
8	Groundwater Oceans	C4 (groundwater) C12,13, 14	Demos Ocean Currents
ATMOSPHERE			
9	Atmosphere	C15,16	Air Masses and Maps
10	Storms & Climate	C17,18,19	Fronts and Patterns
ASTRONOMY			
11	Rotation & Revolution	C20	Kepler's laws
12	Solar System	C21	Life in the Solar System
13			
14	In-class presentations		
15	In-class presentations		
16	Final Exam: 2-3:50		

Course Objectives: The student will:

- apply content knowledge about Earth Science to solve problems and describe systems,
- demonstrate confidence in presenting science in the classroom,
- utilize different methods to teach science and assess learning,

- compile existing teaching resources and construct new inquiry-based classroom activities, and
- demonstrate fluency in Michigan science standards and familiarity with the MI Educational Assessment Program.

The information presented on the Topics listed above will be presented in the framework of the Michigan Essential Goals and Objectives for Science Education (K-12). See: Strand V. Using Scientific Knowledge in Earth Science (at http://www.michigan.gov/documents/MichiganCurriculumFramework_8172_7.pdf). This framework will prepare you for teaching the Michigan Department of Education’s Science Content Standards.

Nature of the Course:

This course will require you to working cooperatively in teams, solve problems, and think critically and creatively to actively explore numerous features and processes of the Earth, hydrosphere, atmosphere, and Solar System. Methods will include hands-on/”minds-on” experiences, inquiry-oriented investigations, constructivism, concept maps, group discussions, demonstrations, and student presentations. The World-Wide-Web will be used as a resource for information. Students will learn by doing instead of passive observation (i.e., standard lecture format). Hands-on, inquiry-based cooperative learning will not be limited to scheduled labs and may also be done during scheduled “lecture” time.

Grades:

1-hour Mid-term test	100
1-hour Final	100
Lab exercises/work (13 at 10 points each)	130
Rock and mineral test	75
Topographic map reading test about landforms	75
Lesson plan	100
Evaluation of Children’s Books (7 at 10 points each)	70
Teaching Experience with Tom Kelley	100
Service Learning Experience at Aberdeen Mach Tech Academy	100
Field trip to Ontario on Oct 4 (lv 3 pm) and 5 (rt late pm)	125
Portfolio	25
	1000 points

Prentice Hall has a webpage (<http://www.prenhall.com/~bookbind/pubbooks/tarbuck/>) dedicated to Tarbuck and Lutgens’ *Earth Science*. The webpage contains short answer questions and questions that require critical thinking. There will be two lecture tests (100 points each), a mid-term and final (Dec. 11). Both tests will be 100 points and consist of multiple choice, short answer, and short essay questions. Questions will reflect the Michigan Essential Goals and Objectives for Science Education (K-12) and the Michigan Test for Teacher Certification. Quizzes and tests from last semester will be available.

Lab is designed to compliment the material presented in lecture by conducting demonstrations, hands-on activities and experiments. Each week there will be graded lab exercises ranging from participating in class or fieldtrips to written exercises from the manual (about 13 labs at 10 points each). All written materials are due at the start of the follow lab.

Each student will be expected to spend a half-day with a master teachers. You will be observing him and his students and then helping or presenting the lesson on your own. After your visit you need to write a two-page summary of your visit that includes observations, outline of the lesson, success of the lesson, suggestions, and a reflective description of the experience. The summary is due one week after the experience.

Each student will spend a half-day presenting a lesson to lower elementary students at Aberdeen Math and Technology Academy in Grand Rapids. After your visit you need to write a two-page summary of your visit that includes observations, outline of the lesson, success of the lesson, suggestions, and a reflective description of the experience.

Seeing rocks and landforms in the field is an excellent way to learn geology. To provide you with a quality field experience we will explore the edge of the Canadian shield in southern Ontario. The area has excellent exposures of a diverse suite of rocks and features. You will be required to take field notes, photographs, and samples and summarize the trip in a short summary paper and rock and mineral kit.

Each student must develop an ORIGINAL Earth Science lesson plan for a 45-minute class period. Lesson plans will follow the constructivist model and consist of: a written one-page outline describing the lesson (due Nov. 11); a completed written lesson plan (submitted on paper and via email prior to your class presentation), and an in-class 15 minute (abbreviated) presentation of the lesson you developed. Samples of lesson plans are available at <http://www1.gvsu.edu/mattoxs/landforms.html>. Your lessons should include line drawings, diagrams, or photos (as needed) that are in the public domain (i.e., not copyrighted). Links to web resources are welcome. You will need to provide one copy of your completed lesson plan to each of your classmates.

Course grades will be on a fixed scale of >93.3% = A, 90%-93.3% = A-, 89.9- >86.6 = B+, 86.6- >83.3 = B, 83.3-80% = B-, 79.9- >76.6 = C+, 76.6- >73.3 = C, 73.3-70% = C-, 69.9- >66.6 = D+, 66.6- >63.3 = D, <60% = F.

Attendance. Although attendance will not be taken, students are expected to arrive at class on time and participate fully in all lectures, labs, discussions and activities. Absenteeism will directly affect your grade by its effect on your assignments, tests, and labs because these materials will be based on material covered in class. Missed tests CANNOT be made up except in cases of prolonged, serious, excused illness.

Extra Credit (choose one for a possible maximum addition of 30 points):

1. Build a Mineral and Rock Collection.
2. Attend the National Science Teachers Association meeting.
3. Join a state or national education or teaching association (e.g., MSTA, NESTA, NSTA).

All students and the teacher are expected to be aware of and follow GVSU's rules of Academic Honesty. See: <http://www.gvsu.edu/acad/acadreg1.html>

Additional Suggested Materials from Michigan Dept. Natural Resources:

The Glacial Lakes around Michigan, 1988, Farrand, W.R., BU04 Stratigraphic Succession in Michigan, 1964, CH 01.

Collecting Rocks, Minerals & Fossils in Michigan, 1976, Wilson. S.E., PA06

Michigan Fossil Poster, 1991, PO 01 Bedrock of Michigan – small scale map, 1996, Anon., BG 01.