

Geology 101 — The Dynamic Earth

University of Tennessee — Fall 2009

OVERVIEW

We are witness to extraordinary times. At latest count, the Earth has experienced the extinction of nearly 20% of known animal species, and at the same time, the debate rages as to the possibility of finding life on Mars or elsewhere in the universe. We have also witnessed incredible instances of nature's power and its affect on life on Earth — tornados, hurricanes, volcanoes, earthquakes, tsunamis, the threat of global climate change, and the deterioration of our natural resources. Finally, as humans have both the incredible potential to prevail over these dramatic events, and a responsibility to be respectful stewards of our planet.

Where do we start? The first step in is to learn a little something about the Earth. This may seem a daunting task at first – the Earth system represents a complex combination of chemistry, physics, and biology over a baffling long period of time. However, in this course, we will work to simplify this complex system by showing you how the Earth system can be observed through a combination of easily understandable physical processes and the geologic concept of plate tectonics.

LECTURES

- Lecture Location → MWF 1:25-2:15 pm, EPS Room 302
 - Instructors → Dr. Linda Kah (lckah@utk.edu)
 - Textbook → Earth, 9th edition, by Tarbuck and Lutgens (Prentice Hall)
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GRADING AND ASSESSMENT

- Lab Sections → 33%
- Tests → 16% each (4 exams, to total 64% of final grade)
- Homework Exercises → 1% each (3 exercises, to total 3% of final grade)

NUMERIC GRADING SCHEME

- Grades here denoted by lowest percentage of possible points achieved
- A (93); A- (90); B+ (85); B (80); B- (77); C+ (72); C (67); C- (64); D+ (59); D (54); D- (50)

ADDITIONAL INFORMATION FOR GRADING AND ASSESSMENT

- Laboratory attendance is mandatory
 - Exams consist of multiple choice (50%) and short answer (50%) questions
 - Make-up opportunities will be provided only for documented absences
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STATEMENT ON DISABILITIES

Any student who has a disability that might affect their performance in this class should schedule an appointment with the Office of Disability Services (974-6087) to discuss your specific needs. Once you have met with Disability Services, you should make an appointment with me so I can assist in any special accommodation that you may require.

SYLLABUS OF LECTURE TOPICS — GEOLOGY 101

PART I – OVERVIEW OF THE EARTH AND ITS MATERIALS

W Aug. 19	– Course Introduction; the Nature of Science	Ch 1
F Aug. 21	– An overview of Plate Tectonics	Ch 2
M Aug. 24	– Overview of Earth structure and the Rock Cycle	Ch 1 (14-30), Ch 4 (114-121)
W Aug. 26	– The chemistry of Earth materials	Ch 3
F Aug. 28	– Igneous rocks	Ch 4 (101-114)
M Aug. 31	– Weathering and erosion	Ch 6 (165-177)
W Sept. 2	– Sedimentary rocks	Ch 7 (193-208)
F Sept. 4	– Metamorphism	Ch 8 (221-226; 233-238)
M Sept. 7	– LABOR DAY (NO CLASSES)	
W Sept. 9	– Metamorphic rocks	Ch 8 (226-223; 238-242)
F Sept. 11	– FIRST EXAM	

PART II – EVOLUTION OF THE EARTH SYSTEM

M Sept. 14	– Earth structure	Ch 12
W Sept. 16	– Earth structure	no readings
F Sept. 18	– Time scale of Earth processes	Ch 9 (259-266)
M Sept. 21	– Igneous activity on Earth (intrusive)	Ch 5 (149-159)
W Sept. 23	– Igneous activity on Earth (extrusive)	Ch 5 (125-149)
F Sept. 25	– Mechanisms of crustal deformation	Ch 10
M Sept. 28	– Orogenic activity on Earth	Ch 14
W Sept. 30	– Seismic activity on Earth	Ch 11
F Oct. 2	– The ocean basins	Ch 13
M Oct. 5	– Oceans, atmospheres, and climate	no readings
W Oct. 7	– SECOND EXAM	

PART III – EARTH FLUIDS AND LANDFORM DEVELOPMENT

F Oct. 9	– The hydrologic cycle	Ch 16 (423-426)
M Oct. 12	– Terrestrial groundwaters	Ch 17
W Oct. 14	– Terrestrial surface waters and sediment interaction	Ch 16 (426-434)
F Oct. 16	– FALL BREAK (NO CLASS)	
M Oct. 19	– GSA ANNUAL MEETING (NO CLASS)	
W Oct. 21	– GSA ANNUAL MEETING (NO CLASS)	
F Oct. 23	– Rivers and deltas	Ch 16 (434-452)
M Oct. 26	– Oceanic shorelines	Ch 20 (538-554)
W Oct. 28	– Oceanic waters	Ch 20 (554-562)
F Oct. 30	– Frozen waters and its features	Ch 18
M Nov. 2	– Wind and its features	Ch 19
W Nov. 4	– THIRD EXAM	

PART III – READING THE RECORD OF THE EARTH'S PAST

F Nov. 6	– Fluid and sediment interaction	no readings
M Nov. 9	– Distinctive sedimentary deposits	Ch 9 (253-259)
W Nov. 11	– The sedimentary record and geologic time	Ch 9 (247-253)
F Nov. 13	– Earth's story - part 1 (plate tectonic evolution)	Ch 22 (595-612)
M Nov. 16	– Earth's story - part 2 (biotic evolution)	Ch 22 (612-623)
W Nov. 18	– Earth's story - part 3 (climate evolution)	Ch 21; Ch 18 (505-510)
F Nov. 20	– Snowball Earth – a case study	no reading
M Nov. 23	– Earth's story - part 4 (earth resources)	Ch 23
W Nov. 25	– NO CLASS	
F Nov. 27	– THANKSGIVING HOLIDAY (NO CLASS)	
M Nov. 30	– Beyond the Earth	Ch 24
R Dec. 10	– FOURTH EXAM	