Earth Science 105: Earth System Science II (MWF 1:00-1:50; CRN: 20638) Winter 2006

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Office Hours: T 11-12, W 2-4, R & F 11-12, by appointment, or feel free to drop in most times.

Text: Earth Science, 11th ed., E.J. Tarbuck and F.K. Lutgens. (**TL**)
Supplemental Textbook Materials, Customized Packet for ES 104-106 at WOU. (**STM**)
Lab Manual: ES 105 Laboratory Manual, packet available at bookstore.

Course Overview:

The overall purpose of the "Earth System Science" sequence is to integrate the critical concepts of Chemistry, Physics, and Geology to understand how the Earth operates as a system. This particular course focuses on energy in the Earth system with an emphasis on physical and chemical processes occurring at the surface of the Earth. Major topics will include nuclear chemistry as applied to geologic time and radiometric age dating, Earth materials and energy resources, chemical reactions and balancing chemical equations, a conceptual and quantitative understanding of the physics of objects in motion, and relevant real-world examples such as mass wasting and stream systems. In general, the course is conceptual in nature and is designed to fulfill (in part) the Laboratory Science requirement in the LACC. However, it will be necessary to use basic quantitative and mathematical skills to complete a number of the exercises and laboratory activities.

Grading Scheme:

Midterm Exam	100 points
Quizzes, In-class Activities & Exercises	75 points
Comprehensive Final Exam	125 points
Laboratory*	100 points
Total	400 points

Note:
* A passing grade (>60% or 60/100 points) in the laboratory portion of this course is mandatory for receiving credit in this class.

Grading Scale: (based on total percentage)

100 – 93	**A**	79.9 – 77	**C+**	62.9 – 60	**D-**
92.9 – 90	**A-**	76.9 – 73	**C**	59.9 –	**F**
89.9 – 87	**B+**	72.9 – 70	**C-**		
86.9 – 83	**B**	69.9 – 67	**D+**		
82.9 – 80	**B-**	66.9 – 63	**D**		

Schedule of Topics, Reading Materials, and Lab Exercises for ES 105 (MWF 1-1:50 section)

WEEK	DATE	LECTURE TOPICS (tentative)	READING	LAB
1	1/9-1/13	Overview / Intro / Expectations Age of the Earth System Age of Earth; Geologic Time Relative Dating and Fossils	**TL**: Ch. 1 (9-10) **TL**: Ch. 11 (310-322, 327-329)	**No** Labs this week
2	1/16-1/20	Numerical Age Dating Atomic Structure, Isotopes Radioactive Decay, Half life **No class Mon., Jan. 16 (MLK holiday)**	**TL**: Ch. 11 (322-327) **STM**: Ch. 7 (135-142, 149-151); Ch. 8 (157-166)	**No** Labs this week
3	1/23-1/27	Chemistry of Energy Resources Chemical Reactions and Balancing Equations; Fossil Fuels	**STM**: Ch. 9 (175-178) Ch. 11 (225-238)	**Lab 1:** Relative Dating and Fossils
4	1/30-2/3	Fossil Fuels & Sedimentary Rocks Types / Origin of Sedimentary rocks	**TL**: Ch. 3 (61-69)	**Lab 2:** Radioactivity and Numerical Age Determination
5	2/6-2/10	Physical & Chemical Weathering **Midterm Exam: Fri., Feb, 10**	**TL**: Ch. 4 (84-90)	**Lab 3:** Physical & Chemical Changes / Chemical Reactions
6	2/13-2/17	Alternative Energy Resources Physics of Objects in Motion Linear Motion – Vel, Acc, Gravity	**STM**: Ch. 10 (243-257) **STM**: Ch. 12 (262-275)	**Lab 4:** Study of Sedimentary Rocks
7	2/20-2/24	Mechanics *continued* Non-Linear Motion – Projectile Motion	Ch. 13 (284-292)	**Lab 5:** Energy and Energy Transformation
8	2/27-3/3	Newton's Laws of Motion Energy of objects in motion Kinetic Energy; Potential Energy	**STM**: Ch. 14 (300-320) **STM**: Ch. 15 (326-333)	**Lab 6:** Physics of Landslides
9	3/6-3/10	Mass Wasting and Landslides	**TL**: Ch. 4 (102-111)	**Lab 7:** Introduction to Topographic Maps
10	3/13-3/17	Stream Systems Hydrologic Cycle Flood Hazards in Willamette Valley	**TL**: Ch. 5 (116-133)	**Lab 8:** Stream Tables and Fluvial Processes
Finals	3/20-3/24	**Comprehensive Final Exam:**	Mon., March 20, 12-2 pm	Verify date and time in schedule of classes.

Policies for the Laboratory portion of this course:

- As indicated above, a passing grade (>60% or 60/100 points) in the laboratory portion of this course is mandatory for receiving credit in this class.

- You must be in attendance at the first laboratory class meeting, which will be held during the second week of classes. Failure to do so may result in you relinquishing your space in the lab and subsequently this course.

- Generally, there will be **NO** make-up labs. You are responsible for attending your scheduled lab section. This is especially important because *your* lab instructor will assign your grade for the laboratory portion of this course.

Policies for the Lecture portion of this course:

- Quizzes may or may not be announced, and occasionally, in-class assignments will be conducted. It is your responsibility to attend class, to be prepared for quizzes (and exams, of course), and to complete in-class activities and assignments. You must provide an acceptable Medical or other "Official" excuse in order to make-up quizzes and assignments. I will not give a quiz or accept an assignment after I have returned it to the other students. Out-of-class assignments are due at the time specified. Late papers will not be accepted.

- The dates of the exams will not change. If you are prevented from taking an exam by some *verifiable* catastrophe contact me as soon as possible. I fully realize that unfortunate, emergency situations arise. However, in the event you will miss an exam for this reason, you must notify me at your earliest convenience. In the event of an emergency, you can also contact the Office of Student Affairs (8-8821), and this office will contact your individual instructors regarding the situation. I will not give an exam after I have returned it to the other students.

- Generally, no early or late final exams will be allowed. You must take the final exam during the scheduled time for *this* lecture section.

- Any cheating on quizzes, exams, assignments, or activities will result in ZERO points for that assignment. A possible recommendation may be made to the Department Chair and WOU Administration for additional consequences. CHEATING IS UNACCEPTABLE!

- The deliberate use of another student's materials and/or not citing references for materials incorporated into any writing assignments is plagiarism and will also result in the consequences described above. Working together on "group" lecture and lab activities/assignments is not considered cheating, unless you do not participate fully, copy another person's work, and put your name on it.

- Please be respectful by refraining from talking while others are talking.

- *Work hard and have fun!*