

Earth Science 105

This course covers the basics of motion, chemistry, Earth history, and Earth surface processes. Physics—the study of motion—will be described mathematically. The structure of atoms, bonding, and reactions will be presented in the chemistry unit, and the final unit will tie both of these subjects to Earth processes: history, dating geology, fuel resources, and dynamic surface environments.

The nature of science begins with collection of data. From there, we proceed into organization, prediction of patterns and trends, testing these predictions, and evaluating the results. Suggestions for the patterns of data are called hypotheses—educated guesses as to the reasons behind the patterns. In order for a hypothesis to be considered a *scientific* hypothesis, there must be tests of it which have possible negative outcomes. Well-supported hypotheses can be elevated to theories with rigorous testing. Although tests can never absolutely prove a theory, they can disprove a theory.

Advances in science have progressed from the ancient Greek understanding of the physical world, to grasping the enormity of the universe and its parts, manufacturing materials for the success of societies, to realizing Earth is a regular part of the natural world. Scientific discoveries can lead to technological developments, that of themselves are not problems. Technology can lead to societal problems, with impacts of social interaction and human interaction with the natural world.

Lab starts week 2 of classes. Your lab instructor will have information about your lab at the first meeting. Get your lab manual, bring it, your textbook, and a scientific calculator to lab class. You are registered for a specific class that you should attend on a regular basis. If you miss lab, it is possible to make up lab classes during the week of that lab, you must contact the instructor of the class you want to attend to see if there is room for you that day. Your lab instructor will have specific information about how to turn in the work done in another class. There will be no opportunity to make up the lab after the week it is assigned. If you need to regularly attend a different lab, please have the instructors transfer you from one roll to another, so one is not grading a student that is usually in another's class.

Read the syllabus carefully. It contains contact information for Karen Brown, your instructor, textbook and grading information, website address, useful resources, and policies for your Earth science class. The syllabus follows in this document, with certain parts highlighted to bring attention to what was stressed in lecture on 1-6-09.

ES 105: Earth System Science II

Winter 2009 SYLLABUS

Instructor: Karen Brown

Email: brownk@wou.edu

Phone: (503) 838-8265

Website www.wou.edu/~brownk

Office NS 213

Class Time: Tues./Thurs. 11am-12:20 pm

Class Time: Tues./Thurs. 2:00-3:20 pm

Class Location NS 101

5 Credit Hours

Office Hours: M 11 am-12 noon, Tu/W 9:00-11:00 am

Goal: Explore and investigate physical and chemical processes occurring at the surface of Earth with an emphasis on energy in the Earth system.

Textbooks:

Conceptual Physical Science: 4th ed. by Paul G Hewitt, John Suchocki, and Leslie A. Hewitt, 2008. Pearson Education, San Francisco, CA. ISBN: 13-978-0-321-51695-4

Earth System Science II Lab Manual by the Western Oregon University Earth Science Program Instructors, 2009

In addition, you are expected to check my web site as a resource for classes. I will post lecture slides, answers to in-class activities, midterm key, etc. for your use.

Grading:

Your grade will be based on exams, review questions, in-class activities and worksheets, and your lab score. Below is an itemized list of the weight of each component of your grade.

Assessments	Value
In-Class Activities/worksheets	30 Points
Review Questions	45 Points
Mid Term Exam—January 22	50 Points
Mid Term Exam—Feb 19	50 Points
Final Exam—March 19	125 Points
Laboratory Grade*	100 points
Total	400 Points

Letter Grade‡	Percent	Points
A	(100-90%)	400-360
B	(89-80%)	359-320
C	(79-70%)	319-280
D	(69-60%)	279-240
F	(0-60%)	239-000

‡ Plus and Minus Grades may be given at discretion of instructor

*Laboratory Grade will be reported by your lab instructor. Your laboratory grade will be included as 25% of your lecture grade.

A passing grade in lab (at least 60%) must be obtained to receive credit in ES 105.

ES 105: Earth System Science II

Winter 2009 SYLLABUS

There will be at least 12 in-class activities and/or worksheets for homework. The in-class activities **must be done IN CLASS to receive points**. Worksheets for homework must be turned in at the next class meeting (or before, if you will be out of town) to count for credit. The lowest two scores will be dropped from your record, so if you miss a few, it will not affect your grade. However, if you miss many, it will be a factor. These are worth 3 points each, for a total of 30 points toward your lecture grade.

The review questions will be due on exam days (January 22, February 19 and March 19), as noted in the schedule for this class. They must be turned in ON-TIME to receive credit. Please **purchase a LARGE Blue Book** to do those review questions as assigned on the schedule. The online syllabus has links to scanned copies of the review questions. I will be happy to discuss the answers to review questions any day before lecture begins. Do the questions each week, and turn in at the midterm, and final exams. Each review question set is worth 15 points toward your lecture grade.

There are three exams for this class. Bring a scantron form, and expect to also complete problems similar to in-class activities, worksheets and review questions. The midterm exams are scheduled for January 22 and February 19, 2009. The final is listed in the Registrar's schedule as March 19, 2009. Early final exams are only allowed with special permission.

If you know ahead of time that you will not be in class for the mid-term exam, contact me ahead of time to make an arrangement for you to take a midterm assessment. **If you miss an exam without prior notice, please have some written evidence of your emergency situation, or use the proper University channels to communicate.** I am understanding, but need verification of each case.

Incomplete status: You may have personal circumstances that do not allow you to finish this class on time. You may request an 'incomplete' in this situation. You must have completed the midterm exams, and **be passing at the time of your request**. You must **sign agreement with me** about when and how you will complete this course. Or you may go through official university channels. See page 24 of the 2008-09 catalog for more information.

A tentative lecture schedule follows.

Labs begin week 2 of the winter term. There are no 'make up' labs available. Your lab instructor will provide you with information about your lab schedule.

Earth System Science II (ES 105)--Winter 2009

Schedule for Karen Brown instructor

Date	Topic	Chapter	Pages	Review Questions
Jan 6	Introduction and the nature of science	1	1-10	1, 3-5, 7, 13-15
Jan 8	Motion	1	14-31	3-8, 10, 22, 24, 26-28
Jan 13	Newton's Laws	2	37-53	1, 5-10, 14, 17, 21-24, 30
Jan 15	Momentum, Energy	3	59-80	1, 3, 4, 7, 8, 11, 12, 14-17, 20, 21
Jan 20	Gravity, Weight, Projectiles	4	87-108	1, 4, 8-12, 14, 16-22
Jan 22	Midterm 1			Above questions due
Jan 27	Atoms and the Periodic Table	12	285-305	1, 3-12, 21, 25-27
Jan 29	Atomic Nucleus and Radioactivity	13	311-332	1, 6-10, 12-18
Feb 3	Elements	14	337-348	4-7, 11-16, 20, 21
Feb 5	Bonding	15	353-376	1-9, 12-16, 25, 29
Feb 10	Mixtures	16	381-404	1-3, 7, 9-11, 19-21, 23-27
Feb 12	Reactions	17	411-430	1-14, 16, 19, 22-27
Feb 17	Classes of Reactions	18	437-463	1-3, 7, 9, 11-15, 24, 25
Feb 19	Midterm 2			Above questions due
Feb 24	Rocks and Minerals	20	505-533	1-4, 10, 12, 16, 17, 23-27
Feb 26	Geologic Time	21	539-560	1-11, 13, 14, 18, 22, 25, 26, 28, 30
Mar 3	Surface Processes	23	599-625	1, 2, 4, 6, 8-11, 13, 15, 18-20, 22
Mar 5	Streams and Floods			
Mar 10	Hydrocarbons and Energy Resources	19	471-478	1, 2, 6-10
Mar 12	Natural Occurrences of Hydrocarbons	2; 13		Ch 2: 28-30; Ch 13: 21, 28
Mar 19	Final Exam			Above questions due

Below is some collected information from Western Oregon University Catalog, 2008-2009. These are included here because they are important to your success in this class. Each excerpt is noted with the page on which it appears in the catalog.

Winter term Calendar

Classes begin	Monday, January 5
Fee payment & add/drop begin	Monday, January 5
Last day to pay fees without penalty	Friday, January 9
Last day to add courses, change grade options, elect graduate/undergraduate credit or pay fees	Friday, January 16
Martin Luther King Holiday	Monday, January 19
Last day to drop courses	Friday, February 13
Registration for next term	Monday, Feb. 23 - Friday, Feb. 27
Final examination week	Monday, March 16 - Friday, March 20
Winter term ends	Friday, March 20

(inside front cover)

University Mission Statement

Western Oregon University is a comprehensive university that creates personalized learning opportunities, supports the advancement of knowledge for the public good and maximizes individual and professional development. Our environment is open to the exchange of ideas, where discovery, creativity and critical thinking flourish, and students succeed. (p. 3)

College of Liberal Arts and Sciences

Dean Stephen Scheck

Mission Statement

The College of Liberal Arts and Sciences provides the central learning experience for all undergraduate students at Western Oregon University. The faculty are committed to engaging students in academic discovery and intellectual growth via the core curriculum, major and minor baccalaureate curricula, and mastery in select graduate programs.

Program Objectives

1. Engage students in scholarly pursuits that benefit their preparation for life-long learning and societal engagement.
2. Provide an environment where students may develop disciplinary competencies necessary for their chosen career fields.
3. Provide opportunities for faculty-student mentoring and out-of-classroom learning opportunities.

For more information, see the Web site at: www.wou.edu/las. (p. 37)

Natural Sciences and Mathematics Division of the College of LAS

Division Chair Steve Taylor

The Natural Sciences and Mathematics Division is responsible for majors and minors in biology, chemistry, Earth science, integrated science, mathematics and natural science.

Mission

To offer quality liberal arts education in Biology, Chemistry, Earth Science, Mathematics, Physics and Pre-Professional Studies. Our students have the opportunity to acquire and assimilate mathematical and scientific knowledge, that they may broaden and refine their understanding of the ever-changing world around them, both while at Western Oregon University and throughout their lives.

Program Objectives

1. To help students internalize and apply both the scientific method and major scientific and mathematical concepts and principles.
2. To enhance students' reasoning and problem solving skills.
3. To improve students' individual and collaborative skills in preparation for the global scientific and mathematical challenges of the 21st century. More detailed program information, including program admission requirements can be obtained by contacting the division at: 503-838-8206, or on the Web at

www.wou.edu/las/natsci_math/nsmdiv.html.

(p. 38)

Institutional aspirations for learning

Students at WOU will be challenged to achieve their highest potential through a rigorous and stimulating curriculum. Between 2004 and 2005, a set of educational goals called Institutional Aspirations for Learning were collaboratively developed by our faculty after focused discussions about the fundamental aims of liberal education in the 21st century. These aspirations constitute the core competencies, skills, experiences and values credited to, and expected of, WOU's educational process and its graduates. We believe that these aspirations are the basic building blocks of a high-quality education as well as the foundations for productive careers, life long development and informed citizenship on a local, national and global level.

1. Students will develop more refined critical thinking skills, including advanced analytical, logical and quantitative reasoning abilities as well as excellent problem-solving skills.
2. Students will develop effective communicative abilities, including listening, observing, speaking, writing and dialoguing.
3. Students will become active readers with an enhanced ability to carefully, closely and thoughtfully read a range of texts.
4. Students will acquire field or discipline specific knowledge and they will understand disciplinary modes of intellectual inquiry.
5. Students will develop an interdisciplinary and integrative perspective as they recognize, explore, appreciate and engage the interconnections between disciplines.
6. Students will develop advanced research abilities and they will demonstrate improvements in their information and media literacy.
7. Students will learn how to use appropriate technologies.
8. Students will acquire and demonstrate competencies, skills, attributes and values necessary for successful participation in a diverse, pluralistic and increasingly interdependent world.
9. Students will be able to work effectively in teams.
10. Students will strive to be well-balanced persons capable of making thoughtful and healthy choices.
11. Students will be able to apply theory in relevant, appropriate and reflective ways. (p. 6)

Disability Services

Director Malissa Larson

The Office of Disability Services facilitates appropriate accommodations on campus for students and visitors with disabilities. Services provided by the office help ensure that students with disabilities are able to participate fully in all of WOU's programs and activities. The needs of each student who has a disability are assessed on an individual basis so that each receives the most appropriate accommodations and/or support. The following list of services provided by the Office of Disability Services are the most commonly requested:

- Accessibility assistance: wheelchair accessibility to buildings and campus grounds, communication equipment (FM systems, audio-looped rooms, TTYs, closed caption decoders, amplified phones), CC-TV, Braille, scanner, voice output computer access and other technical equipment
- Accessibility aides: note takers, readers, transcribers, classroom assistants, exam proctors
- Advising: academic, career, personal/social
- Advocacy: for appropriate accommodations, alternative testing, preferred accessibility aid
- Communication aides: Sign language interpreters who use student's preferred signed communication mode (from ASL to MCE), and oral interpreters are provided upon request for classes, school sponsored activities, and meetings with faculty and staff
- Empowerment: Through networking groups, workshops and interaction with the office staff, students learn of their rights and how to obtain services they need.
- Leisure and social activities: Accessibility assistance and aids are provided to encourage and support the students' full participation in all parts of campus life.
- On-campus housing: accessible to deaf, hard of hearing, blind students and students using wheelchairs or other assistive mobility aids
- Orientation: to the campus and services provided by the Office of Disability Services as well as general university services available

Please contact the Office of Disability Services for more information at 503-838-8250 V/TTY or e-mail ods@wou.edu. (p. 30)

Academic Advising and Learning Center

Director Karen Sullivan-Vance

Academic Advising Center

Academic advising at WOU is a developmental process designed to help students define their life and career values and goals in relation to their academic plan. Both the student and adviser have a shared responsibility in the ongoing dialogue that helps students maximize their educational experience at WOU. All undergraduate students are required to meet with their academic adviser at least once a term until a degree plan is filed with the Registrar's Office. Students are encouraged to meet with their adviser when they have questions about their educational goals. Students have access to faculty advisers in their major and minor areas of study. In addition, the Academic Advising and Learning Center's professional advisers can advise students about requirements, along with pre-education and undecided students.

The Academic Advising and Learning Center works with:

- Students to identify their life and career goals in relation to possible academic programs
- Undecided students who are exploring different majors
- Students transferring into WOU from another institution
- Students on academic warning, probation or suspension
- Academic requirements for graduation, including the Liberal Arts Core Curriculum (LACC)

For more information, call 503-838-8428 V/TTY, e-mail advising@wou.edu or go to the Web page www.wou.edu/advising.

Learning Center

Academic skills, including study skills and time management, are essential for college success. The Learning Center helps students assess their current academic skills and develop new skills to help them become successful. Services are provided to WOU students at no charge. Services at the Learning Center include:

- Peer tutoring in most academic subjects by appointment
- Drop-in math tutoring hours
- Tutor-assisted study groups
- Individual study skills assessment and assistance (time management, test taking, note taking, listening, textbook reading, etc.)
- Student computer lab

Tutoring assistance is offered in most academic subjects by peer tutors who have been recommended by faculty. The tutor's goal is to help students improve their knowledge and develop better study habits. Students must be currently enrolled in the requested class at WOU for tutoring. For more information, call 503-838-8501, (503-838-8428 TTY), or go to the web page www.wou.edu/learning. (p. 39)

Standards of Conduct

The following list of prohibited forms of conduct is not all inclusive since it is not possible to list all potential violations.

1. Academic Dishonesty, which includes but is not limited to:
 - a. *Cheating* - intentional use, or attempted use of artifice, deception, fraud, and/or misrepresentation of one's academic work;
 - b. *Fabrication* - unauthorized falsification and/or invention of any information or citation in any academic exercise;
 - c. *Facilitating dishonesty* - helping or attempting to help another person commit an act of academic dishonesty. This includes students who substitute for other persons in examinations or represent as their own papers, reports, or any other academic work of others;
 - d. *Plagiarism* - representing without giving credit the words, data, or ideas of another person as one's own work in any academic exercise. This includes submitting, in whole or in part, prewritten term papers of another or the research of another, including but not limited to the product of commercial vendors who sell or distribute such materials, and the appropriation and/or use of electronic data of another person or persons as one's own, or using such data without giving proper credit for it; or
 - e. *Any use or attempted use of electronic devices* in gaining an illegal advantage in academic work in which the use of these devices is prohibited, and such devices include but are not limited to cell phones, PDAs, laptops, programmable calculators, removable disk drives, etc. (p. 30-31)

Statement on discrimination, including sexual harassment

Western Oregon University is committed to cultivating an educational and work environment in which all individuals are treated with respect and dignity. Each individual has the right to learn and work in an atmosphere that promotes equal educational and employment opportunities and prohibits discriminatory practices, including harassment. Western Oregon University expects relationships across campus will be free from bias, prejudice and harassment.

This policy statement is intended to reaffirm Western Oregon University's prohibition against discrimination and harassment, clarify types of prohibited conduct, and provide an effective complaint procedure to individuals who believe they have observed or have been subject to prohibited conduct.

Discrimination

Discrimination, for the purposes of this policy, is defined as any act or practice, in form or operation, whether intended or unintended, that unreasonably differentiates among persons on the basis of race, color, religion, national origin, age, sex, marital status, sexual orientation, veteran status or disability or any other status protected under the law.

Harassment

Harassment, for the purposes of this policy, is defined as conduct that creates an intimidating, hostile, or degrading environment that would interfere with the work or academic performance of a reasonable person of the complainant's protected status.

Sexual Harassment

Sexual Harassment, whether or not it be by direct physical attack, as defined below. Sexual harassment includes, but is not limited to, sexual advances, requests or suggestions to engage in sexual conduct, and other physical and expressive behavior of a sexual nature when:

- Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, grade, or used as a basis for any employment or academic decision; or
- Such conduct is unwelcome and has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creates an intimidating, hostile or offensive work or academic environment..

Additional information is available at www.wou.edu/sexualharassment.

To request a complete hard copy of the discrimination and harassment policy and complaint procedure; to discuss a sexual harassment, harassment or discrimination concern; or to file a sexual harassment, harassment or discrimination complaint, contact udy Vanderburg at 503-838-8131 or vanderj@wou.edu.

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