EARTH SYSTEM SCIENCE (GS 104 Lecture)
POLICIES AND PROCEDURES
Fall Term 2002 - Western Oregon University
5 CR MWF 11:00 - 11:50 AM Room 101 Natural Sciences Bldg.

INSTRUCTOR: Dr. S. Taylor OFFICE: RM 210 Natural Sciences Bldg

OFFICE HOURS: M 1-2 PM, T 11-12, R 11-12
R 4-5 PM
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COURSE DESCRIPTION:

This course provides an introduction to Earth System Science, a holistic study of all integrated systems operating on the planet Earth. It is designed as a general science elective, using the Earth as a framework for understanding concepts of physics, chemistry, and geology. Emphasis will be placed on discussing classic concepts of astronomy, the solar system, and interior earth processes. Students will learn observational techniques in the spirit of the "scientific method", and generally raising our awareness of the natural environment around us. The "lab" portion of the course will provide the student with an opportunity for "inquiry-based" discovery of concepts developed during the lecture period.

PRELIMINARY COMMENTS AND COURSE PHILOSOPHY:

This course will be qualitative (conceptual) and quantitative in nature. Basic mathematical skills will be reviewed and utilized to complete the exercises. Creative instructor-student interaction will be faithfully encouraged to provide a truly relaxed educational atmosphere. A user-friendly approach to science will be emphasized by the instructor.

REQUIRED TEXTS:

Tarbuck and Lutgens, 2000, Earth Science, 10th ed.: Prentice Hall

Supplemental Textbook Materials, 2002, reprints from “Chemistry for Changing Times”, “Conceptual Physics”, and “The Earth System” textbooks: Pearson Custom Publishing

Lab Manual to Accompany GS104 Foundations of Physical Science, Earth and Physical Sciences Dept., Western Oregon University (photocopied document)

****Note about Supplemental Textbook Materials:** These are select chapters pulled from three different text books, compiled by WOU Faculty and published by Pearson. They have been assigned sequential page numbers and chapter numbers. The listed page numbers and chapter numbers **DO NOT** correspond to those referenced in the text sections. The Tarbuck - Lutgens Textbook and Supplementary Textbook Materials will be used for all sections of GS104, GS105, and GS106. **Please note that this is a considerable cost savings compared to buying three different textbooks for each of the GS courses.**

CLASS NOTES:

A comprehensive set of instructor class notes are available for download via the internet. The class web site is at **URL http://www.wou.edu/taylor** ... and follow the links to the "GS104" home page.

The class notes are available as Adobe Acrobat Reader files (*.pdf file). Acrobat Reader is free and is installed on many campus PC's. For home installation, Acrobat Reader is also available for download at the class web site, but you will be responsible for properly installing the software (and will do so at your own risk!).

Based on prior student suggestions, I have assembled my class notes and made them available. These notes may be freely printed at any campus internet station (e.g. ITC Bldg - Student Lab, Library, local department

computer labs). The notes are in outline form and are very comprehensive. "Exam Study Guides" will also be posted on the web site as the term progresses.

EVALUATIONS AND EXPECTATIONS:

Student performance will be evaluated on the basis of class assignments, two (2) lecture quizzes, lab score (exercises and quizzes), and two (2) exams. The following is a breakdown of evaluation points and letter grades:

Class Assignments and Quizzes	85 pts	21%
Mid-Term Exam	100 pts	23%
Final Exam	125 pts	31%
Lab Score (Exercises and/or Quizzes)	100 pts	25%
Total	410 pts	100%

Final Grading Scale

Percent Range of Total Points	Letter Grade	Percent Range of Total Points	Letter Grade
94-100%	A	77-79%	C+
90-94%	A-	73-76%	C
87-89%	B+	70-72%	C-
83-86%	B	67-69%	D+
80-82%	B-	63-66%	D
		60-62%	D-
		<60%	F

Class Assignments: Class assignments are designed as online (internet-based) "take-home" homework exercises that are submitted electronically at the prescribed due date. Late assignments will not be accepted after the deadline. Special arrangements for turning in late assignments with administrative excuses should be arranged in advance.

Exams: Mid-term quizzes and exams will generally cover only the material that was most current prior to that exam. The final exam will be comprehensive with test material drawn from throughout the term. Tests will generally be objective in nature (multiple choice, matching, true/false, completion) with occasional essay questions.

Class Assignment Grading: Due to the large number of students and assignments, the instructor will not grade this work in detail. The homework and assignments will be checked for completeness, with questions randomly chosen for content and accuracy. Grade points will be assigned on the basis of these two criteria. With a modicum of effort, you will do well in this portion of the class.

Laboratory Exercises: The labs represent a significant component of the class. All lecture sections of GS104 will be distributed across several lab instructors. Be aware that some of you will have the same lecture and lab instructor, while others will not. The following are the terms and conditions of the Lab-portion of the class:

1) You must pass the lab with an average score > 60% to pass the course! For example, if you have an "A" in lecture, and an "F" in lab, you will receive an "F" for the entire course. Moral of the story, attend and successfully pass the lab.

2) Your lab score will be factored into your final lecture grade as shown above.

3) Lab exercises turned in late will result in automatic point(s) reduction, at the discretion of the lab instructor. You must make prior arrangements for make-up labs with lab instructors, as per individual course policy.

4) The specific lab instructor has the final say in all lab grading. The lecture instructors will abide by the lab instructors grading procedure.

Make-up Exams and Incompletes

Under NO circumstances will make-up exams be administered without prior arrangement (at least five days) and good reason, with a signed administrative excuse. Please show up on exam day! Under NO circumstances will a grade of "incomplete" be issued in the last week of class. If you find yourself in a situation where you can't complete the required course work, please make arrangements with the instructor prior to the last week of class. Contact the Office of Student Affairs (838-8365) for assistance in arranging incompletes.

ATTENDANCE AND ASSIGNMENT POLICY:

There is a direct correlation between attendance and student performance. Attendance is necessary for students to properly digest intellectual concepts presented in a college classroom format. The class assignments are designed to reward students who attend class on a regular basis. Absences with written excuses for medical reasons or university-related functions may be used to arrange make-up work with the instructor. As with incompletes, contact the Office of Student Affairs to arrange for written excuses (838-8365).

STUDENT HONOR POLICY:

Plagiarism and cheating will not be tolerated. Cheating includes copying others work and using cheat sheets on exams. However, students are encouraged to interact in small groups during class assignments, i.e. you can freely discuss concepts in all portions of the class, except exams.

OTHER REQUIRED MATERIALS:

Students will also need access to a scientific calculator, colored pencils, ruler, and protractor. You will be required to use these materials during lecture, lab, and exams. Please plan accordingly, or you will have trouble successfully completing the class.

STUDENTS WITH DISABILITIES

Any student who has a disability that requires accommodation, please make an appointment to see me.

A NOTE ABOUT THE LAST WEEK OF CLASS:

Given that the Oregon University System employs the "quarter-method" of academic scheduling, upper division courses are by nature "compressed" with much detailed content to cover in a relatively short period of time. As such, the 10th week of class is as critical to content coverage as the 1st week. Students should anticipate a full slate of "normal" activities during the last week of class, including lectures, lab exercises, written reports, etc. The class is not over until after the final exam!

TENTATIVE COURSE OUTLINE: This outline should be considered tentative at best. The following schedule may be modified as class ideas evolve throughout the semester, TL = Tarbuck and Lutgens Text, STM = Supp. Text Materials.

Week	Dates	Class Content	Reading Assignment (author / page)	Lab Exercise
1	Sep 30-Oct 4	Intro to Earth Systems Earth Overview Models Scientific Method Scientific Techniques / Math Review	TL Ch 1, p. 1-17 TL Appendix A p. 648 STM Ch. 22, p. 488-491	Study Skills Seminar
2	Oct 7-11	Intro Astronomy Gravity, Kepler Laws Sun-Earth-Moon Solar System Tour	TL Ch. 20, p. 549-573 TL Ch 21, p. 576-601 STM Ch 1, p. 3-26 STM Ch 24, p. 532	Models and Systems
3	Oct 14-18	EM Spectrum Sun / Stars Galaxies, Big Picture	TL Ch 22 p. 603-621 TL Ch 23 p. 624-647 STM Ch 23, p. 506-513	Solar System
Quiz 1 - Friday Oct 18				
4	Oct 21-25	Earth Interior Intro to Plate Tectonics	TL Ch 7, p. 192-223 STM Ch 2, p. 27-44	Light / Telescopes
5	Oct 28-Nov 1	Plate Tectonics II PNW Tectonics	TL Ch. 9, p. 260-283	Plate Tectonics
Mid-Term Exam - Friday Nov 1				
6	Nov 4-Nov 8	Earthquakes, Seismology	TL Ch 6, p. 163-189 STM Ch 3, p. 45-62	Earthquakes
Friday Nov 8 – Last Day to Drop w/o Grade Penalty				
7	Nov 11- Nov15	Earthquake Hazards PNW Hazards Intro to Atoms/ Chemistry	TL Ch 6, p. 163-189 STM Ch 4, p. 64-85	Minerals
NO CLASS Monday Nov. 11 – Veterans Day (Monday 11/11/02 Labs will have make-up day on 11/25/02)				
8	Nov18-Nov22	Matter, Atoms Mineral Chemistry	TL Ch 1, p. 20-37 STM Ch 5, p. 87-98 STM Ch 6, p. 113-128	Igneous Rocks
Quiz 2 – Friday Nov 22				
9	Nov25-Nov29	Igneous Rocks	TL Ch. 2, p. 40-47	**No Labs**
NO CLASS Friday Nov. 29 – Thanksgiving (No Labs This Week Except for Monday Vet's Day Make-up)				
10	Dec2–Dec 6	Volcanoes and Igneous Processes	TL Ch 8, p. 226-257	Volcanism
11	Dec 9 – Dec 13	**Finals Week (FINAL EXAM - Check Schedule)**		

Homework Assignments

The homework assignments are designed as online exercises using your textbook, the internet, and campus software called "WebCT". I have prepared a set of online, fill-in-the-blank homework exercises that are keyed to chapter readings in your textbook. By using the WebCT software, your homework exercises are administered and graded online. This eliminates much paperwork on my end, and makes your homework seem more like a video game (which makes it slightly more enjoyable for both of us). Individual weekly homeworks will be available for one week at a time throughout the term. **You will only be able to complete and submit the assigned online homework during the availability time. If you miss the deadlines you will receive a "zero" for the homework. Pay attention to the dates listed below!**

The following are procedures for accessing the online homework assignments:

(1) You will have an individual student account set up on WebCT with a username and password.
(2) The WebCT website may be accessed in the following ways:

(a) from the class homepage (www.wou.taylor ... follow the links to GS104 ... then follow the links to "WebCT" in the Homework Assignments section), or

(b) by surfing to **http://www.wou.edu/webct**

(3) Once at the site, choose the "Log On to My WebCT" option. **DO NOT CHOOSE "Create myWebCT", this has already been done for you.**

(4) Enter your WebCT student username- **This will be the same as your ST1 student server username** (the first letter of your first name + the first 6 letters of your last name, for e.g. *jsmith* or *jwoodwa*) **Use all lower case letters only!!!**

(5) Enter your username again for the password. **Use all lower case letters only!!! Your password will be the last 4 digits of your SS#, just like your ST1 student server account.**
(6) Once you are logged in, look for the "Change Password" icon... you can change your password at any time!
(7) Click on the "Homework Assignment" icon.
(8) Click on the homework assignment you wish to complete, and begin the online assignment.
(9) **For each question, type in an answer in the blank box provided and click on the "save answer" radio button. When finished with all questions in the homework, click on "Finish". IF YOU DON'T SEE YOUR "HOMEWORK GRADE" AFTER YOU SUBMIT, THEN YOU DID NOT FOLLOW THE ABOVE INSTRUCTIONS. REMEMBER TO "SAVE ANSWER" FOR EACH QUESTION AND "FINISH" WHEN YOU HAVE COMPLETED THE HOMEWORK.**
(10) You may stop and begin the assignment as many times as you wish, but only until you click "submit for grading".
(11) **Make sure you print a hard copy of your homework answers and/or save them as a file on your local drive! The print out will be your hard-copy record that you completed the work. IF YOU DO NOT SAVE A HARD COPY OF YOUR WORK, AND THE COMPUTER RECORDS IT AS "0" THEN YOU WILL RECEIVE A "0"… SAVE A HARD COPY OF ALL YOUR WORK AS A BACK-UP RECORD.**

Note: Pay attention to the availability dates, once the deadline has passed you are out of luck! You have unlimited time and an unlimited number of tries to correctly answer and submit the questions. Your highest score will be recorded as the grade.
Note: Print your questions and answers from the browser icon... this will be your written record of completing the assignment!!

Tips and Tricks for Completing the Online Homework:

(1) Read the text chapter in question before you start. The text readings are listed on the schedule above.
(2) Log-on to WebCT and print out a copy of the homework questions.
(3) Answer the questions on paper with your textbook, prior to working and submitting them online.
(4) Log-on to WebCT and finish the online assignment.
(5) Print a copy of your completed online homework, this is your hard-copy record that you completed the assignment (remember - if there is a way for a computer to make a mistake, it will happen to you!).

Homework Assignment Schedule

No.	Topic	Online Availability Dates
1	Intro	09/30/02-10/10/02
2	Solar System	10/07/02-10/14/02
3	Sun / Stars	10/14/02-10/21/02
4	Plate Tectonics	10/21/02-10/28/02
5	Earthquakes	11/04/02-11/11/02
6	Chemistry	11/11/02-11/18/02
7	Minerals	11/18/02-11/25/02
8	Igneous Rocks	11/25/02-12/02/02
9	Volcanism	12/02/02-12/09/02

STUDY TIPS FOR GENERAL SCIENCE COURSES AT WOU

(modified from Rosalie F. Maddocks, Professor of Geoscience, University of Houston)

THE IDEAL PLAN OF STUDY FOR HIGHLY SUCCESSFUL COLLEGE STUDENTS

These are things that successful students do. Use what works for you.

1. First, before the lecture on this topic, read the assigned text chapter(s) all the way through, without stopping and without making any marks in the book. The purpose of this first reading is to gain a general familiarity with the topics covered and the organization of the chapter.

2. Then, listen to the accompanying lecture, augment your lecture notes by hand. Try to integrate this information with what you read in the text.

3. Now read the text chapter a second time, more slowly. The purpose of this second reading is to achieve a thorough, complete understanding of the topics covered. This has to be done in chunks, one bite at a time, in sequence.

> -Reading out loud, because it uses more parts of the brain (eyes, ears, tongue), can help you to concentrate and to remember better what you read.
>
> -Each time you encounter a word you do not know, look it up in the Index or Glossary of the text or in an English dictionary. If geographic features are mentioned, look them up on maps in the textbook or in an atlas.
>
> -Underlining (highlighting) is a substitute for learning, a promise rather than an accomplishment. It can be a procrastination device. Instead of underlining (promising yourself to study this later), stop right there in your reading and learn now what you have just read, right now. Of course, it is a good idea to mark lightly in pencil in the margin any statements you don't understand, to remind yourself to seek clarification.
>
> -For complex material, it may be a good idea to make your own handwritten notes. Start by outlining the chapter, and then fill in more details. You will find this helps you to see the relationships between topics and the organizational plan of the chapter. Writing is a good way to etch the information into permanent memory. After you have made these notes, throw them away, or at least don't look at them again until you get to the Review phase. The value of the notes is in the doing of them.
>
> -Analyze each illustration, reading the caption and relating it to the text, determining the significance of every line and label in that figure. Illustrations are as important as words in a science text. "Every picture tells a story." Try to explain in words the story that each picture is telling. Then push the book aside and try to sketch the idea yourself, in the same style as the figure. Practice drawing pictures of ideas -- it's called graphical reasoning, and scientists do a lot of it.

4. Now that you understand this material, learn it for permanent recall. Read the chapter for a third time.

> -This time, after each paragraph or major section, push the book aside and explain to yourself (aloud or in writing if you wish) the main points of the passage you have just read. Your narrative should be in your own words but should use technical vocabulary and facts.
>
> -The test of whether you understand a topic is whether you can recall and explain it. Teaching is an excellent way to learn -- try explaining these ideas to a friend or family member or study. Talk out loud!
>
> -Study the accompanying lecture notes in a similar manner.

5. Find out whether you are ready for the exam.

-Scan the checklists at the end of the chapter. Can you define, identify, locate, explain, summarize or illustrate every one of the terms and concepts mentioned? If not, look up the ones you missed and study those parts of the text some more.

-Work the Sample Quizzes that may be provided. Check the answers and compute your score. Compare this score with the letter-grade scale for the course. Would you be content with this score?

-If you are not yet satisfied with your score, return to studying the chapter. Then try another quiz.

-Warning: It is a waste of time to attempt the practice quizzes before you have studied the chapter content.

-Warning: Don't try to memorize the answers to quiz questions. A quiz is not something to study. These "short cuts" don't work.

6. A day or two before the exam, review. Skim the chapter, the illustrations, the Lecture Notes and your other notes.

-Review means reminding yourself of what you have already learned, refreshing the memory traces of things you already know so you can find them quickly on the exam.

-Review does not mean learning for the first time. Review is not cramming. No one else can review for you -- only you can review.

LEARN TO READ!

Seriously, it is important to learn how to gather and retain knowledge from reading books and written materials. Reading for a science course is a different kind of reading than, for example, reading for a literature class or reading a novel or newspaper.

You will find that you need to:

Read slowly, for thorough comprehension.

Read completely (no skimming or skipping).

Read sequentially one sentence at a time, evaluating each sentence in its place as a necessary step in the logic of the paragraph.

Read selected passages multiple times, until you understand and can remember (for permanent recall) the information and the steps in the reasoning.

Read the entire chapter two or three or more times.

Have a good general English vocabulary, and use a dictionary as needed.

Integrate the analysis of figures and diagrams into your study of the related text passages.

Some students find that it helps to:

Outline the chapter, writing by hand. The brain learns things that are written more easily than things that are only read. Amplify the outline with each re-reading. But do not treat your outline as something to study. It is only a means to an end. The value of the outline is in the writing of it. Study the chapter, not your notes.

Read the text out loud, slowly. This involves the parts of the brain that control speech and hearing. The more different parts of the brain you involve in studying, the better the information will be learned.

Break the hard words into syllables and practice pronouncing them correctly. (A dictionary can help with this.) You cannot learn a term (word) you cannot pronounce. Terms (words) are necessary handles (symbols) for concepts. Language (vocabulary) is an integral part of human reasoning. To understand a concept you must learn its "name" (word), and to learn the word you must be able to pronounce it.

Practice writing each new term (10 times on a sheet of scrap paper) until you can spell it correctly. Pronounce the word out loud each time you write it.

Read out loud in a lecturing tone of voice, and expand ad lib on what you are reading.

Read text materials into a tape recorder, and play the tape back and listen to it.

If you have trouble staying awake, stand up and walk around as you read out loud

After organizing the vocabulary and factual material, drill yourself until recall is accurate, consistent and automatic. Some students like to make flash cards.

TAKE RESPONSIBILITY FOR YOUR OWN LEARNING

You should be able to detect for yourself whether you understand a topic, whether you have learned what is necessary, and whether you have completed what needs to be done.

You should be aggressive in using the materials provided. You should be resourceful and timely in seeking assistance when needed.

For example, if there's something you don't understand, ask. Help is as close as an e-mail message to the instructor or to a classmate.

MAKE A PERSONAL STUDY SCHEDULE

It is possible that you will have to study more for this course than for some others you may have taken, especially if this is the first time you have taken a college-level science class.

The University expects that an average undergraduate student in an average class for an average grade will attend class 3 hours a week and study outside of class for 6 to 7 hours a week, every week. Everyone is different, so you will need to determine for yourself how much you need to study to achieve your objectives. A student for whom (for whatever reason) the material does not come easily may have to invest more time. **A student who wants a better than average grade may wish to invest more time.**

I find that most students underestimate both their academic potential and the study time they will need to achieve success. Don't settle for second-best. Please budget ample time to do yourself credit.

You should plan a personal study schedule for this class and stick to it. A worksheet is provided here to help you do this. I recommend studying for this course a little every day.

Small doses (an hour or two) repeated frequently are better than total immersion ("all-nighters"). Your brain needs the "down time" between study sessions to process the new information into long-term memory, so you can remember it on the exam. Much of this processing is done during sleep.

Cramming the night before an exam is not an effective way of learning. Stealing study time from one course because you have an exam in another course works no better in academic life than it would in your financial budget.

Your study program should be part of a sensible personal time schedule for the semester.

That schedule should include realistic time allowances for working, commuting, family responsibilities, recreation, studying, and sleep.

Don’t sign up for more classes than you can study for per term. Education is not a race, and there is no prize for speed.

Emergencies happen. Your personal schedule should include some flexibility to accommodate them.

You should be able to keep yourself on task and avoid procrastination. Take charge! Make your own reminders -- whatever works for you -- and stick to your schedule.

KNOW YOUR LEARNING STYLE

You are an adult, and it is expected that you know how to learn by many different methods.

Perhaps some ways are easier for you than others, but it is up to you now to figure this out and to make the appropriate adjustments. For example, if you learn best by listening, you can choose to enroll in a face-to-face section, or you can read the text into a tape recorder and play it back.

OTHER RESOURCES

Check out the tutoring program at the WOU Student Enrichment Program (SEP). If you request a tutor, SEP will find one for you and help you establish positive study habits.

Contact WOU Disabilities Services if you have learning disabilities that need additional maintenance.