Earth Science 105

Winter 2008

New Textbook:
*Conceptual Physical Science, 4th ed.*
Hewitt, Suchocki and Hewitt

Lab Manual:
*Earth Science 105 Lab Manual*
By Western Oregon University Earth Science Instructors
Karen Brown

- 3 years at Western Oregon University
- 10 years previous college instructing
- MS geochemistry, stratigraphy 1987
- WOU Earth Science 100 series lab coordinator
Earth Science 105

• Get textbook: there will be one or two in library on 2-hour reserve if you cannot afford to buy one at the bookstore

• Attend class regularly

• Do NOT miss lab: it is worth 25% of your grade, and you cannot pass the class if you get less than 60% of the lab points

• Labs start next week, and meet weekly. Your lab instructor will give you a schedule and syllabus next week.
This class

• Meets twice per week: 9:30 to 10:50 AM or 3:30 to 4:50 PM. You may attend later lecture occasionally if you have unexpected conflicts.
• Contact and grading information in the syllabus
• Online syllabus has hyperlinks to the review questions, and catalog information
Contact Information

• Office hours:
  – Monday 8 to 9 AM
  – Tuesday 8 to 9:30 AM
  – Wednesday 3 to 4 PM
  – Thursday 2 to 3:30 PM
• Drop in or phone during office hours
• NS 213:
  – up the south stairs, 2\textsuperscript{nd} door on right
• Phone 503-838-8265 (88265 on campus)
Notice the sign on the office door!

May also say
• Gone See Schedule
• Went for Coffee ETA
• Downstairs Be Right Back
• In NS017 Come Find Me
• HERE Please Knock
• Etc.
Emailing me: brownk@wou.edu

• Please, please use the time of this class IN THE SUBJECT of the email
  – ES 105 TR 9:30

• It helps orient me, and makes me be in a better mood.

• Email if you know in advance if you will miss an exam, are having difficulties with course materials, have personal issues that make attending class difficult, are going on a road trip with a team, troupe, club, etc.
I may email you

- If you prefer an address other than the .wou address, send me a note this week from that other address, so I can change it on my spreadsheet.
- I may contact you if I notice you are missing class, have done poorly on an exam, or for good reasons too: to recommend you for department recognition, etc.
- I recommend you reply so I know you got the note, and so we can resolve whatever it was that caused me to send the note.
Resources

• Your textbook: buy it, write your name in it, read it often—and pay attention when you are reading
• Me: call, come by, or email
• My website
• Your lab instructor
• Tutoring at the Learning Center
• Peer Led Team Learning
Textbook

• Review questions are there,
• Textbook website access is also there
My Website

- [www.wou.edu/~brownk](http://www.wou.edu/~brownk)
- Lecture notes, copies of slide shows, keys to in-class activities, midterms, review questions, extra credit opportunities
- Online syllabus with hyperlinks to review questions
Your lab instructor

• Start lab next week
• Bring your lab manual, your textbook, and a calculator to every lab: your cell phone is not appropriate—get a scientific calculator that does sine, cosine and square root!!
• Lab is intended to give you hands-on experience with the material I present in lecture
Tutoring Center

• Make an appointment
  – APS 401
  – call 503-838-8428
  – Email tutoring@wou.edu

• Tutors: get to know them early in the term
  – Teresa, Dallas, Avery

• In the AALC (across the street)
Peer Led Team Learning

• PLTL
• ES105x
• CRN 21016
• Day, time and location to be arranged
• Teresa Trump?
Grading

- **Three exams:**
  - two 50 point midterms
  - one 125 point final

- **Three sets of review questions:**
  - due on exam days,
  - worth 15 points each

- **In-class activities/homework exercises:**
  - 10 will count toward your grade,
  - at least 12 will be offered,
  - 3 points each

- **Lab is 25% of total grade,**
  - you have to pass lab
  - Your lab instructor will give me your percent, and I will use that as 100 points toward your final grade
Exams

• Midterms on January 24 and February 21
• Final on March 18, and will be comprehensive
• Bring a scantron, a pencil and a calculator
• Expect some multiple choice, true/false, matching, and diagrams on the scantron
• There will be a page of exercises, problems and short-answer responses
Missing exams

• If you know in advance, contact me as soon as you know so we can make arrangements for you to take it at another time

• If you miss one due to an emergency situation, you must have some written verification of the event for you to get consideration to take the exam late
Review questions

• Get a LARGE BLUE BOOK or two when you buy your textbooks
• Do the review questions weekly, or more often, instead of waiting until the night before they are due
• Write in independent statements, so the Blue Book is a stand-alone study guide
• Each set is due on each exam day
• No late review questions will be accepted
In-class activities/homework handouts

- There will be many of these, and more than count toward the 30 points available as part of your final grade.
- They cannot be made up outside of class: you need to be here to get the points.
- They are good examples of exam questions, or note-taking techniques.
- Occasional extra credit opportunities can offset missing a few of these.
The structure of the class

• Unit 1 will be physics: mass, motion, gravity, satellites, landslides
• Unit 2 will be chemistry: atoms, reactions, compounds, acids and bases, fuels
• Unit 3 will be geology: weathering, streams, sediments, sedimentary rocks, fuel deposits, energy resources
Nature of Science

• Gather knowledge
• Organize it
• Test it
Advances in Science

- Greece 2500 years ago across Mediterranean world
- East Asian astronomy 1500 years ago
- West Asian mathematics, manufacturing glass, paper, metals and chemicals 1000 years ago
- Copernicus proposed Earth orbits Sun ~500 years ago
Math and Conceptual Science

• Science is expressed in mathematical terms
• Unambiguous
• Easier to verify or disprove by experiment when expressed by math
Scientific Method

• Observe
• Question
• Predict
• Test
• Conclude
Scientific Attitude

• Fact: close agreement about same phenomenon
• Hypothesis: educated guess
• Law or principle: tested hypothesis
• Open mind: change concept of law or principle when contradicting information is found
• Single verifiable experiment outweighs authority, regardless of reputation
Theory

• General usage: same meaning as hypothesis
• Scientific theory:
  – summary of large body of information
  – Encompassing well-tested hypotheses
• Hypothesis must be testable to be a scientific hypothesis
• Mistakes and deception require re-examination of the hypothesis
Scientific Hypothesis

• A) atoms are the smallest particles of matter that exist
• B) space is permeated with an essence that is undetectable
• C) Albert Einstein was the greatest physicist that ever lived
Technology

• Lets us use scientific knowledge for practical purposes
• May lead to problems, but is not the problem
The Physical Sciences

- Physics: motion, force, energy, matter, heat, sound, light
- Chemistry: structure of matter, atoms make molecules, molecules make substances
- Earth Science: geology, meteorology, oceanography
- Astronomy: application to planets and stars
Earth System Science

• Practical application of chemistry and physics
• Knowing the rules of science helps you appreciate it more