

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

Advances in Science

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

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

Karen Brown

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

Books

Conceptual Physical Science, 4th ed.
Hewitt, Suchocki and Hewitt
Lab Manual:
Earth Science 105 Lab Manual
By Western Oregon University Earth
Science Instructors
(*Earth Science 12th ed.* is optional)

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: 11AM to 12:20 PM or 2:00 to 3:30 PM. You may attend either 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 M-T-W 9:30-11 AM, Tu 3:30-4 PM
- Drop in or phone during office hours
- NS 213:
 - up the south stairs, 2nd 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: (time)
 - Downstairs
 - Be Right Back
 - In NS017
 - Come Find Me
 - HERE
 - Please Knock
 - Etc.



Emailing me: brownk@wou.edu

- Please, please use this class IN THE SUBJECT of the email
 - ES 105
 - I read these notes before all others
- 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 what ever it was that caused me to sent 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
- Your lab instructor
- Tutoring at the Learning Center
- Peer Led Team Learning

Textbook

- *Conceptual Physical Science, 4th Ed.* By Paul Hewitt, John Suchocki, and Leslie Hewitt, 2008: ISBN-13: 978-0-321-51695-4
- Review questions are there,
- Textbook website access is also there

My Website

- 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

- 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
 - Go in to office set up first appointment
- Tutors: get to know them early in the term
 - Trevor, others?
- In the AALC (across the street)

Peer Led Team Learning

- PLTL
- ES105x
- CRN 21220
- Wed 4-5:30 PM, NS 016
- Ryan Korn

Grading

- Three exams:
 - two 50 point midterms
 - one 125 point final
- Five Homework Assignments:
 - due as indicated on assignment
 - worth 10-15 points each
- In-class activities/homework exercises:
 - 2 points each,
 - in class full credit if V# entered correctly,
 - In moodle: up to two points, graded
- 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 Jan, 24/25 and Feb. 17/18
- Final on March 17/18, 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

The structure of the class

- Unit 1: physics, mass, motion, gravity
- Unit 2: chemistry, atoms, reactions, compounds
- Unit 3: geology, weathering, landslides streams, sediments, energy resources