Truman College
Physical Science 111, Section WAB
Fall Semester 2012

"Our Mission dedicates us to deliver high-quality, innovative, affordable and accessible educational opportunities and services that prepare students for a rapidly changing and diverse global economy."

Instructor: Prof. James Czuchra, Email: jczuchra@ccc.edu
Office hours: Immediately after class, 2:00-3:30 pm.
Class time: Saturdays, 9:00 am - 2:00 pm
Place: Room 3833
Announcements, labs, and some problem sets will be posted on Blackboard. Please check it regularly. http://ccc.blackboard.com
Necessary Items: Textbook, something to write with, notebook and paper. Bring these to class every session.

Textbook:
Physical Science, 13th Edition, Tarbuck, Lutgens, and Tasa, Pearson Education, Inc., 2012, ISBN 978-0-321-68850-7

Grading:
Your grade will be based on laboratory reports and activities (30%), examinations (best three out of four) (40%), Exit Exam (Part One and Part Two) (20%) and attendance/class participation/homework (10%). You must correctly answer 20/50 questions on the Exit Exam (sum of correct answers on both parts) to receive a "C" or better in this course. Passing the Exit Exam does not guarantee passing the course. It's important to understand that A is earned for superior performance, B for good, C for adequate, D for minimal, and F for insufficient. Letter grades are translated to a numerical score for gradebook recording. Midterm and final grades are assigned based on the percentages earned as follows:
90-100%, A; 80-89% B; 70-79% C; 60-69%, D, below 60%, F.
Coming to class every day on time is essential to your success in this class. There are **no make ups** of any missed work. One participation point will be deducted for every 1 absences (after the first one) or every 2 tardies (after the second one). Grades are cumulative (NOT the average of midterm and second quarter grades). Students may be withdrawn from the class if it is deemed that they are not actively pursuing the course due to absences (more than 3 absences before midterm) and/or missing work.

Classroom/laboratory norms:
I want every student to be successful in learning physical science. You came here to learn but distractions hinder the learning process for you and your classmates. Please turn off (or set to vibrate) all cell phones while in class. You may quietly leave the room to attend to whatever needs tending to. Please do not text or listen to music while in class. When a general question is posed to the class, please do not blurt out an answer—raise your hand. I want every student to have the chance to think about the question before the answer is revealed. Lab safety is very important. Not following safety rules will result in being asked to leave the lab and receiving a zero for the activity we are working on. The work you do must be your own. Submitting work

that is not your own may result in a grade of F being assigned as a final course grade. Class time is our collective learning time, therefore please understand if you are asked to see me outside of class to pursue questions that are not relevant to our current learning task.

The Truman College Disability Access Center (DAC) exists to meet the needs of students with disablilities. This center is responsible for verifying that students have a disability-related need for academic accommodations, and for planning the appropriate accommodations in cooperation with the students themselves and their instructors. Students who need academic accommodations should request them from the DAC. The center is located in room 162-Q of the McKeon Student Services building with phone number: (773) 907-4725. Linda Ford is the director.

The privacy of student educational records is protected by FERPA (Family Educational Rights and Privacy Act - a federal law): www.ed.gov/policy/gen/guid/fpco/ferpa/index.html. Faculty cannot reveal information about students, or discuss student records over the phone or unsecure e-mail. CCC student e-mail meets FERPA requirements. Thus, all communication between the instructor and students (beside the personal one during the class and office hours) will be done exclusively through Blackboard and ccc.edu student e-mails.

The college, as well as your instructor, is concerned with your success. If you appear to be having difficulty with the class, you may be referred for help that the college provides via the Early Alert Program. If such a referral is made, your instructor will tell you so that you can expect someone from the college to contact you.

I recommend the website, http://justonly.com/physci/ps111/index.php for additional course related information.

Success in the Laboratory

Preparation: The moment lab begins is not an ideal time to begin to read a laboratory. You need to read the laboratory ahead of time and look up the meaning of any unfamiliar vocabulary.

Lab Reports: Laboratory reports are formal writing assignments and need to be taken seriously. You are expected to turn laboratory reports in on time, with all questions answered clearly and legibly and all pages neatly stapled (not folded or mutilated) together. Points will be deducted for late reports, messy reports, incomplete sentences and poor grammar/spelling, handwriting that is difficult to read. Points will also be deducted for errors in content.

General Education Goals Established by Truman College

Taking a course in Physical Science helps a student achieve all of the following general education goals. How this occurs is explained below.

- communicate effectively in both written and oral forms

  Students will keep a homework notebook. Students will write short essays after viewing films about volcanoes, caves, floods, hurricanes and other appropriate subjects. Students will keep a cloud journal.

- gather, interpret and analyze data

  Students will learn to collect data in the laboratory, create graphs, compare qualitative and quantitative data and draw conclusions about the data obtained.

- demonstrate the ability to think critically, abstractly and logically

  The Scientific Method is predicated upon deductive and inductive logical reasoning. Students will study applications of the scientific method to information gathered by the scientific community. Students will use the scientific method during laboratory activities.

- work with a variety of technologies

  Students use computers, digital imaging devices, media, the Internet, podcasts, all in the pursuit of scientific knowledge.

- exhibit social and ethical responsibility

  This very serious goal is addressed on many levels in the physical science course, from the discussion of the factors that brought about the destruction of New Orleans during hurricane Katrina to the problems with disappearing groundwater. Many references are made to the connection between geology, meteorology and astronomy to social and ethical responsibility.

- perform productively in the workforce

  Organizational skills are improved in this general education course. Scientific literacy is developed.

- demonstrate the ability to learn independently

  Students are given independent projects to complete in the course. They are also given questions to research independently. Reporting these results to the class develops their ability to speak confidently to their peers.

- gain awareness of their role in the global community

  By discussing the way that physical science is connected to other occupations and careers we develope student awareness about their career choice and its dependencies on a basic understanding of the general science.

Physical Science and Engineering Departmental Learning Outcomes

Upon graduation with an Associate degree from Truman College a student should be able to:

- Organize, analyze and interpret information and use the scientific method to make inferences.
- Exhibit knowledge of scientific concepts through written and oral communication.
- Demonstrate excellent laboratory skills and techniques including the proper use of relevant instruments and related technologies.
- Use the lexicon of science to explain abstract scientific concepts.
- Relate concepts learned in Physical Science and Engineering Department classes to real world situations.

General Student Learning Outcomes for Physical Science 111

At the completion of this course, the successful student will be able to do the following:

In Geology:

- Differentiate between minerals and rocks and identify many of the common rocks.
- Classify types of rocks and draw the rock cycle.
- List causative agents and products of various types of erosion.
- Describe the causes and results of diastrophism.
- Classify earthquake waves, faults and types of unconformities.
- Use the laws of geology to determine the relative age of rock structure.
- Describe the gross structure of the Earth, i.e., crust, mantle, core.
- Sort and identify a mixture of minerals according to their physical properties
- Identify geological land forms and describe their origin.
- Relate diastrophism and land forms to tectonic plate motion.

In Meteorology:

- Describe the structure and composition of the atmosphere.
- Describe atmospheric circulation patterns.
- Read simple weather maps and identify fronts, air masses and wind direction.
- Describe the movement of air about high and low pressure centers.
- Use principles of air mass and frontal movement to predict weather in various parts of the U.S. using maps and weather satellite information.

In Astronomy:

- Give evidence of the sphericity, rotation and revolution of the Earth.
- Use latitude and longitude to identify geographical and time zones on Earth.

- Describe the motions of the Earth and the Moon in their orbits
- State and explain the various cosmological models.
- List Kepler's Laws.
- Use scale models as they relate to astronomical systems.
- List types of stars and describe the process of stellar evolution.
- Describe composition, structure, and possible origin of the solar system.
- Describe the structure and evolution of the universe.

Generally:

- Use laboratory equipment to perform experiments and demonstrations.

Week	Topic	Text Reference
Geology		seven weeks
Week 1: Aug. 25	Scientific Method: Hypothesis, Theory, Law, Inductive and Deductive Reasoning	Chapter 1
	Minerals: Definition, Atomic Structure, Properties, Abundance, Mining	Chapter 2
Week 2: Sept. 1	Rocks: The Rock Cycle, Igneous, Metamorphic, Sedimentary, Ores	Chapter 3
	Weathering, Soil and Mass Wasting: Weathering, Soil Formation, Types of Mass Wasting	Chapter 4
Week 3: Sept. 8	Running Water and Groundwater: The Hydrologic Cycle, River Systems, Work From Running Water, Erosion, Deposition, Floods, Storage and Movement of Groundwater, Springs and Wells, Contamination	Chapter 5
	Glaciers, Deserts and Wind: Glacial Erosion, Landforms, Glacial Deposits, Ice Ages, Evolution of a Desert, Dunes	Chapter 6
Week 4: Sept. 15	Exam One	Chapters 1 to 6
	Plate Tectonics: Continental Drift, Plate Boundaries, Hot Spots, Mechanisms	Chapter 7
Week 5: Sept. 22	Earthquakes and Earth's Interior: Faults, Foreshocks and Aftershocks, Seismology, Scales, Tsunamis, Subsidence, Earth's Layers	Chapter 8
	Volcanoes: Flows, Gases and Pyroclastics, Types of Volcanoes, Volcanic Landforms, Plate Tectonics and Vulcanism	Chapter 9
Week 6: Sept. 29	Mountain Building: Folds, Faults, Types of Mountain Ranges, Isostasy, Joints	Chapter 10
	Geological Time: Relative Dating, Law of Superposition, Cross-Cutting Relationships, Inclusions, Principle of Original Horizontality, Unconformities, Disconformity, Fossils, Radiometric Dating, The Geologic Timescale	Chapter 11
Week 7: Oct. 6	Exam Two	Chapters 7 to 11
	Exit Exam Part One: Geology	Chapters 1 to 11
Meteorology		four weeks
Week 8:	The Atmosphere: Composition, Structure and Temperature	Chapter 16

Oct. 13	Weather and Climate, Height and Structure of the Atmosphere, Earth-Sun Relationships, Mechanisms of Heat Transfer, The Greenhouse Effect, Cloud Cover and Albedo, World Distribution of Temperature	
	Moisture, Clouds and Precipitation: Phase Changes of Water, Relative and Absolute Humidity, Dew Point, Stability and Instability of Air Masses, Classification of Cloud Types, Precipitation,	Chapter 17
Week 9: Oct 20	Air Pressure and Wind: Measuring Air Pressure, Idealized Global Circulation, Local Winds, Land and Sea Breezes	Chapter 18
Week 10: Oct 27	Weather Patterns and Severe Storms: Types of Air Masses, Fronts, Cyclones and Anti-cyclones, Thunderstorms, Tornados, Hurricanes	Chapter 19
Week 11: Nov. 3	Climate	Chapter 20
	Exam Three	Chapters 16 to 20
Astronomy		two weeks
Week 12: Nov. 10	Origin of Modern Astronomy: Early Greeks, Ptolemaic System, Copernican System, Kepler's Laws, Galileo, Constellations, Rotation, Revolution, Precession, Phases of the Moon	Chapter 21
	Touring Our Solar System: Terrestrial Planets, Jovian Planets, The Moon, Asteroids, Comets, Meteoroids	Chapter 22
Week 13: Nov. 17	Light and the Sun: Nature of Light, Spectroscopy, Doppler Effect, Telescopes, Structure and Composition of the Sun	Chapter 23
	Beyond the Solar System: Stellar Brightness, Hertzsprung-Russell Diagram, Variable Stars, Interstellar Matter, Stellar Evolution	Chapter 24
Nov. 24 Holiday - No class		
Week 14: Dec. 1	Exam Four	Chapters 21 to 24
	Exit Exam Part Two: Meteorology and Astronomy	Chapters 16 to 24

Lab		Lab	
	Identification of Minerals		Clay Models
	Identification of Rocks		Air and Air Pressure
	Map Reading		Cloud Journal
	Geological Models: Models 4 and 6 - Glaciers		Using the NOAA Website
	Earthquake Data (Computer Simulation)		Weather Map
	Geological Models - Volcanoes and Mountains		Night Vision
	Simulation of Radioactive Decay		

List of lab activities subject to change.