CHEM 1411, CHEMISTRY OF OUR WORLD

Fall Semester, 2014

Chemistry Department, Dr. Treacy Woods, Department Chair

COURSE DESCRIPTION

This course introduces the physical environment of our world with emphasis on scientific laws. Students study the forces of nature and apply scientific principles. Topics include rocks, minerals, the chemical composition of the earth, glaciers, the hydrologic cycle, salt water salinity, as well as selected topics from cartography, seismology, oceanography, meteorology, and astronomy. The course includes one semester hour credit for laboratory sessions. This course does not count toward the chemistry major or minor.

COURSE SEQUENCE IN CURRICULUM

This course is targeted toward non-science majors.

PRE-REQUISITE INFORMATION

None

INSTRUCTOR INFORMATION

Name:	Dr. Robert Towery
E-mail:	rtowery@hbu.edu
Office Phone:	281-649-3459
Office Location:	S210B
Office Hours:	By appointment
Web Page Address, Web Board, ListServ:	Blackboard http://wps.prenhall.com/esm_tarbuck_escience_11/32/8318/2129529.cw/index.html

LEARNING RESOURCES

Course Texts:	Earth Science, 14th Edition, Tarbuck and Lutgens, 2015. Applications and Investigations in Earth Science, 8th edition, Tarbuck, Lutgens, and Pinzke, 2015
Laboratory Text:	None
Supplementary Text:	None
Other Required Materials:	Non-programmable calculator

COURSE OBJECTIVES

Purpose of the course:

The purpose of this course is to provide students insight to the function of earth systems. Emphasis is placed on matter, energy, crustal dynamics, environmental awareness, materials availability, and the cycles that circulate energy and materials through the earth system.

Aims for the course:

The student will:

1. build an understanding of lithospheric materials, processes, changes, and uses.
2. be able to classify the three major rocks according to their origin, based on texture, mineral composition, and the processes responsible for their formation.

3. facilitate thinking in terms of systems concepts.
4. build an understanding of the hydrosphere and its interactions and influences on the lithosphere, the atmosphere, and environmental quality.

On completion of this course, students should be able to:

1. be able to recognize several minerals that have importance as rock-forming minerals, ore minerals, and are historically/economically important.
2. be able to recognize and classify (at an elementary level) several igneous, sedimentary, and metamorphic rocks common worldwide.
3. be able to relate the relationships between rock types and various geologic processes through laboratory reports and examinations.
4. Understand many of the basic concepts of geology, and see how science changes because of the discoveries of scientists.

RELATION TO DEPARTMENTAL GOALS AND PURPOSES

The chemistry department prepares students to respond to their call to share in the wise stewardship of the matter that makes up all of creation in their chosen career. The chemistry department provides a program for students that gives them:

"A thorough and practical knowledge of the intricate nature of matter;"

"The ability to explore and discover the depths of the beauty of matter;"

"The ability to analyze problems, formulate solutions to problems, and be creative in response to challenges related to the wise use of matter;"

"The ability to respect the matter in creation through preparation for excellent and ethical practice of chemistry in their chosen career."

"The opportunity to complete a major that is comparable in curriculum to those at institutions with chemistry majors certified by the American Chemical Society (ACS.)"

RELATION TO COLLEGE GOALS AND PURPOSES

"…to prepare students for careers and further education in the natural sciences and mathematics in a nurturing Christian environment. The College will also serve the HBU community by providing science and mathematics classes that empower HBU students to meet the goals and requirements of their field of study and enrich their liberal arts education."

RELATION TO THE PURPOSE STATEMENT OF THE UNIVERSITY

University mission and purpose statement from the Houston Baptist University Catalog, 2009-2010: "…to provide a learning experience that instills in students a passion for academic, spiritual, and professional excellence as a result of our central confession, "Jesus Christ is Lord"

"…Committed to providing a responsible and intellectually stimulating environment that:

- fosters spiritual maturity, strength of character, and moral virtue as the foundation for successful living
- develops professional behaviors and personal characteristics for life-long learning and service to God and to the community
- meets the changing needs of the community and society

- remains faithful to the **'Nature of the Institution'** statement"

"…Promotes learning, scholarship, creative endeavor, and service".

ATTENDANCE

Please see the official Attendance Policy in the HBU Classroom Policy on Blackboard. Students missing more than 25% of the class will be given a failing grade.

ACADEMIC ACCOMODATIONS

Students needing learning accommodations should inform the professor immediately and consult the Academic Accommodations section of the HBU Classroom Policy posted on Blackboard.

COURSE REQUIREMENTS & GRADE SCALE

Course requirements:

1. Attend all classes and take complete, careful notes.
2. Read and understand assignments in the text which complement and supplement material received in class.
3. Read and understand classroom material and work problems contained therein.
4. Demonstrate an understanding of these concepts on three lecture exams and a final exam.

Grading standards:

In order to receive a grade of C or greater in CHEM 3415, a student must do the following:

1. Perform satisfactorily on exams and quizzes. The quiz average and lecture exams constitute 80% of the final grade. Neither the final grade nor any of the exams will be curved. A comprehensive exam will be given near the end of the semester.
2. Perform satisfactorily on all laboratory experiments. The laboratory component of the course counts 20% toward the final grade.
3. Homework is not graded. Answers are provided in the solutions manual.
4. Demonstrate knowledge of the lithosphere including names, positions, compositions, and characteristics of the earth's main layers and uses of the seismograph in investigating the earth's structure.
5. Understand the physical and chemical characteristics of rocks and minerals and the formation and characteristics of igneous, sedimentary, and metamorphic rocks.

The grading scale is as follows:

A = 90 – 100; B = 80 – 89; C = 70 – 79; D = 60 – 69; F = below 60

PROFICIENCIES:

Technology component:

LIMS (Laboratory Information Management System) computer handling of data will be used.

Designated essay/writing component:

Exams will have at least one question in which the student must respond using coherent, grammatically correct written statements.

Reading component:

The student will be expected to read several handouts from various sources, including the World Wide Web, in addition to the text.

Oral communication component:

Students will be expected to give an oral laboratory report from one of the experiments.

Mathematics component:

Some algebra will be used to physically define certain concepts and ideas.

Critical thinking component:

Throughout the semester, we will constantly be developing chain of reasoning and evaluating multiple explanations possible for various observations.

LATE WORK & TEST POLICY

Late work:

10 points per day will be deducted from late lab results.

Missed tests:

A comprehensive make-up exam will be given near the end of the semester for anyone missing an exam. There will be no make-up for missed quizzes or lab exams.

EVALUATION

Method of student appraisal of faculty:

Students will be given an opportunity to appraise the professor by completing the IDEA Faculty Evaluation Questionnaire, and/or the COSM course evaluation at the end of the semester. The instructor, the department chairman and dean will review the responses of the students after the completion of the course.

Method of evaluating student response to course:

Students will be given an opportunity to describe their response to the course by completing the IDEA Faculty Evaluation Questionnaire and/or the COSM course Evaluation at the end of the course. The instructor, the department chairman and dean will review the responses of the students after the completion of the course.

LABORATORY DRESS CODE

Students may be asked in advance to wear closed-toed shoes and long pants during certain experimental procedures.

LABORATORY CONDUCT AND SAFETY

IMPORTANT INFORMATION FOR THIS COURSE: IF A STUDENT IS PREGNANT OR NURSING, SHE WILL NOT BE ALLOWED TO ATTEND THE LABORATORY SESSIONS BECAUSE SOME OF THE CHEMICALS, WHICH ARE NORMALLY INNOCUOUS, USED IN

THESE LABORATORY EXPERIMENTS, MAY BE HARMFUL TO A DEVELOPING FETUS. IF A STUDENT BECOMES PREGNANT DURING THE COURSE, SHE MUST STOP ATTENDING THE LABORATORY SESSIONS IMMEDIATELY AND SHE IS TO NOTIFY HER PROFESSOR. THE PROFESSOR WILL DISCUSS OPTIONS THAT THE STUDENT WILL HAVE TO ENABLE HER TO COMPLETE THE COURSE REQUIREMENTS.

TOPICAL OUTLINE - ***include table, calendar, or topical outline with dates***

Topics Covered:

- the solid earth – minerals -- building blocks of rocks
- rocks – materials of the lithosphere
- astronomy – solar system, earth/sun/moon relationships
- oceanography – waves, tides, ocean currents
- glaciers, deserts and wind
- earthquakes and the earth's interior
- plate tectonics
- meteorology -- clouds, hurricanes, air masses
- igneous activity
- Topics covered on each exam will be announced during semester
- Exam 1 September 18, 2014
- Exam 2 October 16,2014
- Exam 3 November 18, 2014
- Final Exam TBA
- Last day to drop the course without a "W" : September 10
- Last day to drop the course and receive a "W" : October 31

The content of this outline and the attached schedule are subject to change at the discretion of the professor.

Student Signature – I have read and understand the syllabus for this class. I understand that the content of this syllabus and the topical outline are subject to change at the discretion of the professor. I have read and understand the HBU Classroom Policy posted on Black Board. **I promise to uphold the Code of Academic Integrity at Houston Baptist University and will not tolerate its violation by others**.