

EVS 357-60 Introduction to the Critical Zone

<http://udonline.dbq.edu/course/view.php?id=890>

Summer 2015

Instructor Information

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Overview/Course Description

This course introduces and examines the Critical Zone (CZ), Earth's permeable layer that extends from the top of vegetation to the bottom of the fresh groundwater zone. It is a constantly evolving boundary layer where rock, soil, water, air, and living organisms interact to regulate the landscape and natural habitats, and determine the availability of life-sustaining resources, including our food production and water quality. CZ science as an interdisciplinary and international pursuit is stressed with a focus on cross-disciplinary science in the CZ. This course focuses on the large quantity of interdisciplinary data available from the existing National Science Foundation (NSF)-funded CZ Observatories (CZO) and utilizes readings, discussions and presentations, and cutting-edge learning activities.

Prerequisites

Suggested courses to be taken prior to this course are UDMA 112, Algebra, with a grade of C or better, and UDCM 111, General Chemistry II, or equivalent. Environmental Chemistry and Environmental Geology are also advised.

Required Text(s), Readings, and Materials

Required reading will be posted on moodle and consist of primary and popular literature.

Course and Program Objectives

A. Department of Natural and Applied Mission Statement:

1. to provide students with a broad-based contemporary program of study, which will provide them with the necessary technical and intellectual skill sets needed to work as a scientific professional in the 21st century;
2. to develop scientific and mathematical competency for students pursuing science education; and
3. to meet the need of all students at the University of Dubuque for quantitative skills, scientific literacy, and an understanding of scientific processes.

This course supports the mission of the Department of Natural and Applied Sciences by providing science majors with an avenue to gain quantitative skills, scientific literacy, and understanding of scientific processes.

B. Department of Natural and Applied Science student outcomes are:

1. identify and analyze significant scientific issues of local and global concern;
2. appreciate ecological diversity;
3. contribute significantly to multidisciplinary teams for which science is one of the components;
4. communicate well according to professional standards of their chosen field;
5. utilize measurements and observations in their chosen field;
6. evaluate the ethics of behavior and decisions likely to be encountered in one's professional career; and
7. embrace lifelong learning.

This course supports the Department's student outcomes by providing students an opportunity to: apply CZ concepts to scientific issues (1); utilize CZ knowledge as part of an interdisciplinary team (3); gain CZ field and lab observation and measurements skills (5); review ethical dilemmas in CZ science (6); and practice lifelong learning (7).

C. EVS 357 (Critical Zone Chemistry) student outcomes and assessment strategies are as follows:

LEARNING OUTCOMES	MEANS OF ASSESSMENT
1. Characterize the relationship between the Critical Zone, atmosphere, lithosphere, hydrosphere, biosphere and soil.	assignments, exams/quizzes, problem sets, paper
2. Summarize the effects of anthropogenic activities on local to global Critical Zone processes.	topic papers, exams, oral presentations, problem sets, paper
3. Demonstrate ability to analyze ethical issues related to CZ science.	reflection papers, CZO studies, oral presentations
4. Determine the distribution of chemical species in CZO environments.	assignments, exams/quizzes, laboratory notebooks, problem sets
5. Perform common air, water, and soil CZO laboratory and field procedures.	laboratory notebooks
6. Analyze how water, carbon, nutrient and energy flow through the Critical Zone and impact long-term sustainability of water and soil resources.	laboratory presentations, assignments, paper

Performance Expectations

1. Login to class website on a daily basis.
2. Meet all deadlines.
3. Prepare adequately for each class session using appropriate study strategies.
4. Do your own work.
5. Have and use all textbooks and required materials.
6. View and read all posted materials provided by the instructor and carefully follow all directions.
7. Actively participate in online discussion forums and wikis.
8. Write effectively and appropriately.
9. Be courteous and respectful in public and private communications.

Technology Requirements and Computing Facilities

1. Electronic Communication: Students are expected to login to UDOonline on a regular basis to access course resources, such as the syllabus, readings, and discussion forums, as well as upload assignments.
2. Electronic Devices: Students are expected to have or locate their own access to computer equipment and an Internet connection. If a student does not have a computer they may access University lab computers located throughout campus. Check with the Office of Technology for specific locations.

Student Evaluation & Grading

The following outcome referenced assessments will be used to measure mastery of individual and overall course outcomes as listed on page 2 of this syllabus.

Comprehensive final exam.....	100 points (31% of total)
Final Research Paper	100 points (31% of total)
Assignments (group and individual).....	125 points (38% of total)
- Grand Challenge Paper	
- One-page Topics/Reflections	
- Problem Sets	
- Quizzes	
- Critical Zone Observatory Profile Presentation	
- Moodle posts	
Total Class Points Possible.....	325 points

Grading Scale

93 to 100% of total points possible.....	A
90 to 92% of total points possible.....	A-
87 to 89% of total points possible.....	B+
83 to 86% of total points possible.....	B
80 to 82% of total points possible.....	B-
77 to 79% of total points possible.....	C+
73 to 76% of total points possible.....	C
70 to 72% of total points possible.....	C-
67 to 69% of total points possible.....	D+
63 to 66% of total points possible.....	D
60 to 62% of total points possible.....	D-
0 to 59% of total points possible.....	F

Schedule of Assignments/Calendar

- Week 1 – Critical Zone Background
- Week 2 – Methods of Critical Zone Science
- Week 3 – Land-atmosphere exchange
- Week 4 – Water transfer through the CZ
- Week 5 – Landform and Landscape Evolution
- Week 6 – Geochemistry and Biogeochemistry
- Week 7 – Humans in the Critical Zone
- Week 8 – Critical Zone Future

Course Administrative Information – “house rules”

- Course work turned in on time will be returned to you in a timely manner; no such guarantee can be made for late work, which in addition will be docked a letter grade.
- Limited extra credit might be available to all students in the form of assessment of classroom topics/methods, lab components, and special outside speakers.

Academic Dishonesty Policy

“The University of Dubuque expects students to be honest in academic matters. We expect each person on campus to be forthright and direct, and to value integrity in all his/her dealings. Activities and attitudes should be consistent with high academic standards and Christian commitment and should be consistent with the Mission and Values of the University.” (University of Dubuque Student Handbook, 2011-12). Please see the “Values Violations” section of the UD Student Handbook for appropriate definitions, procedures and possible sanctions related to Academic Dishonesty (<http://www.dbq.edu/studentlife/pdf/UDStudenthandbook.pdf>)

Academic Success Center

The Academic Success Center for the University of Dubuque is located on the second floor of the Myers Library. The phone to the Center is 589.3262. This center can assist you in developing basic academic skills and can provide tutoring referrals. Please contact your instructor to discuss Academic Success Center services that might assist you in achieving course outcomes.

Library Support

Librarians are available to assist you in every stage of research assignments. The Reference Desk is located on the first floor of the Myers Library. The phone to the Reference Desk is 589.3770. Librarians also answer questions by email (reference@dbq.edu) and instant message (screen name: udreference). Librarians can assist you in developing basic academic research skills and provide referrals as needed. Each academic department has an assigned librarian. Please contact your instructor to discuss library materials and services that will assist you in achieving course outcomes.

Proctoring Services

Some online instructors require exams to be proctored. Should this be the case, students are required to identify a suitable proctor and complete a Proctor Approval Request Form. The form is available on the Moodle home page (UDOnline.dbq.edu).

Americans With Disability Act (ADA) Statement

Reasonable accommodations are available for students who have a documented disability. Please notify Adam Hoffman during the first week of class of any accommodations needed for the course. Late notification may cause the requested accommodations to be unavailable. Confidentiality of all requests will be maintained. All requested accommodations must be approved through the Academic Success Center, 2nd floor Myers Library (589.3262).

This syllabus, course calendar and other attending documents
are subject to change during the semester.