

GEOG 306

Desert Landscapes and Dynamics



COURSE DESCRIPTION

What processes form the landscapes seen in deserts? Are all deserts made up of huge sand dunes? How can anything survive in regions with no rain? How do we know anything about these regions when no one lives there?

Contrary to popular belief, deserts are not wastelands; containing specially adapted plants and animals, this sun drenched landscape typified by limited precipitation abounds in biological diversity and unique geomorphology. Through a combination of seminars, class exercises and lecture this course will review the current processes that shape these landscapes and explore how different methods can inform us about what these lands looked like in the past. Through this journey we will highlight the role of biodiversity in these extreme regions and discuss current threats to these fragile yet tolerant ecosystems. Focusing on mainly hot deserts we will explore arid regions around the globe with some focus on US deserts. Lastly we will examine their effects of human activities and the impact of humans on environmental processes and systems.



GOALS

Students will be able to explain the nature and operation of geomorphological processes in deserts and have an understanding for the relative importance of different process systems. They will recognize how physical characteristics limit human activities and be able to give examples of human-physical interactions within deserts.



STUDENT RESPONSIBILITIES

Textbook & Readings

This course has a required textbook available at the IU Bookstore for purchase or rent:

D.S.G. Thomas (Ed), 2011. *Arid Zone Geomorphology: Process, Form and Change in Drylands*, 3rd Edition.

This text synthesizes the most recent fundamental research in arid zone. Other resources will be made available to give further background on the flora and fauna of desert regions. The text is a great resource, but it is not a replacement for attending class. Current area-specific topics will be presented in class that will be the main focus of discussion.

Lecture

As the main meeting for this class the lecture time slot will play many roles throughout the semester. Primarily it will be used as a guided learning

platform requiring interaction amongst the group to discuss topics from the readings, being attentive and respectful when others are sharing information, and provide feedback on the curriculum through the semester.

The lecture time will also be used for hands-on experiments, group-led seminars, and digital labs.

Course Wiki

A main component of the graded work will be a class-developed public wiki. This will be comprised of summary sections from the course curriculum, cumulating in a multi-purpose group effort that can be used for reference. In addition, small anonymous group projects will summarize and critique current literature throughout the semester through the wiki media platform.

Your Grade

Participation & Quizzes: 30%

Quizzes will be assigned for completion before class based on upcoming readings for the class. Attendance is mandatory and will be reflected a portion of this mark.

Wiki entries: 20%

This grade is composed of small tasks scattered through the semester and several paper critiques.

Group Project & Paper: 30%

A group project is a main focus of the course that comprises of a seminar, wiki entry and a research paper.

Exams: 20%

One exam will be given to assess your knowledge of the key concepts.

Grading Scale

Grade	%	Grade	%
A+	97.0	C+	77.0
A	93.0	C	73.0
A-	90.0	C-	70.0
B+	87.0	D+	67.0
B	83.0	D	63.0
B-	80.0	D-	60.0
		F	0.0

Course Schedule		
WEEK 1	Aug. 25 Introduction to Deserts	Aug. 27 Desert Ecosystems
WEEK 2	Sep. 1 Labor Day: No Class	Sep. 3 How old are Deserts?
WEEK 3	Sep. 8 Diversity of Deserts	Sep. 10 What does aridity mean?
WEEK 4	Sep. 15 Weathering in Deserts	Sep. 17 Desert Soils
WEEK 5	Sep. 22 Deserts Crusts	Sep. 25 Desert Pavement
WEEK 6	Sep. 29 Badlands	Oct. 1 Runoff & Overland Flow
WEEK 7	Oct. 6 Dryland Rivers	Oct. 8 Ephemeral Channel form & flows
WEEK 8	Oct. 13 Alluvial Fans	Oct. 15 Pans & Playas
WEEK 9	Oct. 20 Aeolian bedforms	Oct. 22 Aeolian Transport
WEEK 10	Oct. 27 Dunes	Oct. 29 Dust
WEEK 11	Nov. 3 Desert Flora	Nov. 5 Desert Fauna
WEEK 12	Nov. 10 Wiki-athon	Nov. 12 In-class Exam
WEEK 13	Nov. 17 Human Impacts on Deserts	Nov. 19 Human Impacts on Deserts
WEEK 14	Nov.24 No Class: Thanksgiving	Nov. 26 No Class: Thanksgiving
WEEK 15	Dec. 1 Hazards in Deserts: Student-led	Dec. 3 Hazards in Deserts: Student-led
WEEK 16	Dec. 8 Climate change projections	Dec. 10 Climate change effects

Readings	Assignments
Thomas Ch. 1	Create Wiki account
Thomas Ch. 3	Quiz #1
Thomas Ch. 4 & 5	Wiki entry #1
Thomas Ch. 6 & 7	Quiz #2
Thomas Ch. 8 & 9	Wiki entry #2
Thomas Ch. 10 & 11	Quiz #3
Thomas Ch. 12 & 13	Group Project Proposal Due
Thomas Ch. 14 & 15	Wiki entry #3
Thomas Ch. 17 & 18	Quiz #4
Thomas Ch. 19 & 20	Wiki entry #4
See reading list	Quiz #5
Group wiki entry	Exam!
Thomas Ch. 22 & 23	Research paper ToC/draft
No Class	No Class
Group wiki entries	Quiz #6
Thomas Ch. 24	Research paper due

Course Policies

Academic Integrity

As a student at IU, you are expected to adhere to the standards and policies detailed in the [Code of Student Rights, Responsibilities, and Conduct](#). When you submit a paper with your name on it in this course, you are signifying that the work contained therein is all yours, unless otherwise cited or referenced. Any ideas or materials taken from another source for either written or oral use must be fully acknowledged. If you are unsure about the expectations for completing an assignment or taking a test or exam, be sure to seek clarification beforehand. All suspected violations of the Code will be handled according to University policies. Sanctions for academic misconduct may include a failing grade on the assignment, reduction in your final grade, a failing grade in the course, among other possibilities, and must include a report to the Dean of Students.

Late penalty:

All work turned in after the stated due date will be subject to late penalties. Exceptions include those relating to the IU policy on religious observances. Exceptions beyond this policy will be granted in only the most extreme cases.

Class attendance:

Class attendance is expected. If a student misses a class, it is that student's responsibility to make up the work or get class notes. This course follows the IU policy on religious observances.

Workload Expectations

For undergraduate courses, one credit hour is defined as equivalent to an average of three hours of learning effort per week (over a full semester) necessary for an average student to achieve an average grade in the course. For example, a student taking a three-credit course that meets for three hours of lecture should expect to spend at least an additional six hours per week on coursework and readings outside the classroom.

Statement on Class Conduct

Students who disrupt the positive learning environment in the classroom will be asked to leave. Please refrain from using electronic devices during class unless instructed to do so or if they are being used to serve class needs. Students whose behavior suggests the need for counseling or other assistance may be referred to their college office or University Counseling Services. Students whose behavior may violate the University Student Conduct Code may be referred to the University Counseling Office.



Instructor Details

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