Spring 2013 BIOCLIMATOLOGY TTh 2:30-3:45 pm AOSS 811

218-4208

3 credits

Professor Ankur Desai

1549 AOSS

Email: <u>desai@aos.wisc.edu</u> Office Hours: TTh 1:15-2:15 pm or by appointment

Web page: <u>https://learnuw.wisc.edu/</u> (login with your NetID to access course)

Course Materials

Required:

Bonan, Gordan. 2008. *Ecological Climatology: Concepts and Applications, 2nd edition*. Cambridge Press. ISBN: 978-0-521-69319-6.

Recommended:

Chapin III, F. Stuart. 2011. Principles of Terrestrial Ecosystem Ecology, 2nd edition. Springer. ISBN: 9781441995025

Schlessinger, W., and Bernhardt, E., Biogeochemistry: An Analysis of Global Change, 3rd edition. Academic Press. ISBN: 9780123858740

All books are available at University Bookstore and on reserve at the SSEC Library (3rd floor AOSS)

Course content

Bioclimatology is the study of the connection between **living organisms** and **climate**. This 3-credit graduate course is designed for students interested in seeking answers to questions such as:

- What are the fundamental *ecosystem-relevant* aspects of the climate system?
- What are the basic *climate-relevant* functions of organisms and ecosystems?
- How do the two interact and how does changing land use and climate alter these interactions?

Grading

Short problem sets and literature review response papers -30%Final group project (proposal 10% / report 10% / presentation 10%) -30%Two exams (20% each) -40%

Course Structure

Classes will consist of standard lectures, and interactive discussion is encouraged. On most Thursdays, in addition to lecture, we will either review current and classical literature in bioclimatology or the most recently assigned problem set. Students are encouraged to work on the problem sets together and suggest literature for review. When doing literature reviews, every student will submit a one-page response paper.

The final project will be a small group (3-4 people) integrative analysis of ecoclimatological data. The nature of the project will be selected through a proposal voting process. Final results will be presented in a group conference extended abstract and oral presentation at the end of semester. More details will be provided early in the semester.

Course Calendar

Part I. Climate System					
Week 1	1/22;1/24	Introduction to ecological climatology and system dynamics			
Week 2	1/29;1/31	Physics and dynamics of the climate system			
Week 3	2/5;2/7	Climate observations (NO CLASS TUE FEB 5)			
Week 4	2/12;2/14	General atmosphere and ocean circulation			
Week 5	2/19;2/21	Feedbacks, stability, and trends			

Part II. Ecosystems and Climate					
Week 6	2/26;2/28	Ecosystems and biomes			
Week 7	3/5;3/7	Ecosystem energetics			
THU	3/7 Exam	Ι			
Week 8	3/12;3/14	Ecosystem dynamics			
TUE 3/12 Research proposal due					
Week 9	3/19;3/21	Ecosystem-ocean-atmosphere interaction			
Break	3/26;3/28	SPRING BREAK			
Part III. Biogeochemistry and Global Interactions					
Week 10	4/2.4/4	Introduction to Biogeochemistry			

Week 1	0	4/2;4/4	1	Introduction to Biogeochemistry
Week 1	1	4/9;4/1	1	Biogeochemistry and climate
Week 1	2	4/16;4	/18	Ecohydrology and climate
Week 1	3	4/23;4	/25	Anthropogenic effects and ecosystem resilience
	TUE 4	/23	Exam	II

Week 14	4/30;5/2	Final presentations
Week 15	5/7;5/9	Final presentations and Conclusion
THU	5/9 Resea	arch paper due
NO FINAL		

Accommodation Policy

Campus policy: "We believe in the right of all students who are enrolled at the University of Wisconsin-Madison to full and equal educational opportunity. Disability should not be the basis for exclusion from educational programs. All students are entitled to an accessible, accommodating, and supportive teaching and learning environment. ... Students are expected to inform faculty, in a timely manner, of their need for special instructional accommodations."

Students requiring class accommodations due to a learning or physical disability must present documentation from the McBurney Disability Resource Center (<u>http://www.mcburney.wisc.edu</u>/) in the first week of class. Accommodations will be made in consultation with the McBurney Center.

Students who require temporary accommodations due to medical or psychological reasons should acquire documentation from University Health Services. Counseling is available from Counseling Services, University Health Services (<u>http://www.uhs.wisc.edu/</u>).