

BB1045: Biodiversity (Introductory majors class, up to ~80 students)
Worcester Polytechnic Institute
Worcester, Massachusetts
Abbreviated Course Syllabus
Prof. Marja Bakermans

Instructor and Teaching Assistant Information

Required Course Materials: Gaston, K. J. and J. I. Spicer. 2004. Biodiversity: An Introduction 2nd Edition. Blackwell Publishing. Malden, MA.

Additional course materials, (e.g., supplemental readings, web links and general course information) will be available to you through <http://my.wpi.edu/>.

Course Description: Through lectures, readings, and discussions this course will examine the breadth, patterns, mechanisms, and conservation of biodiversity. We will use case studies and peer-to-peer learning to examine threats to regional and global biodiversity. Students will investigate and interpret past and contemporary research to quantify, document, and track trends in biodiversity. This course will use projects and assignments to explore the natural, social, and economic tradeoffs associated with threats to and conservation of biodiversity. Finally, this course will provide a synthesis of the interdisciplinary nature of biodiversity conservation and how principles of conservation biology, landscape ecology, metapopulation biology, and biogeography can be applied to strategies aimed towards sustaining Earth's biota.

Learning Objectives: After completing this course, you should be able to:

- Describe the mechanisms of evolution and evaluate the need for biodiversity.
- Quantify, analyze, and interpret ecological data.
- Apply the principles of biodiversity conservation to current ecological issues.
- Demonstrate knowledge and skills developed in the area of expertise of your project.
- Speak and work in groups and design/write a professional quality poster.
- Think critically about complex ecological issues.

Grading and Assignments: Final grades are based on the following:

<u>Evaluation criterion</u>	<u>% of Final Grade</u>
Blackboard Quizzes (out-of-class; 5 count toward grade)	20%
Exams (in-class; 2 total)	20%
Primary Literature Learning Modules- Quizzes and Homework (5 total)	20%
Primary Literature Final	10%
Group Project assignments & presentation	25%
Participation (via clicker and conference)	5%
Total	100%



Additional information on lectures, blackboard quizzes, exams, participation, expectations, attendance policy, other class policies, academic integrity, and information for students with disabilities.

Group Project: As a group, you will work together to design and write an informational poster that explains the impacts of climate changes on species while analyzing and incorporating multi-trophic data. This project will be broken into different components throughout the term. Where necessary, you WILL need to include in-text and end of text citations for information (see module 1 for more information). All information MUST be written in your own words. The assignments are as follows:

- 1) Select 1 of the following concepts and go to the primary literature (i.e., peer-reviewed journal articles ONLY) to find information to explain the concept. Concepts: *trophic cascade* or *trophic mismatch*. More information will follow.
- 2) Complete Exercise 1 on regional long-term temperature trends.
- 3) Complete Exercise 2 on statewide long-term temperature trends.
- 4) Complete Exercise 3 on climate change and flowering times.
- 5) Complete Exercise 4 on biological indicators and climate change.
- 6) Final Project: Design and create an informational poster of how climate change impacts species and base it on 1 of the species (either 1 of the flower, butterfly, or hummingbird species). Use information from the previous assignments and any additional information necessary (e.g., its natural history, range, distribution, and life history traits, status).

You will need to conduct library research for these assignments. Appropriate sources of information for these assignments include: articles from peer-reviewed journals, newspapers or popular journals, published books, reference books, IUCN databases, and state or university extension papers. Sources that are NOT appropriate include: internet websites including blogs, Wikipedia entries, and similar sources. I encourage each group to contact our Research Librarian for a consultation right away. You will be graded on content, grammar, and formatting. The Academic Technology Center (ATC) has design tips and templates for posters on their website at: <http://www.wpi.edu/Academics/ATC/Media/poster-design.html>.

Groups will consist of 3-5 students. At mid- and end-of term each group member will be responsible for filling out a peer-evaluation survey. We will use CATME to complete peer evaluations, and you will receive an email from me with the surveys at the appropriate times. You will lose 10% of the total points on your 3rd and final assignment grade if you do NOT fill out the peer evaluations at the time the assignments are due.

The group project assignments are marked in blue in the Tentative Schedule table.

[Feel free to contact me for more information: mbakermans@wpi.edu]

Tentative Course Schedule



Week	Day	Date	Activity and Due date (time)	Topic	Reading		
1	R	1-14	Clicker distribution	Course Intro, What is biodiversity	CH 1		
	F	1-15					
2	M	1-18	College Closed, No classes				
	T	1-19	CH 1 BLACKBOARD QUIZ (11 AM), Tuesday Conference Exam 1	What is biodiversity	CH 1		
	W	1-20					
	R	1-21	Thursday Conference Exam 1				
	F	1-22	*module 1 due 1-24				
M	1-25	CH 2 BLACKBOARD QUIZ (11 AM)					
3	T	1-26	Tuesday Conference	Biodiversity through time	CH 2		
	W	1-27	Project Assignment 1				
	R	1-28	Thursday Conference				
	F	1-29	*module 2 due 1-31				
	M	2-1	CH 3 BLACKBOARD QUIZ (11 AM)				
4	T	2-2	Tuesday Conference	Mapping biodiversity	CH 3		
	W	2-3	Project Assignment 2				
	R	2-4	Thursday Conference				
	F	2-5	In-class Exam 1 *module 3 due 2-7				
	M	2-8	CH 4 BLACKBOARD QUIZ (11 AM)				
5	T	2-9	Tuesday Conference	Does biodiversity matter	CH 4		
	W	2-10	Project Assignment 3 + peer evaluation				
	R	2-11	Thursday Conference				
	F	2-12	*module 4 due 2-14				
	M	2-15	CH 5 BLACKBOARD QUIZ (11 AM)				
6	T	2-16	Tuesday & Thursday Conference	Human impacts	CH 5		
	W	2-17	Project Assignment 4				
	R	2-18	No class, Advising Day (Thursday conference meets in 115 Kaven)				
	F	2-19	*module 5 due 2-21				
	M	2-22	CH 6 BLACKBOARD QUIZ (11 AM)				
7	T	2-23	Tuesday Conference	Maintaining biodiversity	CH 6		
	W	2-24	Project Assignment 5				
	R	2-25	Thursday Conference				
	F	2-26	In-class Exam 2				
	M	2-29				Local conservation + project presentations	myWPI*
T	3-1	Tuesday Conference Exam 2					
W	3-2	Final Project Assignment + peer evaluation					
R	3-3	Thursday Conference Exam 2					
F	3-4	Final Project Presentations					

Chapters refer to the required text by Gaston and Spicer.

*Additional readings will be available on myWPI.



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