



Biology 315- Ecology

Fall - 2009



All notes, PowerPoints, class data, and presentations are available on Moodle at <https://moodle.rhodes.edu/clogin.php>.

day	date	Topic	Reading
Wednesday	August 26	Species Presentations	Chap. 1 - S&S ¹
Friday	28	Species Presentations	
Monday	31	Labor Day Holiday	
Wednesday	September 2	Introduction	
Friday	4	Physical Environment – Global Climate	Chap. 2 - S&S
Monday	7	Aquatic Environments - ENSO	Chap. 3, 24 - S&S
Wednesday	9	Discussion – hysteresis and shallow lakes	Sheffer & Carpenter ²
Friday	11	class cancelled	
Monday	14	class cancelled	
Wednesday	16	Terrestrial Environment - Soils	Chap. 4 - S&S
Friday	18	Physiological Ecology	Chap. 7 – S&S
Monday	21	Life Histories	Chap. 8 – S&S
Wednesday	23	Populations and Population Growth	Chap. 9 & 10 – S&S
Friday	25	Exam 1 in class - take home exam due (17:00)	
Monday	28	Exam Review	
Wednesday	30	Population Regulation	Chap. 11 – S&S
Friday	October 2	Possible Student Discussion	Pimentel et al. ³ or Bryson Chap 23 ⁴
Monday	5	Interspecific competition	Chap. 13 – S&S
Wednesday	7	Competition continued	
Friday	9	Predation	Chap. 14 – S&S
Monday	12	Discussion – Homer-Dixon Homer-Dixon extra credit evening talk	“Climate change...” ⁵ “Positive Feedbacks, ...” ⁶
Wednesday	14	Predation continued	
Friday	16	Optimal foraging (Fall Recess at 5:00 pm)	Pauley et al. 1998 ⁷
Monday	19	Fall break / Midterm Grades Due	
Wednesday	21	Mutualism	Chap. 15 – S&S
Friday	23	Parasitism and disease	

¹ Smith, M.S. and R.L. Smith. 2009. Elements of Ecology. 7th edition.

² Sheffer, M. and S.R. Carpenter. 2003. Catastrophic regime shifts in ecosystems: linking theory to observation. TRENDS 18:648-656. – in Moodle

³ Pimentel, D., L. Westra, and R.F. Noss. 2000. Ecological Integrity. Island Press – Chapter 1 by Miller and Rees – on reserve in library

⁴ Bryson, B. 2003. A Short History of Nearly Everything. Chap. 23. “The Richness of Being.” Pp 350-370. – on reserve in library

⁵ Homer-Dixon, T. 2008. [Climate Change, the Arctic, and Canada: Avoiding Yesterday's Analysis of Tomorrow's Crisis.](#) 20th Anniversary Conference of the National Round Table on the Environment and the Economy, Ottawa, Ontario, Thursday, October 30, 2008. – In Moodle

⁶ Homer-Dixon, T. 2008. [Positive Feedbacks, Dynamic Ice Sheets, and the Recarbonization of the Global Fuel Supply: The New Sense of Urgency about Global Warming.](#) A Globally Integrated Climate Policy for Canada, University of Toronto Press. – in Moodle

⁷ Pauly, D.V. et al. 1998. Fishing down marine food webs. Science 279:860-863 in Moodle

(for the ambitious - Pauly, D.V. et al. 2000. Fishing down aquatic food webs. Amer. Sci. 88:46- in Moodle and/or Pauly, D.V. et al. 2005. Fishing down marine food web: it is far more pervasive than we thought. Bull. Marine Sci. 76:197-211 - in Moodle)

Monday	26	Discussion	Caceres et al. 2006 ⁸
Wednesday	28	Catch up and Review	
Friday	30	Exam 2 in class - take home exam due (17:00)	
Monday	November 2	Exam Review	
Wednesday	4	Community description	Chap. 16, 26 – S&S
Friday	6	Community structure	
Monday	9	Energy	Chap. 20 – S&S
Wednesday	11	Dr. Schantz - toxicology	TBA
Friday	13	Energy	
Monday	16	Nutrient Cycling	Chap. 21 & 22 – S&S Pollan ⁹
Wednesday	18	Nutrient Cycling – Carbon	
Friday	20	Global Climate Change	Chap. 29 – S&S
Monday	23	Landscape Ecology	Chap. 19 – S&S
W, F	25, 27	Thanksgiving Break	
Monday	30	Conservation Biology	Chap. 28 – S&S
Wednesday	December 2	Buffer	
Friday	4	Exam 3 in class - take home exam due (17:00)	
Monday	7	Exam Review	
Wednesday	9	Last day of class – Review for Final Exam	
Wednesday	16 @ 8:30 AM	Final Exam – closed book	

Course Requirements

- 1) Grading - There will be a total of 500 points possible. These will be divided between lecture and laboratory activities as follows:

3 hourly exams	
(100 pts each)	200 (the lowest will be dropped)
1 final exam	100
Lab report initial and final version	
Worksheets, Reviews, etc.	<u>200</u>
	500

The overall grade you earn will be reported for both Bio 315 and bio 315L.

- 2) Hourly exams - These will be both objective (short answers, multiple choice, graphs) and subjective (short essays). These will be both in-class, closed-book and take-home, timed (2.0-2.5 hrs), open-book exams. The honor code allows this format and you will be asked to pledge your exams. Laboratory material will be covered on hourly exams. You will be responsible only for material covered from the previous exam. You may drop the lowest of the three exams. Make-up exams, if needed for a legitimate reason, will be totally subjective.

Copies of previous exams will be available to all students in the class on Moodle.

- 3) Final exam - The final exam will be a comprehensive, closed-book, timed exam. This will be given during the final exam period only. No make-up final exams will be given.

A lab report as an initial submission and revised version is required. A handout outlining “instructions to authors” is available.

⁸ Caceres, C.E., et al. 2006. Physical structure of lakes constrains epidemics in *Daphnia* populations. Ecology 87:1438-1444 - Moodle

⁹ “What’s Eating America” by Michael Pollan – link on Moodle

You are hereby notified that use of lab reports from previous Ecology classes is prohibited. Use of previous Ecology laboratory reports is an Honor Council offense.

Your initial lab report is **due November 10th by 17:00**. Manuscripts will be distributed the next day. Your reviews of your colleagues' reports are due **November 18th**, and your revised lab report is due **December 2nd by 17:00**. Reports received after these times will receive a 2.5 point/day penalty (Saturday-Monday = 1 day). I strongly advise you to set an earlier deadline for yourself and to begin writing much before these deadlines.

Most of the labs will require the collection of data by everyone in the class. Your participation and efforts will help determine the success of these labs. Participation in off-campus field trips is required unless advanced permission is given. Material covered on these off-campus trips may be on hourly examinations and/or the final exam.

Course Objectives

One objective of mine is for you to realize and appreciate the interactions of the biological world. These interactions take place between the biological components themselves and between the biological components and the physical world. Hopefully you will come to see that "everything affects everything else."

The study of these interactions will take the form of "predation", "competition", "nutrient cycling", to mention a few, which are arbitrarily divided and categorized for our convenience. At times these studies may seem disconnected from the real world and may be too simplistic. The specific facts that you learn will become outdated very quickly, but the general processes and mechanisms of our world will remain the same.

Perhaps more importantly are the processes that you will go through in learning that the world can be viewed from many perspectives. There are no rules or laws of ecology, and there are many different ways to study the world. I hope that besides learning about some of these ways you will also learn how to continue to change after this course is finished.

An objective of the laboratory is to expose you to aquatic field experiences. I want to expose you to field work, i.e. the methods of data collection, the types of questions that can be answered, and limits involved. As our natural world continues to degrade, I find it unconscionable to offer a biology degree without the option of some field experience.

