

FOR 332 - FOREST ECOSYSTEM ECOLOGY – Fall, 2019

Class Meets 12-12:50 M-W-F; 120 CNR

INSTRUCTOR: Dr. James Cook; ROOM 242, CNR

OFFICE HOURS: Mon 3-4; Tues 3-5:00; Wed 8:30-10, 3-4; Thur 3-4; Fri 10-11, 2-3

PRE-REQUISITES: It will be assumed that you have completed all courses typically taken up to and including summer camp or the European Environ. Studies Seminar [or their equivalent]. The key courses [content] are: Botany, Soils, FOR 232 [autecology of trees]. If you do not meet these prerequisites, please talk to me right away!

LEARNING OBJECTIVES

The overall objective for the course is to provide a broad, mechanism and process-based understanding of forest function and dynamics. In addition to content, there are skills you should acquire by the end of the course. Thus, you should be able to:

- 1) explain important interactions among organisms and their impacts on plants;
- 2) describe and discuss community structure, diversity and dynamics;
- 3) explain factors that influence succession and community response to disturbance;
- 4) describe and explain key ecosystem processes, and how they are affected by disturbance;
- 5) describe and explain landscape structure;
- 6) describe select landscape features and their relevance to res. mngt;
- 7) extract conclusions from tables and figures; and
- 8) evaluate, interpret and apply information from scientific articles.

The course focus is the temperate zone and on ecological principles that provide the foundation for resource management (very broadly defined).

TEXT: Forest Ecology, 4th edit. 1998. by Burton V. Barnes and others -- text rental

IMPORTANT NOTE!! – A number of articles are used to supplement the text (see below); in addition, four are the sole basis for the quizzes.

OTHER RESOURCES: CANVAS will be used to a) communicate updates and reminders, b) make readings (articles) available, c) provide access to other class materials that are in an electronic format, and d) provide access to grades. You should get in the habit of checking the class site for this class on a regular basis.

SCHEDULE

Note: The 'Ecological Spotlights' last ~ 10 minutes and the material is NOT 'testable'.

CLASS DATE	TOPIC	READING ASSGN. (pages in text unless noted)	HANDOUTS, COMMENTS
Sept. 4	Intro., Ecological hierarchy	1-7	
Sept. 6	Seed germin. + s.d. estab.; interactions	383-387, 394	<i>Spotlight #1</i> [KBB]; H/O*- Pop'l Outline;
Sept. 9	Interactions – cont.	Same as 9/6	H/O - 'Interaction Grid'
Sept. 11	Seed predation & seed dispersal	341-349	
Sept. 13	Herbivory	333-41	
Sept. 16	Deer impacts on WI plants – CLASS DEBATE !!	Alverson et al. 1988, Mladenoff and Stearns 1993 <i>(exclude part on model)</i>	Debate – be prepared! Articles to READ
Sept. 18	Wrap-up principles herbivory; Intro.- pop. genetics	64-67, 71-76, 85-92	<i>Spotlight #2 tri-trophic interaction</i>
Sept. 20	NO CLASS	NO CLASS	NO CLASS
Sept. 23	Sources of variation	Same as 9/18	
Sept. 25	Natural selection & evolution.	284-290	
Sept. 27	Quiz1. Application/example of natural selection	Benkman and Siepielski 2004	Article to READ
Sept. 30	Community concept; Factors determining composit. & struct. –	361-363; 368-371; skim 387- 95	2-H/O's – community
Oct. 2	Comm. distrib. - landscape; ECS	Skim 227-33	
Oct. 4	Diversity: What is it?	577-88	<i>Spotlight_#3 Mistletoe & birds</i>

Oct. 7	Disturbance regimes	280-284, 413-15, 423-428	
Oct. 9	Disturbance impacts	409-413, 290-297	H/O – Disturb. → herb layer
Oct. 11	Quiz2. Understory response to disturb.; ecol. import. - understory	Darwin et al. 2004	Article to READ
Oct. 14	Intro to Succession: History and Mechanisms	443-48, 450-54, 457-461	
Oct. 16	Two examples of succession.	436-41	H/O ‘Multiple Pathways’
Oct. 18	Quiz3. Role of biotic agents. Synthesis.	Castello et al. 1995.	Article to READ. <i>Spotlight #4 extra-floral nectaries</i>
Oct. 21	Wrap up & application in res. mngt.	---	
Oct. 23	Ecology of invasion & import. traits	Rodgers et al. 2008 (don't worry about the chemistry)	
Oct. 25	Impacts of Invasion; EW	Same as 10/24	
Oct. 28	CLASS DEBATE#2 “Use” of exotics	Ewel and Putz 2004	Be prepared!
Oct. 30	Exam preparation	-----	Sample questions provided in Canvas
Nov. 1	Exam #1	---	Spotlight postponed one week
Nov. 4	Ecosystem – introd.	6-8	<i>Spotlight #5 endophytes.</i> H/O Ecosys. Model

Nov. 6	Ecosys. productivity	504-23	H/O – “Net Prim. Production (on back of ecosyst. model)
Nov. 8	Discuss Exam#1	---	
Nov. 11	Cycling w/i system	533-557 (ignore equations)	H/O ‘Within-system Nutr. Cycle’
Nov. 13	Nutrient inputs & outputs	526-33; 562-66;	
Nov. 15	Nitrogen cycle	557-562	Spotlight #6 yucca moth H/O – ‘N cycle’
Nov. 18	Nutrient losses due to disturbance	567-75	
Nov. 20	Nutrient losses (cont.) ; Atmos. Deposition (AD) effects	Same as 11/18	
Nov. 22	Complete AD effects; prep. for exam	---	Sample questions provided
Nov. 25	EXAM #2	---	
Nov. 27	No class – T’giving break		
Dec. 2	Ecological changes since Euro-Settlement	---	<i>Spotlight #7 Climate Change1</i>
Dec. 4	Ecosystem management (EM)	639-45	
Dec. 6	Discuss Exam #2	---	<i>Spotlight #8 Climate Change2</i>
Dec. 9	Quiz4. Ecosys. Mngt. (cont); EM on Cheq.-Nicolet	Covington et al. 1997	

Dec. 11	Intro. to landscape ecology (LE)	pp. 613-14	
Dec. 13	Brief: Application of LE; prep for final	pg. 634-39	Sample questions provided. See D2L

*H/O means a handout will be provided

GRADING

Exam #1	28%
Exam #2	24% (less material than Exam #1)
Final exam	32% (comprehensive) – Dec. 16, 10:15-12:15
<u>Quizzes on articles</u>	16% (no opportunities for make-up)
TOTAL	100%

NOTE!! There are no make-ups allowed for Quiz because we discuss them in class immediately. IF YOU HAVE a VALID EXCUSE, you may take the Quiz early by making arrangements 1 week ahead of time. If you miss a Quiz due to an excused absence, that one will not factor into your grade; however, you must SUBMIT the EXCUSE in WRITING.

Final Exam - yes, it is comprehensive. A list of the topics will be provided.

POLICIES

Determination of Course Grade: If you score substantially higher (≥ 8 pt on 100 pt scale) on the final compared to Exam #1 or Exam #2, I will re-allocate 10% of your exam weight from the lowest exam score to the final.

Attendance does not factor into your grade. However, it is in your best interest to attend all classes because a) the material is cumulative, b) not all material presented is covered in the text, and c) aids understanding interactions and competing forces.

Grading

I believe in curves on exams, but not on course grades.

Final grades are determined as: $> 92.4 = A$; $89.5 \rightarrow 92.4 = A-$; $86.5 \rightarrow 89.4 = B+$, etc.

All electronic devices must be turned off prior to taking a seat in the classroom.

Academic integrity is essential to the University mission and for everyone to be assessed fairly and consistently. See “Student Academic Standards and Disciplinary Procedures” section of the *Rights and Responsibilities* document

(<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf>).

EXPECTATIONS: I expect you to behave in a professional manner and assume you are striving to learn as much as you can. To achieve this you will have to devote some quality time outside of class. Also, if you miss a lecture, you need to **MAKE SURE YOU FOLLOW UP** promptly and get a **COMPLETE SET** of notes. If you do not **UNDERSTAND** those notes, please come talk to me about them. In a class this size, it is difficult for me to monitor how everyone is doing. I will be happy to work with you one on one but you will need to initiate this. You are also expected to respect my intellectual property rights. Thus, you should not post instructor-created course material onto course-sharing websites.