

FOR 332 - FOREST ECOSYSTEM ECOLOGY – Fall, 2020

Class Meets Virtually 12-12:50 M-W-F

URL for CLASS IS:

<https://uwsp.zoom.us/j/91318535605?pwd=MnpURjVdK3FqVU9oNjB0UGwzNldOdz09> and

The passcode is: 8y890n

INSTRUCTOR: Dr. James Cook; ROOM 242, CNR

OFFICE HOUR: Mon 2-3

VIRTUAL OFFICE HOUR: Thur: 10-11 (see Canvas for link)

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, and 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) explain significance of genetic variation within a population, influences that restrict or increase it, and common selective forces;
- 3) describe and discuss community structure, diversity and dynamics;
- 4) explain factors that influence succession and community response to disturbance;
- 5) describe and explain how human actions affect ecosystem processes;
- 6) describe and explain landscape structure, and its relevance to resource management;
- 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!! – Three articles are used to supplement the text (see below); in addition, three are the sole basis for the quizzes.

OTHER RESOURCES: CANVAS will be used extensively. Through it I will a) communicate updates and reminders, b) make readings (articles) available, c) provide access to other class materials in an electronic format, d) handle the quizzes and exams;

and e) 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)	Notes
Sept. 2	Class Introduction, Ecological hierarchy [PWRPT*]	1-7	
Sept. 4	Regeneration [PWRPT]; Interactions [PWRPT]	94-108 ; 383-387, 394	H/O** Pop'l Outline ; H/O - 'Interaction Grid'
Sept. 9	Practice Quiz on « Regeneration » Interactions – cont.	Same as 9/4	Must log into Canvas to take quiz. Xtra credit points.
Sept. 11	Seed predation & seed dispersal	341-349, 105-107	Spotlight #1 - KBB
Sept. 14	Herbivory [PWRPT]	333-41	
Sept. 16	Debate about deer impacts on hemlock	Alverson et al.1988, Mladenoff and Stearns 1993 (<u>exclude part on model</u>)	Be prepared to discuss using these 2 articles. Consult spreadsheet in Canvas for group assignments.
Sept. 18	Xtra Credit Quiz – Interactions; Wrap-up principles herbivory;	64-67, 71-76, 85-92	<i>Spotlight #2 tri-trophic interaction</i>
Sept. 21	Intro to Population		[Population Outline]

	Genetics [PWRPT]		
Sept. 23	Sources of variation	64-69	
Sept. 25	Natural selection & evolution. Application	71-76, 284-290	
Sept. 28	Quiz1. Prep for exam	Benkman and Siepielski 2004	Article to READ <i>for quiz.</i> Sample questions in Canvas
Sept 30	EXAM #1	-----	-----
Oct. 2	Community concept; Factors determining composit. & struct. [PWRPT]	361-363; 368-371; skim 387- 95	2-H/O's – community
Oct. 5	Comm. distrib. - landscape & Ecol. Classif. Systems	Skim 227-33	
Oct. 7	What is Diversity & Major Influences [PWRPT]	577-88	<i>Spotlight #3 Mistletoe & birds</i>
Oct. 9	Disturbance regimes [PWRPT]	280-284, 413-15, 423-428	
Oct. 12	Disturbance impacts	409-413, 290-297	H/O – Disturb. → herb layer
Oct. 14	Quiz2. Understory response to disturb.; ecol. import. – understory [PWRPT]	Darwin et al. 2004	Article to READ
Oct. 16	Intro to Succession: History and Mechanisms [PWRPT]	443-48, 450-54, 457-461	
Oct. 19	Two examples of succession.	436-41	H/O 'Multiple Pathways'

Oct. 21	Quiz3. Role of biotic agents. Synthesis - succession	Castello et al. 1995	Article to READ. H/O
Oct. 23	Ecology of invasion & import. Traits [PWRPT]	Rodgers et al. 2008 (don't worry about the chemistry)	Article to READ
Oct. 26	Impacts of Invasion; Earthworms.	Same as 10/21	
Oct. 28	Are all exotics bad?	Ewel and Putz 2004	Discussion #2 – based on Rodgers et al. and Ewel & Putz. Consult spreadsheet.
Oct. 30	Synthesis – comm. Unit	---	
Nov. 2	Exam preparation	-----	Sample questions provided in Canvas
Nov. 4	Exam #2	---	Spotlight postponed one week
Nov. 6	Ecosystem – foundational ideas; productivity [PWRPT]	6-8	<i>Spotlight #5 endophytes.</i> H/O Ecosys. Model
Nov. 9	Effects of fire exclusion on ecosystem process [PWRPT]		
Nov. 11	Discuss Exam#2	---	
Nov. 13	Fire exclusion effects (cont)	533 – 535, 538-47, 550-53 (ignore equations & Fig.19.10)	H/O 'Within-system Nutr. Cycle'
Nov. 16	Impacts of harvesting on	562-75	

	ecosystem process [PWRPT]		
Nov. 18	Impacts of harvesting (cont)		Spotlight #6 yucca moth H/O – ‘N cycle’
Nov. 20	Effects of Atmos. Deposition (AD)	527-31	
Nov. 23	prep. for exam	---	Sample questions provided
Nov. 25	EXAM #3 ecosystem level		
Nov. 27	No class – T’giving break	---	
Dec. 2	Ecosystem management (EM) [PWRPT]	---	<i>Spotlight #7 Climate Change#1</i>
Dec. 4	Discuss Exam #2	639-45	
Dec. 7	EM. (cont); EM on Cheq.-Nicolet [PWRPT]	---	<i>Spotlight #8 Climate Change#2</i>
Dec. 9	Intro. to landscape ecology (LE) [PWRPT]	pp. 613-14	
Dec. 11	Brief: Application of LE; prep for final	pg. 634-39	Sample questions provided. See D2L

* PWRPT – means there is a powerpoint on this topic in Canvas

** H/O means a handout provided in Canvas

GRADE DETERMINATION

Exam #1 Population level	22%
Exam #2 Community	26%
Exam #3 Ecosystem	18%
Final exam	22% (partially comprehensive)

Dec. 16, 2:45-4:45

Quizzes on articles	12% (no opportunities for make-up)
TOTAL	100% (PLUS XTRA credit earned)

NOTE!! There are no make-ups allowed for Quizzes 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, it will not factor into your grade; however, you must SUBMIT the EXCUSE in WRITING.

Final Exam - yes, it is partially 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, #2 or Exam #3, 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.

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 listen to the recorded lecture. If you do not UNDERSTAND something after listening, please come to 'virtual' office hour and we can talk about it one-on-one. In a class this size, it is difficult for me to monitor how everyone is doing, so please speak up if you feel like you are falling behind or having trouble comprehending the lectures. You are also expected to respect my intellectual property rights. Thus, you should not post instructor-created course material onto course-sharing websites.