

**BIO 5490/7490**  
***Population and Community Ecology***  
**Course Syllabus**  
**Winter Semester 2017**

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**CLASS LOCATION**

319 State Hall

**CLASS MEETING TIME**

Tuesday, Thursday 2:30-3:45pm

**OFFICE HOURS**

Tuesdays and Thursdays 1pm-2pm, or by appointment (please contact Dr. Steiner via email at least one day in advance to schedule a meeting)

**COURSE DESCRIPTION AND OBJECTIVES**

This course will use a combination of lectures and discussions of primary literature to explore advanced topics in population and community ecology. Both empirical and theoretical perspectives will be examined. Topics will include: population dynamics of animals and plants, life history theory, population regulation, species interactions and the structure and dynamics of communities.

Upon successful completion of this course, students should be able to:

- 1) interpret and construct mathematical models of ecological systems and apply their predictions to novel ecological scenarios
- 2) interpret and critically evaluate data from the primary literature
- 3) synthesize findings from the primary literature and present syntheses in a written and oral format
- 4) demonstrate an understanding of the fundamental processes that influence the dynamics and structure of natural populations and communities
- 5) demonstrate an understanding of the influence of community structure on the functioning of ecosystems (including trophic dynamics, energy flow, and stability).
- 6) graduate level students should be able to synthesize findings in a sub-discipline of ecology and present areas of further research exploration in the form of a research grant proposal.

**COURSE PREREQUISITES**

Students are required to have completed and passed the following courses: basic introductory biology (BIO1500 or equivalent) and an undergraduate level ecology course (BIO4130 or equivalent). Those not meeting these requirements must seek approval by the instructor for admittance into the course. Proficiency with basic calculus and algebra will be beneficial but prior courses in these topics are not required.

## GRADING

1000 points total for the course:

- 200 points midterm exam I
- 200 points midterm exam II
- 200 points midterm exam III
- 20 points for attending class (only lectures count)
- 180 points for leading paper discussions and participating in paper discussions
- 200 points oral presentation

The final letter grades for the course will be based on the total percentage accumulated at the end of the semester and assigned based on the following:

A	93.5 – 100%	C	72.5 – 75.4%
A-	89.5 – 93.4%	C-	69.5 – 72.4%
B+	85.5 – 89.4%	D+	65.5 – 69.4%
B	82.5 – 85.4%	D	62.5 – 65.4%
B-	79.5 – 82.4%	D-	59.5 – 62.4%
C+	75.5 – 79.4%	F	≤ 59.4%

## EXAMS

There will be three in-class, non-cumulative midterm exams covering material presented during lectures and class discussions. Exams will be a combination of multiple choice and short-essay questions. Exams will be closed book and held in class. No electronic devices of any kind will be allowed unless indicated otherwise in advance. Anyone who leaves the exam room will not be allowed back in. Late-arriving students should know that admittance into the exam room will not be allowed after the first student has left the room.

Students with scheduling conflicts for the midterms must notify Dr. Steiner by email at least two weeks in advance of the exam dates. No make-up exams will be given unless notification in writing is provided by this date. Reasonable exceptions will be granted in cases of illness which will require notification prior to the exam and must be followed up with an original signed note from a physician (all physician notes will be verified; notes that cannot be verified by the signing physician will result in an automatic zero on the exam).

## CLASS READINGS AND DISCUSSIONS

**Required textbook** - “Community Ecology” by Gary Mittelbach (2012, Sinauer Associates)

In addition to assigned book readings, supplemental readings will also be assigned from time to time (and posted on Blackboard). These are meant to serve as background for materials presented in lectures and should be read.

We will also routinely discuss journal articles in class (see the Discussion Readings list for papers and discussion dates). **Students will be assigned as discussion leaders for each paper.** As a discussion leader, you are expected to give a brief (~5 minute) oral overview of the main objectives of the paper, their research approach/methods and a basic summary, in a few sentences, of the main findings of the paper. Additionally, discussion leaders should develop a list of 4 or more key questions that the class

will use as a basis of discussion. Questions should be emailed to the class and Dr. Steiner the day before a discussion. As a discussion leader you should be familiar enough with the paper to critically evaluate it and/or point out issues you think are strengths or weaknesses of the paper. All students are expected to participate in the discussion of papers led by others by asking questions and making points you think are relevant to the key issues in the paper. Your class participation points will be dependent in part on your contributions to the class discussions, your performance as a discussion leader, and your participation in learning activities performed during lectures.

### **ORAL PRESENTATIONS**

In lieu of a final exam, each student will give an oral presentation on a population or community ecology topic of the student's choice. All topics must be pre-approved by the instructor (see class schedule). Presentations should be approximately 12 minutes in length, with 2-3 minutes left open for questions from the class, and must use computer-based presentation software (e.g., PowerPoint, pdf, etc.). The presentation should provide a review and synthesis of the topic, highlighting the current state of knowledge as well as potential future areas of research. Presentations must use information obtained from the primary literature (i.e. scientific journal articles) and a list of references must be provided at the end of the presentation. A copy of the presentation should be emailed to Dr. Steiner by 12 noon of the day of the presentation. Oral presentations will take place during the last week of class during the normal class times and if needed during the scheduled final exam period (Thursday, April 27, 2:45-4:45pm). Students are expected to attend all days of presentations.

### **EXAM GRADE DISPUTES / CHALLENGE OPTION**

Students will have one (1) week after the return of an exam or a written assignment to challenge a grade for any question. Failure to challenge the grade within this period indicates a willingness to accept the grade as is. The challenge should consist of a written description of why the answer is correct based on other published material that you cite. It is not an opportunity to complain.

### **CHEATING**

Cheating is covered in detail in the Wayne State University Code of Conduct, found at <http://doso.wayne.edu/student-conduct-services.html>

Students found to be cheating during an exam (using a "cheat sheet", looking at another's paper, or allowing another to look at yours), will receive a zero for that test with no opportunity to drop or replace that score. A second episode of cheating will result in a grade of F for the course and may also result in initiation of university disciplinary action. No electronic devices (cell phones, blackberries, ipods, computers, cameras, calculators, etc.) are to be present at an exam. Those present will be confiscated until the exam is completed, and students using such devices to cheat on an exam will receive a zero on the exam.

### **SPECIAL CONSIDERATIONS FOR INDIVIDUALS WITH DISABILITIES**

If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodations in place, I will be glad to meet with you privately during my office hours to discuss your special needs. Student Disability Services' mission is to

assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University. Please be aware that a delay in getting SDS accommodation letters for the current semester may hinder the availability or facilitation of those accommodations in a timely manner. Therefore, it is in your best interest to get your accommodation letters as early in the semester as possible.

### **RELIGIOUS HOLIDAY CONFLICTS**

If you have a conflict with any of the scheduled class or exam times due to religious reasons, you must notify Dr. Steiner via email at least two weeks in advance of the date of conflict.

### **ADD/DROP POLICY**

January 23, 2017 is the last day you can drop the class and get your tuition refunded. The last day you can drop this course and have no record on your transcript is February 5, 2017. From February 6, 2017 until the last withdraw date (March 26, 2017), if you withdraw from the course you will receive a WN on your transcript if you never completed any exams; a WP if you have greater than 60% of the points possible at the time of your request on exams; or a WF if you have less than 60% of the points possible at the time of your request. No exams are dropped or replaced in this calculation. You can initiate a withdrawal request in Academics (Pipeline), and the system will contact me. I will respond within five business days. Failure to withdraw before the deadline will result in the student receiving the grade earned in the course. See [reg.wayne.edu/students/calendar15-16.php](http://reg.wayne.edu/students/calendar15-16.php) for more important dates.

### **UNEXPECTED UNIVERSITY CLOSURES**

If the University is officially closed on an exam day, the exam will be held on the next regularly scheduled class day. Closure of the University is announced by the following mechanisms:

1. the University Newline (313) 577-5345 \*
2. WSU Homepage ([www.wayne.edu](http://www.wayne.edu)) \*
3. WSU Pipeline ([www.pipeline.wayne.edu](http://www.pipeline.wayne.edu)) \*
4. WDET-FM (Public Radio 101.9)
5. by other local radio and television stations

\* Note: The information on closures and class cancellations is likely to be found at these locations before it is broadcast by local radio and television stations

**Any specific issue not covered by this syllabus will be resolved using University policies. Disputes that cannot be resolved following the guidelines present in this syllabus will be resolved by following the guidelines of the University "Student Due Process".**

## CLASS LECTURE SCHEDULE AND BOOK READINGS

The following is the lecture schedule for the semester. Book readings marked “to be announced” (TBA) will be provided on Blackboard.

<b>Lecture #</b>	<b>Day/Date</b>	<b>Lecture Topic</b>	<b>Reading</b>
<b>Week 1</b>			
Lecture 1	Tue 1/10	Intro	
Lecture 2	Th 1/12	Density-independent population growth	Ch. 4
<b>Week 2</b>			
Lecture 3	Tue 1/17	Density-dependent population growth	
Lecture 4	Th 1/19	Density-dependent population growth	
<b>Week 3</b>			
Lecture 5	Tue 1/24	Life history and Age/stage-structured populations	
Lecture 6	Th 1/26	Age/Stage-structured populations	
<b>Week 4</b>			
Lecture 7	Tue 1/31	Predation	Ch. 5
Lecture 8	Th 2/2	Predation	Ch. 6
<b>Week 5</b>			
<b>Exam</b>	<b>Tue 2/7</b>	<b><u>Midterm Exam 1 (covers lectures 1-8)</u></b>	
Lecture 9	Th 2/9	Predation	
<b>Week 6</b>			
Lecture 10	Tue 2/14	Competition	Ch. 7
Lecture 11	Th 2/16	Competition	Ch. 8
<b>Week 7</b>			
Lecture 12	Tue 2/21	Competition	
Lecture 13	Th 2/23	Competition and evolution of species interactions	Ch. 15
<b>Week 8</b>			
Lecture 14	Tue 2/28	Disturbance, fluctuating environments	Ch. 14
Lecture 15	Th 3/2	Disturbance; Metapopulations	Ch. 12, 13
<b>Week 9</b>			
<b>Exam</b>	<b>Tue 3/7</b>	<b><u>Midterm Exam 2 (covers lectures 9-15)</u></b>	
Lecture 16	Th 3/9	Metapopulations and Metacommunities	Ch. 12, 13
<b>Week 10</b>			
	<b>Tue 3/14</b>	<b><u>No Class (Spring Break)</u></b>	
	<b>Th 3/16</b>	<b><u>No Class (Spring Break)</u></b>	
<b>Week 11</b>			
Lecture 17	Tue 3/21	Disease ecology	
Lecture 18	Th 3/23	Disease ecology; Mutualism and facilitation	Ch. 9
<b>Week 12</b>			
Lecture 19	Tue 3/28	Mutualism and facilitation; Community structure	
Lecture 20	Th 3/30	Community structure; Food chains	Ch. 10,11
<b>(3/30 is the last day for approval of oral presentation topics)</b>			
<b>Week 13</b>			
Lecture 21	Tue 4/4	Food webs; Biodiversity	
Lecture 22	Th 4/6	Biodiversity	Ch. 2, 3

<b>Lecture #</b>	<b>Day/Date</b>	<b>Lecture Topic</b>	<b>Reading</b>
		<b>Week 14</b>	
Lecture 23	Tue 4/11	Biodiversity	Ch. 3
<b>Exam</b>	<b>Th 4/13</b>	<b><u>Midterm Exam 3 (covers lectures 16-23)</u></b>	
		<b>Week 15</b>	
	<b>4/18</b>	<b><u>Oral presentations</u></b>	
	<b>4/20</b>	<b><u>Oral presentations</u></b>	
	<b>4/27</b>	<b><u>Oral presentations (scheduled final exam period 2:45pm-4:45pm)</u></b>	

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