

# Principles of Ecology Fall 2017

Lectures: Tuesday/Thursday 3:30 PM – 4:50 PM, BIOL 101

Nothing in biology makes sense except in the light of evolution

– Theodosious Dobzhansky, 1973

Nothing in evolutionary biology makes sense except in the light of ecology

– Peter & Rosemary Grant, 2008

Nothing in evolution or ecology makes sense except in the light of the other

– Fanie Pelletier, Dany Garant, & Andrew Hendry, 2009

## COURSE DESCRIPTION

Ecologists are interested in understanding how interactions between organisms, and interactions with the environment, generates and explains the tremendous variation in biodiversity on our planet. This course is an overview of how ecologists answer questions about these interactions across many scales: between organisms of the same species, among populations of organisms, within communities of different species, and at a global scale.

## EXPECTED COURSE OUTCOMES

- Gain a broad understanding of the diversity of organisms, ecosystems, and the complex webs of interactions that exist on our planet
- Understand how ecologists answer questions across many scales of biological diversity
- Appreciate how research questions are motivated by observations of natural history
- Be able to evaluate the merit of scientific claims based on the results of observations or experiments

## METHODS FOR ASSESSING OUTCOMES

- Participation in discussions via Piazza (<https://www.piazza.com>)
- In-class quizzes via Top Hat (<https://tophat.com/>)
- Weekly quizzes via Blackboard (<https://ttu.blackboard.com>)
- Four exams (three in-class, one final)

**REQUIRED TEXT** *Ecology in Action*, Singer (Cambridge) 1<sup>st</sup> edition

**INSTRUCTOR** Dr. Brian J. Sanderson  
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**OFFICE HOURS** By appointment

**TEACHING ASSISTANT** William Fetzner  
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**OFFICE HOURS** Tuesday, 2:00 PM – 3:00 PM, BIOL 407  
Wednesday, 12:00 PM – 1:00 PM, BIOL 407  
Thursday, 11:00 AM – 12:00 PM, BIOL 407

## **STUDENT CONTACT POLICY**

Any questions that are not of a personal nature (e.g. illness, exam makeup, etc.) should be posted to the course forum on Piazza (<https://www.piazza.com>) rather than being e-mailed to instructors. This forum will allow students to collaborate in trying to understand the course material, with feedback from the instructors.

## **GRADING**

80% from exams (each exam worth 20% of final grade)

15% from weekly online quizzes through Blackboard

5% from Top Hat questions during class

Grading scale: **A:** 100% - 90%, **B:** 89% - 80%, **C:** 79% - 70%, **D:** 69% - 60%, **F:** ≤ 59%

## **EXAMS (80% of final grade)**

All exams for the semester will be comprehensive, multiple choice exams that will each contribute 20% to your final grade for the course. On each exam, you will encounter questions that will require you to combine concepts to synthesize plausible answers, potentially drawing on material you encountered throughout the course. As a result, simply memorizing isolated concepts and examples will not be an effective method of preparing for exams. The first three exams will be held during the normal class period in the same room where we hold lectures.

Thursday, September 21<sup>st</sup>, normal class period

Thursday, October 12<sup>th</sup>, normal class period

Tuesday, November 7<sup>th</sup>, normal class period

Saturday, December 9<sup>th</sup>, 4:30 PM – 7:00 PM, BIOL 101

## **WEEKLY QUIZZES** <https://ttu.blackboard.com> (15% of final grade)

Each week we will post review questions as quizzes to the Blackboard site for the course. These questions will be similar in form and content to those you can expect to see on the exams. *Note, however, that simply memorizing these questions and answers is a very poor way to study for the exam.* Instead, these quizzes are an opportunity for you to honestly confront your mastery of each week's material, and a passive incentive to keep up with the material on a weekly basis.

## **IN CLASS PARTICIPATION** <https://tophat.com> (5% of final grade)

We will be using the Top Hat classroom response system during lectures to gauge your understanding of the material and to facilitate discussion among students. You will be able to respond to questions during class using a smartphone, tablet, laptop, or via text message (normal text message rates apply). At the end of the semester we will calculate how many answers you provided to questions. If you answer 80% of the questions for the semester you will receive full points. If you answer less than 80% you will receive partial points. These questions can't be made up, so attendance in class is necessary to provide responses to these questions.

**IMPORTANT DATES**

- Aug. 31<sup>st</sup>: Last day to add a course  
Sept. 13<sup>th</sup>: Last day to drop a course without penalty  
Oct. 30<sup>th</sup>: Last day to drop a course with penalty (counts against drop limit)  
Dec. 1<sup>st</sup>: Last day to withdraw from the university

**TENTATIVE COURSE SCHEDULE** (*Note: this schedule is subject to change depending*)**Part I: Individuals in the environment**

| <u>Date</u> | <u>Text</u> | <u>Subject</u>             |
|-------------|-------------|----------------------------|
| 8/29        | Ch. 1       | Introduction               |
| 8/31        | Ch. 2       | The physical environment   |
| 9/5         | Ch. 3       | Evolution                  |
| 9/7         | Ch. 4       | Evolutionary ecology pt. 1 |
| 9/12        | Ch. 5       | Evolutionary ecology pt. 2 |
| 9/14        | Ch. 6       | Behavioral ecology         |
| 9/19        |             | Part I summary, review     |
| 9/21        | EXAM I      |                            |

**Part II: Population ecology**

| <u>Date</u> | <u>Text</u> | <u>Subject</u>                  |
|-------------|-------------|---------------------------------|
| 9/26        | Ch. 8       | Life history evolution          |
| 9/28        | Ch. 9       | Distribution and dispersal      |
| 10/3        | Ch. 10      | Population abundance and growth |
| 10/5        | Ch. 11      | Conservation ecology            |
| 10/10       |             | Part II summary, review         |
| 10/12       | EXAM II     |                                 |

**Part III: Community ecology**

| <u>Date</u> | <u>Text</u> | <u>Subject</u>                      |
|-------------|-------------|-------------------------------------|
| 10/17       | Ch. 13      | Interspecific competition           |
| 10/19       | Ch. 14      | Predation and exploitation          |
| 10/24       | Ch. 15      | Facilitation                        |
| 10/26       | Ch. 16      | Food webs                           |
| 10/31       | Ch. 17 & 21 | Biological diversity and succession |
| 11/2        |             | Part III summary, review            |
| 11/7        | Exam III    |                                     |

#### **Part IV: Ecosystem ecology**

| <u>Date</u> | <u>Text</u>          | <u>Subject</u>                      |
|-------------|----------------------|-------------------------------------|
| 11/09       | Ch. 19               | Ecosystem structure and energy flow |
| 11/14       | Ch. 20               | Nutrient cycles                     |
| 11/16       | Ch. 22               | Geographic and landscape ecology    |
| 11/21       | THANKSGIVING HOLIDAY |                                     |
| 11/23       | THANKSGIVING HOLIDAY |                                     |
| 11/28       |                      | Billy guest lecture                 |
| 11/30       | Ch. 23               | Climate change ecology              |
| 12/5        |                      | Part IV summary, final exam review  |
| 12/9        | Final exam           |                                     |

#### **ADA STATEMENT (OP 34.22)**

<http://www.depts.ttu.edu/opmanual/OP34.22.pdf>

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note: instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services in 335 West Hall or call 806.742.2405.

#### **RELIGIOUS HOLY DAYS (OP 34.19)**

<https://www.depts.ttu.edu/opmanual/OP34.19.pdf>

Texas law requires institutions of higher education to excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day. The student shall also be excused for time necessary to travel. An institution may not penalize the student for the absence and allows for the student to take an exam or complete an assignment from which the student is excused. While no prior notification of the instructor is required, OP 34.19 indicates that a student who intends to observe a religious holy day should make that intention known to the instructor prior to the absence. The student should make up any missed work.