

Biology II: Intro to Ecology and Evolution

FALL 2025 BIOL206.02

INSTRUCTOR: Professor Partain - Office: SC3101L; E-mail: cpartment@towson.edu
Office hours: By appointment; email with preferred dates and times.

UNDERGRADUATE LEARNING ASSISTANT (ULA): Timothy Hurley; E-mail: thurley1@students.towson.edu

CALCULATORS: Each student is expected to have their own scientific calculator in lab and lecture. Your cell phone cannot be used as a calculator. You may not share calculators during exams.

RECOMMENDED TEXTBOOK: *Biology*, 13th edition, Raven *et al.*, McGraw-Hill Higher Education, ISBN: 9781260169614. : There is no required book for this class. However, Cook Library has placed a copy of the textbook (Biology by Raven) on course reserves. You can borrow the book from the library for free for two hours at a time by going to the [Ask Us Desk](#) on Cook Library's main floor, asking for the title, and presenting your OneCard. This can be used to help supplement the material we go over in class.

BLACKBOARD: Study guides, assignments and other critical information will be posted on the course Blackboard website which can be accessed through at <https://bbweb.towson.edu>. Please check our Blackboard site and your TU email regularly for announcements.

INTRODUCTION: The purpose of this course is to introduce you to ecology and evolution. Emphasis will be placed on learning the key concepts in each of these fields of biological study. The laboratories will be used to support these key concepts and to teach students the principles of collecting, organizing, analyzing, interpreting and drawing inferences from data. By the end of this course students should be able to:

- Use population growth equations to predict the size of populations in future generations,
- Describe the effects of competition and resource limitation on population growth rate,
- Explain the effects of competition and ecological niches on structuring communities,
- Differentiate between interference and exploitative competition,
- Define species richness and species diversity,
- Describe the role of disturbance in maintaining diverse communities,
- Define evolution from several different perspectives, including use of Hardy-Weinberg equations,
- Explain the process of evolution by natural selection, sexual selection and genetic drift,
- List and describe several lines of evidence for evolution,
- Describe several different methods of speciation.

STUDENT RESPONSIBILITIES

Class Attendance: *Lectures will be in-person.* You are expected to check Blackboard regularly and to participate in all posted exercises. You are expected to keep track of due dates and to submit your coursework on time. Failure to participate may lower your performance on exams (and your grade in the course), as you are responsible for all material presented in the course, on Blackboard and from other provided resources. The syllabus is subject to change if necessary, due to unforeseen events and at the discretion of the Professor.

Make-up Work Make-up work will not be allowed unless you have a **justifiable and documented reason**. If an assignment or quiz is missed, the student must inform the instructor in writing within 48 hours. ***There will be no exceptions.*** It is the student's responsibility to obtain permission and to make arrangements for a

make-up work. If these procedures are not followed, a score of zero will be given for the assignment. **THERE ARE NO MAKE UP EXIT TICKETS.**

Student Conduct: This course is governed by the Towson University Code of Conduct (<https://www.towson.edu/studentaffairs/policies/conduct.html>), which disallows all forms of misconduct, including but not limited to “disruption of teaching”, “intentionally furnishing false information” and “violation of the student academic integrity policy” (see next section). Free discussion, inquiry, and expression are encouraged in this class. Classroom behavior that is determined to be inappropriate and cannot be resolved by the student and the faculty member may be referred for administrative or disciplinary review and the student will be barred from class.

Academic Integrity. Any form of cheating (including on exams, quizzes, or plagiarism of assignments and term papers) will not be tolerated. Cheating and plagiarism are defined in the Student Academic Integrity Policy (<https://www.towson.edu/about/administration/policies/03-01-00-student-academic-integrity-policy.html>) and should be reviewed by each student. Please also see the edbold text explanations below. **The consequences of violating the Academic Integrity policy may result in the assignment of a Failing (F) grade for the assignment or for the course. The faculty member will meet with the student and present the evidence for violation of the Academic Integrity Policy. In this case the student will be notified in writing of the infraction and the consequences for the course. A letter describing the misconduct and consequences will be forwarded to the Department Assistant Chair and the Office of Student Conduct and Civility Education, which could take further action.** The student will be unable to withdraw from the course.

Grade Grievances: Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate / graduate catalog. I am always willing to discuss a question you may have about grading of a particular answer. However, you must see me regarding a grading question **within one week** of the assignment or exam being returned; I will not decide on disputes after that. Also, keep in mind that a reexamination of grade may not come out in your favor. In other words, if points were not initially deducted for incorrect answers, points will be deducted after the reexamination.

Please do not ask for your grade to be bumped up. It is not only unethical for me to do this, it is unethical for you to even ask. It is also a violation of the University faculty policy.

Copyrighted Material: My lectures and course materials, including, but not limited to PowerPoint presentations, tests, outlines, and similar materials, are protected by copyright. I am the exclusive owner of the copyright in those materials they create. You may take notes and make copies of course materials for your own use; however, you may not, nor may you allow others to, reproduce or distribute lecture notes and course materials publicly whether or not a fee is charged without my express written consent. Similarly, you own the copyright in your original papers and exam essays. If I am interested in posting your answers or papers on the course website, I will ask for your written permission.

Americans with Disabilities Act: This course is in compliance with Towson University policies for students with disabilities. Students with disabilities are encouraged to register with Accessibility & Disability Services (ADS), 7720 York Road, Suite 232, 410-704-2638 (Voice) or 410-704-4423 (TDD). Students who suspect that they have a disability but do not have documentation are encouraged to contact ADS for advice on how to obtain appropriate evaluation. A memo from ADS authorizing your accommodation is

needed before any accommodation can be made. If you cannot attend class due to concerns dealing with covid (immunosuppression, etc), you must provide documentation from ADS.

Diversity Statement. Towson University values diversity and fosters a climate that is grounded in respect and inclusion, enriches the educational experience of students, supports positive classroom and workplace environments, promotes excellence and cultivates the intellectual and personal growth of the entire university community. Should you feel that you are experiencing negative environment related to diversity issues or cultural sensitivity, we encourage you to contact the Department's Assistant Chair, [Professor Charlotte Saylor] csaylor@towson.edu. For more information go to <https://www.towson.edu/fcsm/departments/biology/diversity.html>

Title IX policy: Towson University (TU) is committed to ensuring a safe, productive learning environment on our campus that does not tolerate sexual misconduct, including harassment, stalking, sexual assault, sexual exploitation, or intimate partner violence [Policy 06.01.60]. It is important for you to know that there are resources available if you or someone you know needs assistance. You may speak to a member of university administration, faculty, or staff, but keep in mind that they have an obligation to report the incident to the Title IX Coordinator. It is a goal that you feel able to share information related to your life experiences in classroom discussions and in one-on-one meetings. However, it is required to share information with the Title IX Coordinator regarding disclosures, but know that the information will be kept private to the greatest extent possible. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the TU Counseling Center 410-704-2512 to schedule an appointment, and locally within the community at TurnAround, Inc., 443-279-0379 (24-hour hotline) or 410-377-8111 to schedule an appointment.

Reporting Hate Crimes and Bias Incidents: Towson University prohibits all students, staff, and faculty from committing or engaging in any hate crimes as defined under state and federal law, or any acts of bias, hate, or prejudice exhibited in conduct that is in violation of another University policy on campus, on University property, at University sponsored events, or when engaged in University activities and business on or off campus. The University must receive notice to respond effectively to alleged Hate Crimes or Bias Incidents in the University Community. Please report or file a complaint of a Hate Crime or Bias Incident in the following ways:

- Report to University Police: Towson University's Police Department ("TUPD") will determine if incidents are criminal in nature. In cases of hate crimes, individuals can be punished with fines and/or imprisonment. Felony offenses demonstrated to be motivated by bias are subject to enhanced penalties.
- Contact the Office of Inclusion & Institutional Equity: Online at: <https://towson.edu/notattu> email at: OIIE@towson.edu, telephone, In person or via regular mail.

Mental Health: These are difficult times and there is no shame in needing mental health help. Services available through the Health and Counseling Centers include group counseling, 24hr crisis support, substance use counseling and much more. They can be reached at <https://www.towson.edu/counseling/> or 410.704.2512 (answered 24/7).

Determination of course grade:

All exams are cumulative but will focus on material that has followed the last exam; your lowest exam score from exams 1-4 will be dropped so only three exams are calculated for your final course grade.

	Points	Your scores
Exam 1	50	/ 50
Exam 2	50	/ 50
Exam 3	50	/ 50
Exam 4	50	/ 50
Comprehensive Exam*	100	/100
Exit Tickets**	40	/ 40
In-Class Activities	20	/20
		/ 310

*Using the TU final exam schedule (our test is from 10:15 am–12:15 pm on December 11th)

**There will be 24 exit tickets each worth 2 pts in total. Your lowest four scores will be dropped.

The following scale is used to determine grades:

Grade	Percent
A	93.3-100
A-	90.0-93.2
B+	86.7-89.9
B	83.3-86.6
B-	80.0-83.2
C+	76.7-79.9
C	70.0-76.6
D+	66.7-69.9
D	60.0-66.6
F	BELOW 60

Grades will not be curved, so ask questions and plan your time carefully so that you can perform well in this class.

Exit Tickets: There will be 25 exit ticket short assessments at the end of every class (each worth 2 pts), except on those days when exams are held. You must be in class to complete the exit tickets. No makeup exit tickets will be given, but you will drop the five lowest scores. The exit tickets can include multiple choice, true/false, fill-in-the-blanks, matching, and short answer questions. These are designed to be very short assessments that will take no longer than five minutes at the end of class.

Exams: There will be four in-class exams each worth points. You will drop the lowest exam score, so only three exams will be used in the calculation of your final course grade. These exams can include short answers, multiple choice, true/false, fill-in-the-blanks and matching questions. Each exam is cumulative, meaning material from previous exams will show up on subsequent exams, but emphasis will be put on material covered since the previous exam. The details on each exam's content will be discussed in class before

examination day.

Examination Protocol:

- * You will need to use **pencils and erasers** for taking exams on **scantrons**, which will be provided.
- * **You may not leave the exam room during the testing period.** Plan accordingly and visit the bathroom before testing. Exams will not exceed a class period (50 minutes approximately). If you must leave to the bathroom, **you must hand in your exam**. You cannot get your exam back after leaving the testing room. Please speak to me if you have a medical conflict with this rule.
- * **Put away AND silence all electronic equipment.** Using cellular phones for calculations is *not allowed* for testing. If you handle, look at, or use any type of electronic equipment during the exam class time you will be asked to hand in your exam immediately and **you will receive a zero for the exam**. This is to ensure that no student has an unfair testing advantage by checking information saved in any electronic equipment. Your desk surface must be clear of everything and you must turn off and place all electronic equipment, **away inside a closed bag**.
- * Once the exam is handed out, you cannot communicate in any way with your classmates. As well, your eyes must not wander to other's exams. If either situation occurs, you will be asked to leave and **you will receive a zero for the exam**.
- * Stay seated at all times during the exam. If you have any questions, **raise your hand** and I or the ULA will come to you.
- * **If you arrive late** to lecture exams (without a legitimate excuse) **you will have only the time remaining** for that testing opportunity. For example, if you arrive 10 minutes late, you lose those 10 minutes of testing time. If you arrive 30 minutes late, you lose those 30 minutes of testing time.
- * **If you miss an exam for a valid reason (see below) you must contact me as soon as you are able.** There will be no make-up exam for the final exam. Having car trouble, traffic problems, and campus parking problems do NOT constitute an acceptable excuse. We all must plan for an early arrival time to lecture!

Miscellaneous Assignments: (5 points each) There will be four miscellaneous assignments, which will be completed in-class. These assignments will provide an opportunity to apply some of the information we've talked about in class. There are no makeups for the in-class activities – **you must be in-class** to be able to complete the assignment. If you miss it and have an excused absence, you will exempt for the activity.

Late/Missed Work: If an exam is missed, the student must inform the instructor in writing within 24 hours. Quizzes will not be accepted after the deadline.

Excused absences include 1) illness or injury (when accompanied with a note from a doctor), 2) religious observance where the nature of the observance prevents the student from attending class, 3) participation in university activities at the request of university authorities (complete Notification of Absence from Class Form from the Office of Campus Life) and 4) bereavement (email studentaffairs@towson.edu to complete procedure through Towson University's Division of Student Affairs) and "compelling verifiable circumstances beyond the control of the student". **Documentation of excuse for all absences must be provided; absences are excused at the sole discretion of the instructor.**

Emails: When you email me or any of your instructors, please treat the email as a formal letter (ex: Dear Prof. Partain, Thank you, your name). Do not treat emails like a text message. If you do not sign your email, I will not know who it is from.

Extra Credit:

Extra credit is given at the discretion of the professor. Everyone will receive the same extra credit opportunities, so extra work at the end of the semester to “boost a grade” will not be permitted. Extra credit will not exceed 4% of the course total.

Tentative Schedule

Week	Lecture Topics	Due dates
1 8/26 & 27	Course Introduction Quick overview of evolution 1. Origin of Life 2a. Evidence for Evolution	
2 9/2 & 4	2b. Evidence for Evolution 3a. Hardy-Weinberg Equilibrium	
3 9/9 & 11	3b. Hardy-Weinberg Equilibrium 4a Natural Selection, Variation	In-Class Exercise 1 (9/9)
4 9/16 & 18	4b Natural Selection,	Exam 1 (Lectures 1 – 4a) (9/18)
5 9/23 & 25	4b. Natural Selection & Variation 5b. Variation, Sex, Nonrandom Mating	Class Cancelled (9/23)
6 9/30 & 10/2	5b. Evolution & Mutations 5c. Migration and Genetic Drift 6a. Species Concepts 6b. Speciation	
7 10/7 & 9	7a & b. Tree Thinking (Phylogeny)	In-Class Exercise 2 (10/9)
8 10/14 & 16	Population Ecology: 8. Demography 9. Survivorship	Exam 2 (Lectures 4b – 7b) (10/14)
9 10/21 & 23	Population Ecology: 10a. Exponential growth/10b. Logistic growth 11a. Density dependence 11b. Tradeoffs	In-Class Exercise 3 (10/23)
10 10/28 & 30	Community Ecology: 12. Niches 13a. Competition 13b. Predation	
11 11/4 & 6	Community Ecology: 13c. Parasitism, Mutualism,	Exam 3 (Lectures 8 – 13b) (11/4)
12 11/11 & 13	Community Ecology: 14. Indirect, Interactions 15. Succession 16. Island Biogeography	
13 11/28 & 20	Ecosystem Ecology: 17a. Primary Production 17b. Trophic Efficiency	In-Class Exercise 4 (11/20)

14 11/25	Ecosystem Ecology: 18a. Biochemical Cycles	
15 12/2 & 4	Ecosystem Ecology: 18b. Water 19. Diversity	Exam 4 (Lectures 13c – 19) (12/4)

Important Dates:

August 2 – Class begins

September 3 – Change of schedule period ends

November 3 - Last day to withdraw from full semester courses with a grade of "W".

December 8 - Last day of class