

Course Information

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Course Prefix and Number: BIOS 1207

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Course Description

BIOS 1207 was designed for Biology majors. This is an **active-learning** class that will introduce you to basic principles of modern biology, including evolution, ecological relationships, biomacromolecules, bioenergetics, cell structure, and genetics. This course will help you develop critical scientific skills including hypothesis testing, experimental design, data analysis and interpretation, and scientific communication. Class time will include a variety of **team-based activities** designed to discuss, clarify, and apply new ideas by answering questions, drawing diagrams, analyzing primary literature, and explaining medical or ecological phenomena in the context of biological principles. We will spend class time on building your comprehension of the material you find the most difficult, based on pre-class assessments.

Learning Objectives:

By the end of this course, you will be able to:

- A. Explain fundamental principles of modern biology, including evolution, ecological relationships, biomacromolecules, bioenergetics, cell structure, and genetics (Course lecture content).
- B. Use scientific skills to test hypotheses, design experiments, analyze and interpret data, and communicate scientifically (Course lecture content).
- C. Communicate effectively using appropriate scientific language (Group Project).
- D. Appreciate commonalities and differences among people who practice science, and recognize that there are multiple pathways into science as a career (Scientist Spotlights).
- E. Reflect on the usefulness of your study strategies and identify new strategies and practices to achieve your best learning strategies (Metacognition Assignments and Exam wrappers).

Required Course Materials:

Biological Principles is taught using a flipped classroom model, meaning that *you will need to complete your assigned readings and view the included videos before each lecture*. The Biological Principles textbook is available at bioprinciples.biosci.gatech.edu. The online course schedule contains links to each required reading and video.

Required pre-class (IKE), in-class (TICA), and homework activities will be conducted through Learning Catalytics (learningcatalytics.com). *A code will be sent to your GT email to access Learning Catalytics; you do NOT need to purchase access yourself*. Points earned in Learning Catalytics will contribute to the "participation" portion of your course grade. To participate in class, you will need to have an internet-ready smartphone, tablet, or laptop in class. Phone and computer use should be restricted to class-related material, and off-task use may result in loss of participation points for that day.

Grading Policy and Weighting:

Your final grade will depend on the following combination of grades:

Midterm exams	40%
Final exam (cumulative):	20%
Incoming Knowledge Evaluations (IKEs, see note below)	5%
Team In-Class Activities (TICAs, see note below)	5%
Homework (see note 2 below)	10%
Writing Assignments	9%
Group Project	20%

Note: Learning Catalytics assignments (IKEs, TICAs, and homework) are graded for completion, not accuracy. Every answer submitted receives credit, whether correct or not. All assignments within a category (IKE, TICA, homework) are weighted equally and we will

Note also that these components total 108%, though the maximum score possible is 100%, meaning that there is 9% extra credit built into the course components. **We advocate that you attempt every assignment to the best of your ability.** We hope that knowing that you can have lower scores on 9% of your grade at no cost to your final grade will help relieve some anxiety around your course grade.

We will use the following procedure in calculating your final grade:

1. We will combine your exam, IKE/TICA, homework, group activity, and other scores into a raw composite score (0 – 100%) using the weights shown above.
2. We will use the mean score earned by the top 5% of the class as a gauge of real student performance in the class.
3. We will normalize your score to actual student performance by dividing your raw composite score by the mean score earned by the top 5% of the class. If you're in the top 2.5% of the class, your score will be 100%.
4. We will assign final letter grades using the following scale:

A: $\geq 90.0\%$

B: $\geq 80.0\%$ and $< 90.0\%$

C: $\geq 70.0\%$ and $< 80.0\%$

D: $\geq 60.0\%$ and $< 70.0\%$

F: $< 60.0\%$

In recent years, normalized and raw scores have been very similar, but this grading approach allows us to take account of actual class performance in assigning grades, if necessary. Normalization can only improve, not decrease your final course grade, though usually it doesn't change grades. **Note that we do not constrain the final grade distribution in any way – everyone can earn an A in this class, and we'd be delighted if you all did.**

Course Policies

Attendance and Participation:

Attendance in lecture correlates strongly with performance in Biological Principles. We will make our lecture materials available and urge you to download and print them for use in active note-taking during class. Much of the material and application of ideas needed for success in this course will be presented only in lecture and assessed via Learning Catalytics. Questions presented in class are usually at the same level as exam questions. TICA sessions in Learning Catalytics close at the end of class, with a few exceptions, and will not be reopened for credit, but you can review closed sessions for study purposes. All IKE and TICA sessions are graded for participation and count equally. We will drop the four lowest IKE/TICA scores from your participation grade.

- **Incoming Knowledge Evaluations (IKEs):** Before each class, we'll expect you to complete the pre-class readings on the website. Once you've reviewed the material, log in to Learning Catalytics to complete that day's Incoming Knowledge Evaluation (IKE). IKE sessions close before the start of class and will not be reopened for credit, but you can review closed sessions for study purposes. We'll use your responses to guide what we do in class. IKE questions are not often at the same level as you can expect to see on an exam; instead, they ensure that you come to class with effective baseline knowledge to work up to exam-level questions in class. All IKE and TICA sessions are graded for participation and count equally. We will drop the four lowest IKE/TICA scores from your participation grade.
- **Team In-class Activities (TICAs):** A TICA sessions in Learning Catalytics close at the end of class, with a few exceptions, and will not be reopened for credit, but you can review closed sessions for study purposes.
- **Homeworks:** Homework assignments will be posted each week in Learning Catalytics and are always *due at 11:59 pm Monday*. Homeworks close when due and will generally not be reopened for credit, but you can review closed sessions for study purposes. All homework assignments are graded for participation and count equally. We will drop the lowest homework score from your participation grade.

Absences:

Regular attendance and active participation during class time are correlated with better performance in the course. If you miss class, you should get notes from a peer and meet with a TA to get your content questions answered. If you experience any situation that causes you to miss more than one consecutive class or otherwise interferes with your ability to keep up with course assignments, we ask that you request assistance from the Dean of Students using this link: <https://studentlife.gatech.edu/request-assistance>. Select "Class Absence Verification" for documentation of an absence, including missed exams. Select "Meeting with a Dean" for any other issue that is interfering with your ability to succeed in this or any other course. Missed exams fall under the **Missed Exams** policy. Missed participation sessions due to absences for any reason fall under the **Missed Participation** policy.

- **Missed Participation (IKEs, TICAs, and HWs):** We will drop the 4 lowest IKE/TICA and lowest Homework score for all students. We will remove assignments missed due to absences related to illness, institute-approved absences, and other situations documented through the Office of the Dean of Students. We will carry out these adjustments only at the end of the semester. Note that each assignment is worth a small amount and that *HWs, IKEs, and TICAs are graded for participation, not accuracy*.
- **Missed Exams:** If you miss an exam for any reason, you will receive a grade of 0 (zero) on that exam unless you petition us for a makeup exam within 24 h of the start of the missed exam, and we approve your petition. Your petition must be submitted in writing (by e-mail) with a legitimate reason for missing the exam. Documentation is required for any exam to be considered excused; any medical documentation should be submitted to the Dean of Students (<https://studentlife.gatech.edu/request-assistance>) and *not* to your course instructors. You are encouraged to submit your petition before the exam if you know of your scheduling conflict in advance. Examples of legitimate reasons to miss an exam include illness, illness or death in your immediate family, and participation in official university activities. Requests for makeup exams

due to missed class for religious observances also require documentation and must be submitted to the Registrar's Office using the Instituted Approved Absence Form **within the first two weeks of the semester** as per the Registrar's Office guidelines: <https://registrar.gatech.edu/info/institute-approved-absence-form-for-students>. We will consider each petition individually. For students with approved petitions, we will either administer a makeup exam or replace your missed exam score with the average of your other exam scores, weighted by the class average for each exam. Exam grade replacement is intended only in situations where it is not feasible to administer a makeup exam. The formula to calculate your score on a missed exam is: (your missed exam score) = (class average of missed exam) x [(sum of your scores on exams you took) / (sum of class averages on exams you took)]

Academic Honesty:

All students are expected to abide by the Academic Honor Code (<https://policylibrary.gatech.edu/student-life/academic-honor-code>) and the Student Code of Conduct (<https://catalog.gatech.edu/rules/18/>). Academic dishonesty in any form will not be tolerated. Academic dishonesty includes cheating, lying about course matters, plagiarism, submitting someone else's work as your own, stealing classroom materials, or helping others commit a violation of the Honor Code. Plagiarism includes any form of representing the words or ideas of others as your own. Cell phones must be off/silenced and placed face-down on the desk during exams. Any student found with a phone or other unapproved electronic device on their person during testing will be referred to the Office of Student Integrity. Suspected violation of the Academic Honor Code in any form may be referred to the Office of Student Integrity for adjudication.

Student-Faculty Expectations:

The Georgia Tech Student-Faculty expectations may be viewed here: <https://catalog.gatech.edu/rules/22/>

Students with Accommodations:

We will make classroom accommodations for students with documented accommodation needs per the Office of Disability Services. These accommodations should be arranged in advance and in accordance with the Office of Disability Services (<http://www.disabilityservices.gatech.edu>). Students with accommodations on exams must schedule their exams at least five business days in advance with the testing center, and exams at the Testing Center must be scheduled to occur on the same day and at the same time as the scheduled exam. Students who are unable to schedule on the same day and time as the exam must have instructor permission to take the exam at an alternative time or day. Students with accommodations on exams forego those accommodations if they choose to take the exam in the classroom.

This is a Core IMPACTS course that is part of the STEM area.

Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help students master course content, and support students' broad academic and career goals.

This course should direct students toward a broad Orienting Question:

- How do I ask scientific questions or use data, mathematics, or technology to understand the universe?

Completion of this course should enable students to meet the following Learning Outcome:

- Students will use the scientific method and laboratory procedures or mathematical and computational methods to analyze data, solve problems, and explain natural phenomena.

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies:

- Inquiry and Analysis
- Problem-Solving