BSC 2005 – Biological Sciences (online)

UF Sections 7089 (10333), 7090 (10334), 7191 (17448), 7092 (10335), 71AE (10337), 71AF (10338), 71AH (10339), 75A0 (10340), 75E0 (10341), 75E1 (13588), 75E2 (13589)

UFO Sections 71A0 (10336)

Syllabus for Summer C 2025

I. Course Description

This course applies the scientific method to critically examine and explain the natural world including but not limited to cells, organisms, genetics, evolution, ecology, and behavior. Primarily intended for non-majors. 3 credits.

Note: BSC2005L is a separate course, and is taught by a separate instructor – NOT Dr. Gerlach!

II. Course Meetings

First day of classes: Monday 12 May 2025
Last day of classes: Friday 08 August 2025
Final exam period: n/a

Course Meeting Times: This course is entirely online and asynchronous, with weekly deadlines but no fixed meeting times except for exams. Exams will be available online during a limited time window on the days posted. Students may work on course material at their own pace from any location with a reliable internet connection, but it is each student's responsibility to keep up with course assignments and meet posted deadlines for all assignments. All deadlines and exam times are US Eastern time; students who are not in the US Eastern time zone are responsible for doing the appropriate conversions to ensure their work is submitted on time.

III. Instructors

Course Instructor:

Dr. Nicole Gerlach (she/her)
Department of Biology
Office: 520 Carr Hall / Phone: 352-392-2419
E-mail: ngerlach@ufl.edu (preferred)

Teaching Assistants:

TBA
Sections:
TBA
E-mail: TBA
Office Hours: TBA

TBA
Sections:
TBA
E-mail: TBA
Office Hours: TBA

TBA
Sections:
TBA
E-mail: TBA
Office Hours: TBA

IV. Course Communications

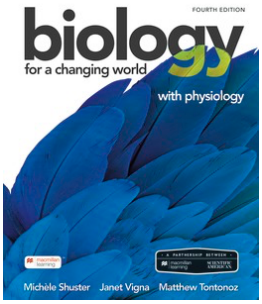
A. Course Website: https://elearning.ufl.edu/ or CANVAS LINK GOES HERE

B. Office Hours: All office hours will be held via Zoom. Office hour appointments can be scheduled with Dr. Gerlach via Google Calendar; the link to the scheduler will be available on the "Contact Your Instructor" page on Canvas. Availability may vary by week but will typically be Wednesdays and Fridays 10 a.m. – 12 p.m. Note that these are not open drop-in hours; you must sign up for an appointment slot at least 2 hours in advance to guarantee availability.

C. Contacting Your Instructors: If you have a question about course mechanics or course material that cannot be answered from the syllabus, course announcements, or the course FAQ, please post it to the Discussion Boards on Canvas (see section VIII. "Getting Help", below). If you have a question involving a personal/grade-related issue, please e-mail your TA and Dr. Gerlach. All e-mail correspondence must originate from your @ufl.edu account or the Canvas Inbox system, and contain "BSC 2005" in the subject line. E-mails not meeting these requirements may not be recognized by our e-mail filters, and thus may not be answered. Barring unusual circumstances, expect a reply within 24 hours during the week, and 48-72 hours over the weekend. E-mails and Discussion Board posts are typically checked at least once per day, but sometimes not more than that.

D. **Communications From Your Instructors:** Each student is solely responsible for reading and following the instructions, guidelines and schedules in this syllabus and on the course webpage and in course announcements. Not having read the information in this syllabus, on the webpage, or in course announcements will not constitute an excuse for missing deadlines, assignments, or other assessments. Please set your preferences in Canvas so that you receive timely notifications of course announcements and other information.

V. Course Resources



A. Textbook

Biology for a Changing World, *4e* by Shuster, Vigna, and Tontonoz. W.H. Freeman (publisher), 2021.

A physical copy of the textbook is not required for the course, but is optionally available in the UF Bookstore. The required Achieve access (see below) includes an electronic copy of the textbook.

There are current versions of the textbook on reserve at the Marston Science Library. Visit the Reserve Materials area to check out these copies.

B. MacMillan Online Resources

Achieve is an online assignments and tutorial system from the textbook publisher that includes an electronic version of the textbook. Achieve will be used for required readings, interactive activities, and quizzes. Access to Achieve is required for BSC2005.

Achieve will be offered at the lowest cost option through UF All Access. UF All Access allows students the choice to "opt-in" for a limited time to receive access to Achieve for a reduced price and pay for these materials through their student account. Students who do not choose this option will be able to purchase the access code directly from the MacMillan site. All options provide access to the same materials.

To access Achieve via UF All Access:

1. Go to https://bsd.ufl.edu/allaccess and click on the "Opt In" tab or the "View Eligible UF All Access Classes" button.
2. Log in with your GatorLink account.
3. Students are shown a list of classes in which they are enrolled in that are participating in UF All Access with the prices included.

4. Click the Opt-in check box next to the desired class(es).
5. Once you have reviewed your course selections click the Opt-In button.
6. The access code or access instructions are now displayed. Please copy the code and follow the instructions on the course Canvas page for gaining access to your materials.
7. The classes that you opted into will continue to be displayed at https://bsd.ufl.edu/allaccess for up to three weeks after the term has started. Be sure to register the access code before this deadline.

For help with this system, difficulties finding your access code, or issues with an invalid access code, please contact allaccess@bsd.ufl.edu.

If you are waiting on financial aid disbursement and choose not to use the UF All Access program, you can register for temporary Achieve access via the MacMillan site, but you will have to purchase access once the temporary access expires.

Instructions on correctly registering for Achieve will be available on the Canvas course site once the semester has started. **Please wait for these instructions before registering for Achieve**; incorrect registration on Achieve may result in receiving zero points for all Achieve assignments.

For help with Achieve, contact MacMillan Technical Support: (800) 936-6899 (phone) or via their web form at https://macmillan.force.com/macmillanlearning/s/achieve.

C. Course Website (Canvas)
All other class material that is not part of the Achieve system – including the syllabus, lectures, assignments, discussions, quizzes, and gradebook – will be posted on the course Canvas website (https://elearning.ufl.edu/). For help with Canvas, call the UF Computing Help Desk at 352-392-4357, or visit the e-Learning support website: http://help.instructure.com/.

D. Course Fee
For UF students, the course fee is $27.99. For UFO students, this fee is included in tuition.

E. Additional Course Supplies
Some activities will require students to acquire additional inexpensive materials on their own for "kitchen experiments" or simulations. These include: rubbing alcohol, a coffee filter, some utensils, and some dry particulate food (like dry beans or uncooked macaroni) or household items (like paperclips or pennies).

VI. Course Policies

A. Time Commitment
The UF College of Liberal Arts and Sciences assumes that each student will devote on average 3-4 hours per week per credit-hour to each course during the regular semester. Because BSC 2005 is 3 credits, each student should therefore expect to devote an average of 9-12 hours per week to this course in a 15-week semester. During the accelerated 12-week summer session, students should expect to devote an average of 11-15 hours per week to this course. This time will not necessarily be evenly distributed; some weeks will have heavier workloads than others.

B. Attendance
Students are expected to complete all assigned work by the due date. Students with pre-planned travel/conflicting activities on the day of the deadline (including student athletes) are responsible for **managing their time wisely and should plan to work ahead when needed** so that they can submit their work before they leave. Excuses such as "we didn't get back from (activity) when planned and I didn't have time" or "my computer crashed half an hour before the deadline and tech support wasn't open" will NOT be accepted as excuses for missed deadlines.

Unavoidable emergency circumstances (e.g. severe illness, hospitalization, or family emergencies) that prevent you from completing your work in a timely manner or cause you to miss an exam require you to obtain a letter from a medical professional or the Dean of Students office (https://care.dso.ufl.edu/instructor-notifications/) that specifies the time period for which you are excused from classwork, and submit it to your instructors as soon as possible (i.e. within a week, barring extreme circumstances like extended hospitalization).

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies.

C. Computing Requirements

It is the responsibility of the student to maintain a functioning computing system and internet connection. Computing/internet connectivity issues will NOT be acceptable excuses for missed deadlines unless they are brought to the attention of the instructor **at least 24 hours prior to the deadline** and accompanied by the ticket number from technical support. See section VIII for Technical Support contact information. Internet connectivity problems can cause issues with assignment submission, so students should verify that all activities are marked as "complete" and that all files uploaded correctly after they hit the "submit" button.

Microsoft Office programs are required for many of the assignments; these can be accessed by current UF and UFO students through GatorCloud: http://www.it.ufl.edu/gatorcloud/ . Submissions must be made either in an MS Office format (.doc or .docx, .ppt, etc.) or in a generally readable file format (.pdf, .jpg, .txt, etc.); proprietary file formats such as Pages, Keynote, etc. cannot be opened and will not count as an on-time submission. Links to external services such as GoogleDocs will not be accepted in place of a file uploads; the file must be saved into a static format (.pdf, etc.) and uploaded.

D. Exams

Any material covered during the lectures or assigned in the reading may be included in the lecture exams. This can include textbook reading and illustrations, the lectures themselves, and any supplemental videos. Take notes!

Exams will be administered online using Honorlock proctoring software. Students must have a functioning webcam and microphone (integrated or external), and must have the Chrome browser installed. Students will need to show their Gatorlink ID at the beginning of each Honorlock Proctoring section and show both sides of their blank scratch paper (if allowed) to the camera prior to the Exam starting. If students do not meet these requirements, it will be considered cheating and students will fail the exam and be reported for an Honor Code violation. Additional information about taking Honorlock-proctored exams will be available on the course website. Students must take the exam during the specified exam window; **no additional time will be given to complete an exam if you start late.**

Exams will be available for review by appointment following the posting of exam scores on Canvas; specific times for exam review will be announced following each exam. Exams will not be available for review after the semester has ended.

No make-up exams will be given without prior permission or documentation of illness on the day of the exam. Students that will be missing an exam due to a pre-arranged university-approved excused absence (sports, conflicting exam, etc.) should let the instructor know a minimum of two weeks in advance. In case of illness or personal emergency on exam day, students must submit documentation to the Dean of Students office (https://care.dso.ufl.edu/instructor-notifications/) and request an instructor notification to be sent. These notes must be received within five business days after the exam.

E. **Late Work**

All work must be submitted by the posted deadlines. Please do not wait until the night of the deadline to complete your assignments!

Assignments, quizzes, and other activities in Canvas and Achieve automatically close at the deadline. No late work will be accepted on these assignments without an excused extension from the Dean of Students (see VI.B above) or a technical support trouble ticket (see VI.C above) documenting technical issues for at least 24 hours prior to the deadline.

F. **"Life Happens" Free Pass**

As explained above, assignments may not be submitted late without a documented excused absence, and deadlines will not be extended due to technical issues unless those issues are brought to our attention at least 24 hours ahead of time. For this reason, we encourage all students to submit their work well ahead of the deadline, and not wait until the last minute. However, we are aware that sometimes life happens, and technology can be troublesome, and this can sometimes lead to a submission not going through, a deadline being missed, the wrong file being submitted, etc. To deal with these situations, each student will have ONE "Life Happens" free pass that they can use to excuse ONE written assignment or quiz during the semester.

This is a separate mechanism from the course policy covering approved excused absences/extended deadlines for personal/family emergencies. Late work will still be accepted in those cases, as described above. The "Life Happens" free pass is meant for situations in which a student would ordinarily receive a zero in the gradebook for a missed assignment or quiz, and is not applicable for cases in which a student was able to complete the assignment.

Some rules:
- Each student may use their free pass to have ONE missed assignment of their choice excluded from their final grade. Exams are not eligible for the free pass!
- The free pass is only good for excusing ONE assignment, not a whole module's worth of work.
- Use of the free pass MUST be requested via a Canvas submission comment on the assignment or quiz. No requests made via e-mail will be honored.
- Requests to use the free pass must be made by ONE WEEK after the deadline for that assignment or quiz **at the latest**. For Module 15 assignments at the end of the semester, requests to use the free pass must be made within 24 HOURS of the deadline. Requests that come in past these deadlines will not be honored.
- Once a student's pass is used, it's gone; they cannot change their mind and use it on a different assignment later in the semester.
- The free pass cannot be used to excuse assignments that are part of a case of suspected / verified academic misconduct.

G. Assignment Submissions and Resubmissions

Animations within Achieve are graded on the first attempt; please do not start these quizzes until you are ready to complete them. After completing an Animation or an Adaptive Quiz, please ensure that the score has been posted to the Achieve gradebook. Note that Achieve scores may not sync to the Canvas gradebook immediately, but scores for these activities/quizzes should always be visible in the Achieve gradebook.

All files for written assignments must be submitted through the proper Canvas assignment; **files will not be accepted over e-mail or via Canvas comments**. Files must be saved in the appropriate file format and uploaded to Canvas; links to GoogleDocs or similar services will not be accepted as replacements for file uploads. **It is each student's responsibility to ensure that their work is submitted prior to the deadline. Please double-check your file submissions to make sure they have completed successfully.** Errors with the submission process (such as the internet connection being lost mid-submission) will not be grounds for deadline extensions unless they occur at least 24 hours prior to the deadline and are accompanied by a UF HelpDesk ticket number (see VI.C above). Please also double-check that you have submitted the correct file; submitting an incomplete or incorrect file will result in a zero. For assignments within Canvas that require a file upload, these may be resubmitted multiple times; we will only consider the most recent

submission. However, once a submission has been graded, **even if it is prior to the deadline**, no further submissions will be considered.

H. Classroom Behavior

Please behave with courtesy towards your fellow students and the instructors. This is particularly important in collaborative discussions where you are voicing opinions and commenting on those of other students. Students who persist in being rude or disrespectful will be blocked from future participation (with corresponding loss of points).

Students are encouraged to employ critical thinking and to rely on data and verifiable sources to interrogate all assigned readings and subject matter in this course as a way of determining whether they agree with their classmates and/or their instructor. No lesson is intended to espouse, promote, advance, inculcate, or compel a particular feeling, perception, viewpoint, or belief.

I. Grammar

Correct grammar, punctuation, spelling, capitalization and paragraphing should be used in any college level submission, including the discussion boards. (U SHLD NT US TXT SPEAK LKE IDK OR BFF THX ALSO DNT USE ALL CAPS. Ugh.) We will take note of spelling and grammar in all submissions and we will grade accordingly, even if it is not explicitly included on the rubric. If you need help with any aspect of your writing, please visit the UF Writing Studio at http://writing.ufl.edu/writing-studio/ .

J. Course Materials

All materials for this course, including but not limited to lectures, quizzes, exams, and worksheets, are the intellectual property of the professor, TAs, or textbook publisher, and are provided solely for the personal use of currently enrolled students. These materials may not be distributed to other students or repositories without express written permission, even after the conclusion of the course at the end of the semester. Doing so will be considered a violation of the UF Honor Code (see below).

VII. UF Policies

A. Academic Honesty

All students registered at the University of Florida have agreed to comply with the following statement:

> *"I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."*

In addition, on all work submitted for credit the following pledge is either required or implied:

> *"On my honor I have neither given nor received unauthorized aid in doing this assignment."*

More details can be found in the UF Honor Code at https://sccr.dso.ufl.edu/process/student-honor-code/. Academic dishonesty or other Honor Code violations will not be tolerated, and *each incident*, as determined by Dr. Gerlach, will result in – at minimum – the loss of **a full letter grade** in the course, a zero on the assignment or exam in question, and additional sanctions as appropriate, up to and including a failing grade in the class. In this course, academic dishonesty includes (but is not limited to) collaborating with others on course assignments, quizzes, or exams; utilizing prohibited materials or outside resources during exams; copying the work of other students in whole or in part; allowing other students to copy your work or otherwise sharing completed assignments in person or online (during the semester or in the future); discussing or sharing quiz/exam questions or answers with other students; using advanced automated tools (artificial intelligence or machine learning tools such as ChatGPT) on assignments; and plagiarism, including insufficient paraphrasing.

In short, each student is expected to complete each assignment and exam without substantiative assistance from others, including current or previous students, automated tools, or internet sources (except where specifically required by the assignment, and these must be cited correctly).

All written submissions in this course are run through TurnItIn's anti-plagiarism software, which gives each submission a similarity score, depending on the degree to which it matches the sources in TurnItIn's database, which include web sites, journal articles, and other student submissions. Students can view their own TurnItIn score and similarity report on a submission, generally within a few minutes of submission. Submissions with a high TurnItIn score should be rewritten to better put concepts into your own words, and ungraded assignments may be resubmitted without penalty prior to the deadline (see section VI.G above).

If you have knowledge of any instances of academic dishonesty in this class, you are obligated to notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Student Honor Code at: https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

B. Accommodations for Students with Disabilities

Students who will require a classroom accommodation for a disability must contact the Dean of Students Office's Disability Resource Center, in 001 Reid Hall (phone: 352-392-8565). Please see the University of Florida Disability Resources website for more information at: https://disability.ufl.edu. Students should provide their DRC accommodation letter to Dr. Gerlach as soon as possible, ideally by the second week of classes. No accommodations are available to students who lack this documentation, and accommodations are not retroactive (i.e. accommodations can not be made for assignments submitted prior to Dr. Gerlach receiving the letter). It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed, and instructors cannot provide accommodations beyond those listed on a student's documentation. Once notification is complete, the Disability Resource Center will work with the instructor to accommodate the student.

C. Drop/Add/Withdrawal

A student can drop/add this course during the drop/add period with no penalty. After drop/add, a student who drops will receive a W until the date listed in the academic calendar. After that date, the student may be assigned an "E" (fail). Note: it is the responsibility of the STUDENT to withdraw from a course, not the instructor. Failure to participate/complete the class does NOT constitute a drop.

D. Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://my-ufl.bluera.com. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/. We do take student feedback into account when planning future semesters; please let your instructors know if there are particular modules and/or activities that you found helpful or topics that you would have liked to cover in more depth, as well as any that you found less useful.

VIII. Getting Help

A. Computing Problems

For issues with technical difficulties in Canvas, or general computing questions, contact the UF Help Desk:

- (352) 392-HELP
- https://helpdesk.ufl.edu/

For issues with Achieve, please contact MacMillan technical support at:

- (800) 936-6899
- https://macmillan.force.com/macmillanlearning/s/achieve

B. University Support Services

College can be a very stressful time in a person's life. Resources are available on campus to help students meet academic goals and solve personal problems that may interfere with their academic performance. If you find that you are having difficulty emotionally or academically, there is substantial support available. See "A Self Help Guide for Students" or contact one of the following services:

1. U Matter, We Care, umatter@ufl.edu, 352-392-1575
2. Counseling and Wellness Center, Radio Rd Facility, 352-392-1575
3. Dean of Students Office, 202 Peabody Hall, 352-392-1261
4. Student Health Care Center, 2140 Stadium Rd,352-392-1161
5. Career Connections Center, Suite 1300 Reitz Union, 352-392-1601
6. CLAS Academic Advising Center, Farrior Hall, 100 Fletcher Drive, 352-392-1521
7. Teaching Center, 1317 Turlington Hall, 352-392-2010
8. Writing Studio, 339 Library West, 352-846-1138
9. UF Field and Fork Pantry, 564 Newell Dr., 352-294-3601

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to contact the Dean of Students (202 Peabody Hall, 392-1261) for support. Furthermore, please notify your instructor(s) if you are comfortable in doing so. This will enable us to provide any resources that we may possess.

C. Other Questions

If you have non-tech-support questions about other aspects of the course, check the following sources first to see if it is already answered, **before** e-mailing your instructors:

- Course Syllabus
- Course Orientation Module in Canvas
- Course FAQ page
- Course Announcements (this is the primary means that your instructor has to communicate with you in a timely manner)
- Course Questions Forum Discussion Board

If you still cannot find the answer to your questions:

- If it is a question that others might find useful to know the answer to as well, post it to the discussion board.
- If it is a question specific to you (e.g. account or grade specific), contact Dr. Gerlach and your TA via e-mail.

IX. General Education

A. **General Education Classification**

BSC 2005 meets the general education requirements for Biological Sciences.

B. Program Area Objectives

Biological science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the life sciences. Courses focus on major scientific developments and their

impacts on society, science and the environment, and the relevant processes that govern biological systems. Students will formulate empirically-testable hypotheses derived from the study of living things, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

C. General Education Student Learning Outcomes

The general education student learning outcomes (SLOs) describe the knowledge, skills and attitudes that students are expected to acquire while completing a general education course at the University of Florida. The SLOs fall into three areas: content, communication and critical thinking.

1. Content: Students demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline.

2. Communication: Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline.

3. Critical Thinking: Students analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems.

D. **General Education in the Context of This Class**

Each module will contain between 1-2 written activities or discussions that are worth 10 and 30 points each; this represents approximately 25% of the final grade. The purpose of these activities is to encourage students to think about Biology outside the framework imposed by the textbook or instructor lectures by giving them the opportunity to develop their own materials to support or reject existing scientific hypotheses. Hypothesis testing is most explicitly addressed in the first module, on the scientific method. Students will gain practice formulating hypotheses and analyzing experimental data throughout the class, in various activities that involve virtual and/or "kitchen" experiments. Activities that include an emphasis on hypothesis testing are marked on the schedule below with ‡.

For each activity, students are provided with specific instructions for completing the activity as well as a grading rubric. The grading rubrics are designed to evaluate the student's mastery of specific content and their ability to produce bodies of work within the guidelines specified in the instructions. Some examples of activities types include: research using reliable web sources, expository writing, "kitchen experiments", inquiry activity sheets, and construction of figures and tables.

The course also includes five discussions, in which students collaboratively annotate a reading or video regarding the ethics and application of biology in daily life. Students will be expected to provide several thoughtful annotations to the material, as well as to respond to the annotations of their classmates, in order to foster critical thinking skills within a learning community.

E. **Course-Specific Objectives and Student Learning Outcomes**

The primary goal of this course is to establish a foundation of knowledge in biology. Fundamental concepts discussed include the process of science, cellular biology and the production and use of energy by those cells, the inheritance of traits via genetics, the processes and patterns of evolution by natural selection and other mechanisms, the diversity and history of life on Earth, and ecology at population, community, and ecosystem levels of organization. An additional course goal is to develop critical thinking skills for development of reasoned thought and for evaluation of life experiences.

Objectives of the course will be achieved if, by its conclusion, students can:

- Describe the natural world.
- Describe the scope of biology, and explain the means by which biologists answer questions.
- Articulate and practice the steps of the scientific method.
- Generate scientific hypotheses and design appropriate experiments to test them.
- Identify whether explanations/information are scientific.
- Read and interpret a variety of scientific data.
- Evaluate data regarding validity.
- Identify the four types of biological macromolecules, and explain their structure and function in living organisms.
- Explain why water is so important to life on Earth.
- Describe the function of enzymes in chemical reactions.
- Explain cell theory.
- Identify differences between prokaryotes and eukaryotes and between plant and animal cells.
- Describe the function of each organelle within a cell.
- Describe the importance of the cell membrane and how different materials move across the membrane.
- Identify types of energy transformations.
- Explain the process of photosynthesis, including the reaction formula, the various reactions, and the location of each step of the process within the cell.
- Explain the physics of light, including the absorption/reflectance spectra of pigments such as chlorophyll.
- Explain the aerobic and anaerobic respiration process, including the reaction formula and when each is type is most likely to be used.

- Describe the structure of DNA and use complementary base pairing to synthesize a new strand of DNA.
- Explain how DNA profiling is used in paternity and criminal cases, and explain the steps involved in gathering and analyzing these data (i.e., being able to watch *CSI* critically!).
- List the key stages of mitosis and identify what is happening at each stage.
- Identify the important stages of meiosis and describe how it differs from mitosis.
- Explain the difference between a gene and an allele.
- Describe the inheritance of alleles, complete Punnett squares, analyze pedigrees, and predict phenotype/genotype for various crosses (single-gene, multi-gene, incomplete or co-dominance, sex-linked).
- Explain the various effects of genetics vs. environment on various traits.
- Define "evolution" and describe how it differs from natural selection.
- Describe the conditions necessary for natural selection to occur and explain how they apply to real-world situations (e.g., antibiotic resistance).
- Use information on fitness to identify what type of selection is acting and to predict the population's response to selection.
- Describe non-selective processes that can result in evolution, such as Drift, Founder Effect, Population Bottlenecks, and Gene Flow.
- Calculate Hardy-Weinberg Equilibrium allele, genotype, and phenotype frequencies.
- Define what a species is and describe the process by which a single species can split into two reproductively isolated species.
- Describe how fossils are formed and how this results in observed patterns in the fossil record.
- Explain the importance of homologous structures, transitional fossils, and DNA evidence to our understanding of Earth's evolutionary history.
- Explain how relative and absolute dating are used to determine the ages of fossils and the age of the Earth.
- Identify the order and approximate timing of major events and transitions in the history of life (e.g., mass extinctions, oxygenation of the atmosphere, transition to land, etc.).
- Describe how many species there are on Earth and approximate proportions of various types of organisms.
- Compare Linnean vs. taxonomic classifications.
- Explain how phylogenies are built and the types of information involved.
- Use a phylogeny to describe the relationships between species.
- Classify bacteria by metabolism, feeding type, shape, and cell wall type.
- Explain the ways prokaryotes are useful to other species and the ways they are detrimental.
- Describe the diversity of environments in which prokaryotes can be found.
- Describe the current theories about the origin of eukaryotes.
- Describe the characteristics of major groups of plants, animals (vertebrates and invertebrates), and fungi.
- Describe the population distributions and potential growth rates.
- Explain the concept of carrying capacity and use it to predict/explain population patterns over time.
- Identify biotic and abiotic factors that can influence population growth.
- Construct or explain a food web.
- Identify and explain various types of species interactions (symbiotic, parasitism, mutualisms, competition, etc.).
- Explain how a single species can affect the others in its environment (keystone species, invasive species, species competition, etc.).
- Identify major types of biomes and their characteristics and distribution.
- Define climate change, identify its major sources, and describe its potential effects.
- Define sustainability in terms of ecological footprints, and describe how students could reduce their footprint.

X. Assessments and Grading

A. Due Dates

This course is divided into fifteen modules, typically with one due each week of the semester during Fall and Spring semesters. The **learning activities** for each module will be due at **11:59:00 p.m. on the Wednesday** of that module's week, and the **assessments** for each module will be due at **11:59:00 p.m. on the Friday**. There may be exceptions for the first and/or last module of the semester to accommodate add/drop and/or reading days; please see the schedule below for details. During the twelve-week Summer semester, there will be three weeks that have two modules due instead of one; the due dates for each module are listed on the last pages of the syllabus, and will also be listed on each assignment's page within Canvas.

B. Module Coursework

Each module will consist of various learning activities to read/watch/complete, and assessments to submit. All required activities and assignments for each unit will be listed on that module's page on Canvas. The various pieces that might be included in a unit are outlined below.

1. **Learning Activities**
    a. **Read the chapter(s).**
    b. **Learning Animations.** There are typically 3-4 per chapter. Each one involves a short animated infographic to work through, followed by a short quiz (usually 2-3 questions) on the material covered in the infographic. You have two attempts to answer each question; getting a correct answer on the first attempt is worth 100%, getting a correct answer on the second attempt is worth 50%.
    c. **Adaptive Quizzes:** In these quizzes, the questions get harder or easier depending on how you do. You're not penalized for getting questions wrong, but you need to reach a certain level of question for each unit. Once you reach that level, you receive full credit (10 pts) for the unit. After that point, you can continue answering questions to review the material without affecting your score.
    d. **Lecture videos in PlayPosit:** All lecture videos will have embedded interaction questions in PlayPosit. To receive credit, you must complete every interaction in the video and watch the video until the very end. This tells PlayPosit you are done with the video and sends a grade to Canvas. You have one attempt to answer each question, but you may re-watch the video as a whole for another attempt to re-answer the questions.

2. **Assessments**
    a. **Perusall Discussions:** Perusall is a tool that allows students to collaboratively annotate a document or video. Each discussion will have a document to read or a video for you to watch, as well as a discussion prompt to guide your comments and annotations. Perusall grades annotations based on their quality and effectiveness. A high-quality and effective comment deeply engages with points in the readings, stimulates further discussion with other students, offers informative questions or comments, and helps others by addressing their questions or confusions.
    b. **Written Submissions.** These are activities that will ask you to do something – some outside research, a kitchen experiment, an online simulation, etc., and then write up and submit your findings / answers to questions to Canvas. Rubrics for each of these assessments are available in Canvas.

C. Exams

All exams will be available online through Honorlock during the assigned assembly exam times. Exams will be primarily multiple choice questions, although they may include many choice, matching, fill in the blank, etc. Exams may be curved if needed; details of the curve (if any) will be clearly announced.

D. Grading Category Weights

Assignment Category	Percent of Final Grade
Achieve (Learning animations and adaptive quizzes	10
Lecture videos in PlayPosit	15
Assignments and Discussions	25
Exams	50

E. Grading

Grades from written assignments, exams, Playposit, Perusall, and Achieve activities will be posted on Canvas throughout the semester. It is the responsibility of the student to check their grades on Canvas and to let instructors know about discrepancies **within one week of the grades being posted to Canvas**.

Minimum grade cutoffs are listed in the table below. The scores for the course as a whole will not be curved (i.e. these grade cutoffs will not be lowered) except under extremely rare circumstances (i.e., unless we tell you otherwise these cutoffs will not be lowered, so do not ask). However, these cutoffs will not be raised; in other words, if you receive at least 93% of the possible points, you are guaranteed to earn an A grade. Final scores will be rounded to one decimal place but will NOT be rounded beyond that (e.g., 89.92% will be rounded to 89.9%, not 90%). Being on the borderline of the next highest grade can be frustrating, so please put in the work you need to make sure you earn the grade you want!

Point Range (%)	Letter Grade
≥ 93	A
≥ 90	A–
≥ 87	B+
≥ 83	B
≥ 80	B–
≥ 77	C+
≥ 73	C
≥ 70	C–
≥ 67	D+
≥ 63	D
≥ 60	D–
< 60	E

Note that the current UF policy for assigning grade points is available at the following undergraduate catalog web page: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx. A minimum grade of C is required for general education credit.

F. **Incomplete ("I"):** If a student has completed the majority of the course work with a passing grade and particular DOCUMENTED circumstances prevent completion of the course in the time allotted, the student may, with the agreement of the instructor, be assigned an "I" pending resolution of the grade. All incompletes MUST be resolved by the end of the following term or the student will receive a grade of "E" (failing).

G. Extra Credit

Extra credit assignments *may* be offered at the instructors' discretion; if extra credit is offered, it will be open to all students and will be clearly announced on the course website (i.e. please do not ask). No individualized extra credit will be offered.

H. Special Treatment

Please do not request individual special treatment (extended deadlines without a documented excused absence, grade adjustments, extra credit) at the end of the semester; **we do not adjust grades or provide special treatment for individuals for any reason**. Plan to do well on all quizzes and other assignments from the beginning of the semester; if you are having difficulty in the class, please let your instructors know sooner rather than later.

XI. Disclaimer

This syllabus represents the current plans and objectives; however, schedules, requirements, and assignments may change throughout the semester as the need arises. Such changes, communicated clearly, are not unusual and should be expected.

XII. Weekly Course Schedule

Module	Topic	Learning Activities				Assessments		
		Learning Activities due date*	**Chapter**	**PlayPosit Lectures**	**Achieve**	**Assessments due date***	**Perusall Discussion**	**Written Assessments****
1	Process of Science	**Weds 14 May**	1	What is Biology? The Scientific Process	Learning Animations Adaptive Quiz	**Fri 16 May**	--	Introduce Yourself Hypothesis Testing‡
2	The Molecules of Life	**Weds 21 May**	2, 4.2	Organic Compounds & Biological Molecules Water and the Chemistry of Life Enzymes and Reactions	Learning Animations Adaptive Quiz	**Fri 23 May**	Molecular Biology of Cooking	--
3	Cell Structure & Function		3, M1	Prokaryotes and Eukaryotes Organelle Structure and Function Transport Across a Membrane	Learning Animations Adaptive Quiz		--	Build an Everyday Cell
4	Energy Flow & Photosynthesis	**Weds 28 May**	5, 6.3-6.5	Energy and Thermodynamics Photosynthesis Cellular Respiration & Metabolism	Learning Animations Adaptive Quiz	**Fri 30 May**	Artificial Photosynthesis	Paper Chromatography of Leaf Pigments‡
Tuesday 03 June 8:00 p.m. – 10:00 p.m. EXAM 1 (covers Modules 1-4)								
5	DNA & Genetics	**Weds 04 June**	7, M2, 10.1-10.3	DNA Structure Mitosis DNA Replication and PCR	Learning Animations Adaptive Quiz	**Fri 06 June**	DNA Databases and Ethics	Paternity Testing for Baby Birds‡
6	Inheritance	**Weds 11 June**	11-12	Meiosis Mendel's Rules of Inheritance Sex-Linked Inheritance Other Patterns of Dominance	Learning Animations Adaptive Quiz	**Fri 13 June**	--	Punnett Squares with Puppies
7	Natural Selection & Adaptation	**Weds 18 June**	13, M4	Darwin's Story Natural Selection and Adaptation Modes of Selection Sexual Selection	Learning Animations Adaptive Quiz	**Fri 20 June**	--	Feeding Tools Selection‡
8	Species & Speciation		14	Allele Frequencies & HWE Genetic Drift and Founder Effects Species and Speciation	Learning Animations Adaptive Quiz		--	Evolution in a Fishbowl‡

Tuesday 01 July 8:00 p.m. – 10:00 p.m. EXAM 2 (covers Modules 5-8)								
9	Evidence for Evolution	**Weds 02 July**	15, 16.1	Fossils and Fossilization How Good Is the Fossil Record? History of the Earth & Mass Extinctions When Whales Walked	Learning Animations Adaptive Quiz	**Thurs 03 July**	--	Radioactive Decay Activity Timeline to Scale
10	Life on Earth	**Weds 09 July**	16	Biodiversity and Biogeography Organizing Life's Diversity Building a Phylogeny	Learning Animations Adaptive Quiz	**Fri 11 July**	Why Does Evolution Matter Now?	Phylogeny of Household Objects
11	Prokaryotes	**Weds 16 July**	17	Prokaryote Diversity Bacteria Archaea Beneficial and Harmful Prokaryotes	Learning Animations Adaptive Quiz	**Fri 18 July**	--	Prokaryote Symbioses
12	Eukaryotes		18	Endosymbiont Theory and Protists Plants Animals Fungi	Learning Animations Adaptive Quiz		--	Eukaryote Diversity Dichotomous Key
Tuesday 22 July April 8:00 p.m. – 10:00 p.m.. EXAM 3 (covers Modules 9-12)								
13	Population Ecology	**Weds 23 July**	20	Modeling Population Growth Regulation & Cycles of Pop. Growth Population Structure Applications of Population Ecology	Learning Animations Adaptive Quiz	**Fri 25 July**	--	Isle Royale Population Simulation‡
14	Community Ecology	**Weds 30 July**	21	Food Webs, Niches, & Competition Symbioses and Keystone Species Pollinators as Keystone Species Otters & Orcas: An Alaskan Mystery	Learning Animations Adaptive Quiz	**Fri 01 Aug**	--	Species Interactions
15	Ecosystem Ecology & Sustainability	**Weds 06 Aug**	22, 23	Biomes Climate Change & Global Warming Sustainability and Footprints	Learning Animations Adaptive Quiz	**Weds 06 Aug**	Ecosystems and a Warming Earth News	--
Thursday 07 August 8:00 p.m. – 10:00 p.m. EXAM 4 (covers Modules 13-15)								

Note: This schedule is subject to change; the most up-to-date listing of the required assignments will be found on the Canvas site.

* All due dates are 11:59:00 p.m. US Eastern time on the date indicated