

Big Picture Biology: Energy and the Rules of Life

BSC 2930, 3 credits, Spring 2026

Location and Meeting Times

Room 521 Carr Hall; Tuesdays Period 6 & Thursdays Periods 6-7

Instructor

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Course Description

We often marvel at the diversity of life on earth but rarely consider how organisms as different as plants and animals follow the same rules. In this course, we will first learn how basic life processes in plants and animals are often predictable based on rules of energy use. Understanding these rules of life allows one to predict everything from species' lifespans to rates of evolution to effects of stress. We will then apply these rules by conducting research that aims to explain differences in rates of survival, growth and reproduction in vertebrate animals, social insects, and plants. Students will work in teams and engage in all aspects of the scientific process, from data collection and analysis to scientific communication. Through this research-based course, students will gain a big picture understanding of the unifying principles of life. The knowledge and experience gained from the class will be valuable for students interested in everything from health and disease to climate change and biodiversity.

Specific Learning Outcomes

Dedicated students will learn to:

1. Describe different ways that scientists conduct research
2. Identify how their work as part of this course will contribute to the scientific body of knowledge
3. Develop enhanced critical thinking skills to assess the relevance and importance of scientific findings
4. Conduct a thorough literature review from reputable sources, and compile and collate data from the literature.
5. Perform accurate data entry, and basic statistical analyses of data.
6. Communicate research findings effectively through oral presentations and writing.

General Learning Outcomes

The general education student learning outcomes 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 categories: **content, communication and critical thinking**. Every general education course must address all three SLOs. Note that the specific outcomes (detailed above) fall into one of the following three categories:

Category	Institutional Definition	Institutional SLO
CONTENT	Content is knowledge of the concepts, principles, terminology and methodologies used within the discipline.	Students demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline.
COMMUNICATION	Communication is the development and expression of ideas in written and oral forms.	Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline.
CRITICAL THINKING	Critical thinking is characterized by the comprehensive analysis of issues, ideas, and evidence before accepting or formulating an opinion or conclusion.	Students analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems.

Required Materials

Access to a laptop computer. There are no required texts for this course. All reading materials and media will be made available on Canvas or through the internet.

Evaluation and Grading

Assignment	Breakdown	Points
Oral Presentations	2x, 20 pts each	40
Pop Quizzes	5x, 15 pts each	75
Data Collection and Analysis	1x	140
Research Basics Quiz	1x	40
Discussion Leader	2, 20 pts each	40
Writing Assignment s	2, 20 pts each	40
Participation in Discussion	1x	60
Final Group Project	1x	90
		Total Points: 525

Oral presentations

Students will be asked to make two oral presentations related to their research projects

Pop Quizzes

Students will be given 5 pop quizzes over the course of the semester on the assigned reading.

Data Collection and Analysis

Throughout the semester, students will work in teams to compile and analyze data from the literature on a specific topic. Assessment of this portion of the class will happen throughout the semester. Grades will be determined by combining anonymous grades of team members with the assessment by the instructor.

Research Basics Quiz

The instructor will review basic scientific concepts and formulas related to the course topic over the first 3-4 weeks of class in a series of mini-lectures. This quiz will cover this material.

Discussion Leader

Students will be asked to co-lead two discussions of scientific papers, with input from the instructor.

Writing Assignments

Students will be asked to complete 2 brief writing assignments over the course of the semester.

Participation in Discussion

Students are expected to carefully read assigned papers and participate weekly in class discussions. Grades will be based on the overall level of participation throughout the semester.

Final Group Projects

Students will work in teams to present their research findings as a scientific poster. The grade includes both producing a poster (50 %) and presenting it at the research symposium (50 %).

Grading Scale

Point Range (%)	Letter Grade
≥ 90.00	A
≥ 86.66	A–
≥ 83.33	B+
≥ 80.00	B
≥ 76.66	B–
≥ 73.33	C+
≥ 70	C
≥ 66.66	C–
≥ 63.33	D+
≥ 60	D
≥ 56.66	D–
< 56.66	E

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. The following is a partial list of available services:

Health and Wellness

1. **U Matter, We Care:** If you or someone you know is in distress, please contact <mailto:umatter@ufl.edu>, 352-392-1575, or visit <https://umatter.ufl.edu/> to refer or report a concern and a team member will reach out to the student in distress.
2. Dean of Students Office, 202 Peabody Hall, 392-1261
3. **Counseling and Wellness Center:** Visit <https://counseling.ufl.edu/> or call 352-392-1575 for information on crisis services as well as non-crisis services.
4. **Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need, or visit <https://shcc.ufl.edu/>.
5. **University Police Department:** Visit <https://police.ufl.edu/> or call 352-392-1111 (or 9-1-1 for emergencies).
6. **UF Health Shands Emergency Room/Trauma Center:** For immediate medical care in Gainesville, call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; <https://ufhealth.org/uf-health-shands-emergency-room-trauma-center>.
7. UF Field and Fork Pantry, 564 Newell Dr., 294-3601

Academic and Student Support

1. **Tutor Matching Service:** Students in BSC 2010 are eligible for FREE one-on-one tutoring through UF's partnership with TMS. <https://studentsuccess.ufl.edu/tms/>
2. **Career Connections Center:** 352-392-1601. Career assistance and counseling services: <https://career.ufl.edu/>
3. **Library Support:** Various ways to receive assistance with respect to using the libraries or finding resources: <https://uflib.ufl.edu/>; ask@ufl.libanswers.com
4. **Teaching Center:** 352-392-2010 General study skills and tutoring: <https://academicresources.clas.ufl.edu/>
5. **Writing Studio:** 352-846-1138. Help brainstorming, formatting, and writing papers: <https://writing.ufl.edu/writing-studio/>
6. **CLAS Academic Advising Center**, Farrior Hall, 100 Fletcher Drive, 392-1521
7. **Computing Problems:** Contact the UF IT Help Desk at 352-392-4357.

Course Technology Requirements

It is the responsibility of the student to maintain a functioning computing system and internet connection that can meet the minimum technical requirements of the course. Computing/internet connectivity issues will NOT be acceptable excuses for missed deadlines unless they are brought to the attention of the instructor at least 48 hours prior to the deadline and accompanied by the ticket number from technical support.

Software Use All faculty, staff, and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Technology	Privacy Policy	Accessibility Policy/Statement
Instructure (Canvas)	Privacy Policy	Accessibility
Sonic Foundry (Mediasite Streaming Video Player)	Privacy Policy	Accessibility
Zoom	Privacy Policy	Accessibility
YouTube (Google)	Privacy Policy	Accessibility
Microsoft	Privacy Policy	Accessibility
Adobe	Privacy Policy	Accessibility
MacMillan Learning (Achieve)	Privacy Policy	Accessibility

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."

Any acts of cheating, plagiarism, or other forms of academic dishonesty will result in, at minimum, a 0 grade for the assignment, test, or quiz, and may include additional consequences up to and including a failing grade in the class. Sharing information about tests and quizzes with students who have not yet taken the exam or quiz, or posting on social media information about tests and quizzes that other students have not yet taken, is a serious act of academic dishonesty. If you witness any instances of academic dishonesty in this class, please 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 and Student Conduct Code at: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>.

Attendance/Participation

Students are expected to participate in all classes and are responsible for all material covered during class, including announcements.

Time Commitment

The UF College of Liberal Arts and Sciences assumes that each student will devote 3-4 hours per week per credit-hour to each course, including time in lectures and labs. Because this course is 3 credits, each student should therefore expect to devote 9-12 hours per week to this course during a regular semester. A recommended time allocation is below.

If you find yourself spending more than the recommended number of hours per week on average, discuss this with your course instructor to see if you can refine your study habits. We encourage you to view the Study Skill Videos (<https://writing.ufl.edu/writing-studio/video-resources/study-skills/>).

Accommodations for Students with Disabilities

Students who will require a classroom accommodation for a disability must contact the 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/>. Note that the student should provide documentation of a requirement for accommodation **by the second week of classes**, or as soon as possible after any changes are made to their accommodations. No accommodations are available to students who lack this documentation. It is the policy of the University of Florida that the student, not the instructor, is responsible for arranging accommodations when needed. Once notification is complete, the Disability Resource Center will work with the instructor to accommodate the student.

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. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Class Demeanor and Inclusivity

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

The Department of Biology, and the instructor for this course, values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

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.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Disclaimer

This syllabus represents the instructors' current plans and objectives. As we go through the semester, those plans may need to change to enhance the class's learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.