

Syllabus – Spring 2019
BIOLOGY 111-01: Intro. to Cell and Molecular Biology

TR 3:05 – 4:20 p.m., RITA 154

INSTRUCTOR: Michael Janech, Ph.D.

Email: janechmg@cofc.edu (best way to reach me outside of office hours – please make sure to use your CofC email only) I will try to reply the same day if the email is received before 6 p.m., but I do not regularly check my emails after 6 p.m. or over the weekend. Please don't email my wife (Kathleen Janech) by mistake!

Telephone: (843) 460-9788. I do not check voicemail every day, and my office phone is located off campus.

COURSE OFFICE LOCATION: 228 or 226 RITA. Grice Marine Laboratory faculty offices. I may be in either.

OFFICE HOURS (drop-in): T and R 4:30 – 5:30 p.m. You are welcome to email or speak with me to schedule an appt. if outside of regular dates/hours.

Co-requisites

BIOL 111 Laboratory – you **MUST** enroll in a lab section in addition to this lecture.

Required Course Materials

- *Biological Science* by Freeman, Quillin, Allison, Black, Podgorski, Taylor, Seventh Edition, (Pearson Publishers), with the newts on the cover. You can buy it (hard cover, looseleaf version or digital), rent it, borrow it, or share it with a classmate, but you **MUST** have access to this textbook. You will also need it for Biology 112 (and Biology 211 if you are a Bio. major). It is best to start at the end of each chapter and read the sections: “Test your knowledge, Test your understanding, and Test your problem-solving skills”. This will focus your attention on the critical information.



Suggested Course Material

The Study Guide for *Biological Science* by Freeman, Seventh Edition, (Pearson Publishers). This is not required, but it is usually available in the book store and is very helpful for many students. The Mastering Biology website that goes with the text also offers additional resources.

Alternative Material

Youtube has a number of good biology instructional videos that are presented by professionals and amateurs. Beware, Youtube and other unsupervised secondary sources can contain wrong or misleading information. AKlectures.com and Khan Academy are fairly trustworthy sources. The Amoeba Sisters (search on Youtube or Google) take a fun and refreshing approach to biological concepts. Don't be afraid to use alternative learning tools, but realize that quiz and test questions will come from the lecture material presented in class.

Course Policies and Requirements

Accommodations

Any student in this class who has a documented disability should speak to me as soon as possible (preferably at office hours immediately following the first class), as well as contact the Center for Disability Services (CDS/SNAP program), located on the first floor of the Lightsey Center, Suite 104, (843) 953-1431, SNAP@cofc.edu. I am unable to retroactively adjust grades and will not allow retesting if you wait.

Class Attendance

You are expected to attend all meetings of the class. Students are responsible for **getting their own notes from a classmate** for any class missed. Exams will be based on the lectures and the text. **You will not do well in this course if you miss lectures.**

Honor Code

Students are required to adhere to the guidelines outlined by the Honor Board in the Student Handbook (please see <http://studentaffairs.cofc.edu/honor-system/studenthandbook/9-the-honor-code.php>). **This includes lying, which will not be tolerated in this course.** All work that you turn in for this course (whether for assignments, quizzes, or exams) must be **your own independent scholarship**. *Students should be aware that unauthorized collaboration—working together without permission—is a form of cheating; this includes collaborating with classmates or other individuals on online quizzes or exams.* Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance. Any form of plagiarism (intentional and unintentional), cheating, or presenting someone else's work as one's own will be treated as a serious academic transgression and will be communicated accordingly by the instructor as an honor code violation to Student Affairs. Cheating, attempted cheating, or plagiarism will result in a grade of zero on that assignment or exam and may result in a final overall grade of F or XXF (failure due to academic dishonesty) for the course. All instances of suspected cheating will be immediately communicated to the honor board.

Grades

Grades will be determined based on weekly quizzes, department and two exams.

Quizzes

Weekly short quizzes will be given throughout the semester. They are intended to encourage students to keep up with the large amount of information in this course by studying/reading/reviewing every day. **It is the student's responsibility to keep up with quiz due dates and times! No make-up quizzes are given, but don't worry, your lowest quiz score will be dropped in the final grade calculation.** A missed quiz will result in a 0 for that quiz, unless the student provides a valid and documented absence memo (through the Absence Memo Office – see below). Acceptable excuses include serious illness, personal tragedy or extreme circumstances beyond the student's control. **If you have a quiz excused, all of your remaining quiz scores will count toward your final grade (none will be dropped). No more than 2 quizzes may be excused.** All cell phones, pagers, iPods, iPads, tablets, laptops, etc. are to be turned off and put away during each quiz, and you are **expected to take them by yourself without input from other people, notes, websites or books.**

Exams

In this course, 2 exams are scheduled during the semester (see calendar below for dates): Midterm and Final. The Final exam has been scheduled by the college. I had nothing to do with scheduling an exam between 4-7pm on a Sunday.

- You will need to bring a pencil or pen with you to exams, as they will be Akindi.
- **There will be no make-up exams.** Anyone who misses an exam will receive a 0, unless the student provides a valid and documented absence memo (through the Absence Memo Office, Lightsey Center, Suite 101 (behind the bookstore), (843) 953-3390, victimservices.cofc.edu/absence-memo/index.php, absencememo@cofc.edu). Acceptable excuses include serious illness, personal tragedy or extreme circumstances beyond the student's control. If you have any conflicts with the scheduled exams, you must see me ahead of time, well before the exam date. After receiving one

excused exam, a student will be in danger of receiving a grade of Incomplete for the course if the final exam is missed. **All cell phones, pagers, iPods, iPads, tablets, laptops, etc. are to be turned off and stored in a bag or pocket during each exam. The use of any wireless communication device during a quiz, test, or final exam is a violation of the Honor Code. The professor has the right to remove a student's exam and ask them to leave if this policy is not followed, and they will receive a 0.**

Department

Department is simply another term for behavior and manners. The reason for grading this category stems from the very minor groups of students who feel it is acceptable to stroll around the classroom, interrupt a lecture/lecturer for no reason, cussing aloud, watch soccer on a laptop or phone during class period, chat/IM, plan a Greek function, or conduct themselves in a manner that disrupts other students. You are expected to be respectful of your instructor and other students. Everyone who is in class has paid to take the course and most are working towards a productive career. Talking, texting and computer use are prohibited unless deemed appropriate by the instructor (i.e. note-taking, poll everywhere). If you find yourself unable to fight electronic addiction, please leave the room until you can cope. Grading of department is completely subjective and non-negotiable. I expect 99% of students will receive full credit for this category.

Questions and discussion pertaining to the subject matter is **highly encouraged**. Participation in poll everywhere is also highly encouraged.

Grading

The quizzes will count for a total of 40% of your final grade. Department will count for 10% of your grade. The midterm and final exams will count for a total of 50% of your final grade.

Grade calculation formula.

$[(\text{Quiz avg.} * 0.40) + (\text{Department} * 0.10) + (\text{Exam avg.} * 0.50)] * 100 = \text{final percentage}$

Letter grades will be determined by the following breakdown:

≥93% = **A** 90-92 = **A-** 87-89 = **B+** 83-86 = **B** 80-82 = **B-** 77-79 = **C+** 73-76 = **C**
70-72 = **C-** 67-69 = **D+** 63-66 = **D** 60-62 = **D-** ≤59 = **F** 0 due to acad. dishonesty = **XXF**

Grades will be populated on OAKS, but feel free to maintain your own record of grades in the case of an error. Any errors should be brought to my attention within a week of the error.

Expectations:

- 1. Proper Department:** In this class, you are expected to be respectful of your instructor and other students. Talking, texting and computer use are prohibited unless deemed appropriate by the instructor. If you find yourself unable to fight electronic addiction, please leave the room until you can cope. Questions and discussion pertaining to the subject matter is highly encouraged.
- 2. Electronic device policy:** The use of wireless communication devices during class is prohibited, other than to respond to a Cougar Alert announcement. Please **SILENCE** all cell phones, pagers, iPods, iPads, tablets, laptops and anything with alarms before coming into class. If you forget to do so you **RISK BEING MARKED DOWN A GRADE** on the next exam and you may be asked to leave and not to return that class period. ***If you have a legitimate need to use a laptop or electronic device, please see me to discuss.***
- 3.** Please stay awake, participate and be attentive. Professionalism will be expected and critiqued.

COURSE CALENDAR

Date	TOPIC
January	
R 9	First Day of Class
W 15	Last Day for Add/Drop
R 30	Biol111 Class will not meet. Cancelled. Please make note.
February	
R 27	Midterm Exam
March	
Sa 7	Midterm grades available
F 13	Last Day to Withdraw
T 17	Spring Break
R 19	Spring Break
April	
M 6	Course Instructor Evaluations are open
R 22	Last day of class for this course!
T 23	No class scheduled.
Sun 26	Final Exam 4pm – 7pm

**** Please note: as stated in the 2019-2020 Undergraduate Catalog, under Academic Regulations, Final Examinations (<http://catalog.cofc.edu/content.php?catoid=12&navoid=572#final-examinations>):**

“Examinations **must** be taken at the time scheduled (<https://registrar.cofc.edu/pdf/exam-schedule-spring2020.pdf>), **except** when:

1. Two or more exams are scheduled *simultaneously*.
2. Legitimate **AND** documentable extenuating circumstances prevent the student from completing the examination at the scheduled time (e.g., burial services for an immediate family member).”

Core Concepts for Bio 111 and Bio 112

This 2-semester course sequence in general biology addresses fundamental principles in biology to prepare students for sophomore and upper level courses in biology:

- **EVOLUTION:** The diversity of life evolved over time by processes of mutation, selection, and genetic change. The theory of evolution by natural selection allows scientists to understand patterns, processes, and relationships that characterize the diversity of life.
- **STRUCTURE AND FUNCTION:** Basic units of structure define the function of all living things. Structural complexity, together with the information it provides, is built upon combinations of subunits that drive increasingly diverse and dynamic physiological responses in living organisms. Fundamental structural units and molecular and cellular processes are conserved through evolution and yield the extraordinary diversity of biological systems seen today.
- **INFORMATION FLOW, EXCHANGE, AND STORAGE:** The growth and behavior of organisms are activated through the expression of genetic information at different levels of biological organization and depend on specific interactions and information transfer.
- **PATHWAYS AND TRANS FORMATIONS OF ENERGY AND MATTER:** Biological systems grow and change by processes based upon chemical transformation pathways and are governed by the laws of thermodynamic and will be explored to understand how living systems operate, how they maintain orderly structure and function, and how physical and chemical processes underlie processes at the cellular level (i.e. metabolic pathways, membrane dynamics), organismal level (i.e. homeostasis) and ecosystem level (i.e. nutrient cycling).

SYSTEMS: Living systems are interconnected and interacting and biological phenomena are the result of emergent properties at all levels of organization, from molecules to ecosystems to social systems. The course will explore the dynamic interactions of components at one level of biological organization to the functional properties that emerge at higher organizational levels.

Core Competencies

Nature of Scientific Knowledge

- Understand the intellectual standards used by scientists to establish the validity of knowledge, evidence, and decisions about hypothesis & theory acceptance. These standards include: 1) science relies on external and naturalistic observations, and not internal convictions; 2) scientific knowledge is based on the testing of hypotheses and theories, which are under constant scrutiny and subject to revision based on new observations; 3) the validity of scientifically generated knowledge is established by the community of scientists through peer review and open publication of work.
- Understand that new ideas in science are limited by the context in which they are conceived; are often rejected by the scientific establishment; sometimes spring from unexpected findings; and usually grow slowly, through contributions from many investigators.
- Understand that science operates in a world defined by the laws of chemistry and physics.
- Understand the differences and relationships among scientific theories, hypotheses, facts, laws, & opinions.
- Understand the differences between science and technology, but also their interrelations.
- Understand the dynamic (tentative) nature of science.

Scientific Methods of Discovery

- ^[1]Understand the methods scientists use to learn about the natural world (observing; questioning; formulating testable deductive hypotheses; controlled experimentation when possible; observing a wide range of natural occurrences and discerning (inducing) patterns).
- Apply physical/natural principles to analyze and solve problems.

Develop a Scientific Attitude

- Develop habits of mind that foster interdisciplinary and integrative thinking (within biology; between biology and other sciences; between science and other disciplines).
- Develop an appreciation for the scientific attitude - a basic curiosity about nature and how it works.

Develop scientific analysis and communication skills

Please read this syllabus carefully and keep it for future reference. The information in this and the online syllabus document is important to your success in this course.

- Develop quantitative reasoning skills (quantitatively expressing the results of scientific investigations, or patterns in nature and using knowledge of biological concepts to explain quantitatively-expressed data or patterns).
- Understand the probabilistic nature of science and the use/application of inferential statistics to test hypotheses.
- Develop scientific information literacy (library, internet, databases etc...); find and evaluate the validity of science-related information.
- Communicate scientific knowledge, arguments, and ideas in a variety of different contexts (scientific, social, cultural), utilizing a variety of different media (scientific articles, policy statements, editorials, oral presentations etc.).
- Develop cooperative problem-solving skills (working effectively in teams), but also habits of mind and skills that foster autonomous learning.

Develop an appreciation for the impact of science on society.

- Develop an appreciation of humans as a part of the biosphere and the ^[2]impact of biological science on contemporary societal/environmental concerns.
- Knowledge of the history of the biological sciences and the influences of politics, culture, religion, race, and gender on the scientific endeavor.

Signature assignments for measuring learning outcomes

Learning Outcome 1: Students apply physical/natural principles to analyze and solve problems.

This learning outcome is assessed using the poster (or scientific article) generated in Biology 112 lab as part of the multi-week student-directed independent research project. In this project students use data they collect (or has been collected in actual research investigations) to test an hypothesis of their choosing. These projects may be themed, with all student groups addressing different aspects of a larger question, emphasizing the interdependence of various research groups needed to address complicated problems. This multi-week project begins the class identifying what questions need to be addresses in the larger problem. Individual student groups then become experts in these areas of the larger problem. The smaller research teams develop a hypothesis, and write a research proposal to test their hypothesis. Students collect (or use already collected data), summarize and statistically analyze the data, and draw conclusions.

Learning Outcome #2 - Students demonstrate an understanding of the impact that science has on society.

Biology 112 lab Students produce a written document based on one of the case-based labs (examples - policy statement, article, stake-holder professional letter or poster) that requires them to research and apply biological knowledge or evidence to defend or critique a proposed solution to a biology-related societal issue. Although the choice of the specific issue or proposed solution is course-section specific, some examples of potential issues include

- exploring environmental/health impacts of genetically modified organisms
- the use of performance enhancing drugs in sports
- the development of antibiotic resistance in disease organisms

[1] This learning goal will be measured as part of the general education assessment. The specific learning outcome to be measured is: *Students can apply physical/natural principles to analyze and solve problems.*

[2] This learning goal will be measured as part of the general education assessment. The specific learning outcome to be measured is: *Students can demonstrate an understanding of the impact that science has on society.*