Course Syllabus, Vernal Term 2027 C.E. (Last Modified 01 November 2026 C.E.)

Estrella Mountain Community College
BIO181: General Biology for Majors I (4 Credit Hours)
Section Numbers 19878 (Lecture); 19879 (Laboratory)
Lecture: Online
Laboratory: Online

All enrolled students are required to fully read and comply with the information found herein. Further, all enrolled students are responsible for knowing and abiding by college policies included in the college catalog and the student handbook. If information in this syllabus is changed, a notification will be posted on the course website.

Course Description

This course treats principles of structure and function of living things at molecular, cellular, and (to a far lesser extent) organismic levels of organization. Prerequisites: None. One year of high school chemistry or one semester of college-level chemistry is strongly recommended.

Instructor Information

Ty C.M. Hoffman, Ph.D.
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Course Objectives

1. Describe and apply the scientific method to solve problems in biological context.
2. Describe the characteristics of life.
3. Identify the basic parts of atoms and describe how they influence chemical characteristics.
4. Analyze the relationships between the structure and functions of the four kinds of organic molecules found in living things.
5. Identify the parts of a cell and describe their structure and functions.
6. Describe cellular transport, membrane structure and membrane functions.
7. Compare and contrast prokaryotic and eukaryotic cells.
8. Describe the laws of thermodynamics, energy processes, and enzymes as they relate to biology.
9. Describe the purpose and components of cellular respiration.
10. Describe the purpose and components of photosynthesis.
11. Describe the biological processes of mitosis, meiosis, DNA duplication, and protein synthesis.
12. Compare Mendelian and non-Mendelian genetics and use problem solving to predict the outcome of genetic crosses.
13. Describe gene regulation and effectively analyze the various biotechnological applications.
14. Describe the genetic basis of development.
15. Demonstrate knowledge of laboratory safety skills and procedures.
16. Practice principles of scientific method while conducting laboratory activities and experiments.
17. Perform laboratory activities using relevant laboratory equipment, chemical reagents, and supplies to observe biological specimens, to measure variables, and to design and conduct experiments.
18. Operate light microscopes, prepare wet-mount slides, and use stains.
19. Exhibit ability to use pipettes and other volumetric measuring devices, chemical glassware, balances, pH meters or test papers, spectrophotometers, and separation techniques, such as chromatography an electrophoresis to perform activities relevant to other course competencies.

20. Develop graphing skills manually and/or by using appropriate computer software.
21. Calculate and make molar and/or percent solutions of varying concentrations.
22. Analyze and report data generated during laboratory activities and experiments.

Learning Outcomes

By successfully completing this course, the student will gain a deeper understanding of the structure and function of cells and organelles, will become familiar with basic concepts of chemistry underlying cellular physiology and biological structure, will learn major biochemical pathways including glycolysis, cellular respiration, and photosynthesis, and will be able to appreciate the central importance of energy in the processes that define all life.

Course Websites

As stated on Canvas, you will be using my own (non-Canvas) website (hereafter called the Hoffman website) in addition to Canvas. The URL for the Hoffman website is:

https://www.tycmhoffman.com

From that site, you can find the link to your specific section (19878). Be sure to bookmark the site, so you can access it even if Canvas is down. **You are REQUIRED to check the website daily**, even if nothing changes. The website includes (or will include) various resources to help you succeed. It is also where official announcements will be posted (whether I make those announcements in class or not). Failure to notice an announcement posted on the website will not be a valid excuse, so check the website frequently.

Supporting Materials (Be sure to also see the Textbooks page on the Hoffman website)

You are required to access some assignments via McGraw-Hill's Connect website, corresponding to the textbook, *Principles of Biology* by Brooker, et al. Your course fees cover the cost of this access, so there is no additional expenditure. The McGraw-Hill site includes access to Connect Homework assignments as well access to the Brooker eText. You will be able to access the McGraw-Hill site though Canvas.

Rules Consent Form

You will not receive any credit in the course unless you electronically submit the Rules Consent Form found on the Hoffman website. I cannot overstress how important it is to fully read and understand that form. You can easily receive a zero if you take this lightly. Believe me; it happens every term.

Scoring

Lecture Examinations	5 @ 8.00% each; 40.0% total
Virtual Laboratory Activities	9 @ ca. 2.72% each; 24.5% total
Virtual Laboratory Quizzes	9 @ ca. 1.17% each; 10.5% total
Topic Quizzes	14 @ ca. 0.714% each; 10.0% total
Connect Homework	12 @ 0.833% each; 10.0% total
Laboratory Practicum	1 @ 5.00%

Grades

The minimum final scores for the respective letter grades are given below.

86%	A
76%	B
66%	C
56%	D

My Absolutely Rigid Policy on Missing Lecture Examinations

It's important for everyone to be aware of the policy regarding make-up lecture examinations. If you fail to complete a scheduled lecture examination by the deadline for that examination, there will be no official penalty for missing the examination. However, it is my strict policy that *multiple-choice* lecture examinations may be taken only when they are scheduled to be taken (i.e., per the most recently updated syllabus). This means that all make-up lecture examinations will consist of short-answer or essay type questions. NO MAKE-UP LECTURE EXAMINATION WILL EVER BE A MULTIPLE- CHOICE TEST. To ensure that you fully understand my policy, please re-read the previous sentence. The material treated on a make-up examination will be the same material treated on the corresponding multiple-choice version. In that sense, one can say that the make-up examinations are therefore no more difficult. But for many students in my experience, scores on short-answer tests are significantly lower than those on multiple-choice tests. This is because doing well on a short-answer test requires that you truly know what you're talking about. Guessing is much less likely to net you a correct answer. I'm telling you this, on the one hand, to make the official policy known. But even more importantly, I'm telling you this to strenuously dissuade you from missing a lecture examination for any but the most unavoidable of reasons. Doing well in this class REQUIRES that you make the class a priority. Therefore, if you'd like to receive a good grade, you would do well to save excuses for the other things that might coincide with the test dates, not vice-versa.

Laboratory

You must be concurrently enrolled in the corresponding laboratory section, and your final grade is a combination of credit earned in both sections (lecture and laboratory).

MCCD Policies and Procedures

Estrella Mountain and all Maricopa Community Colleges are governed by the same policies and procedures which include information about nondiscrimination, compliance with regulations, health concerns, admissions, residency guidelines, financial assistance, academic advising, assessment, articulation, registration, tuition and fees, refunds, attendance, grading, records, and scholastic and disciplinary standards. These policies can be found in the academic catalog and student handbook and it is each student's responsibility to be informed of this information.

General Education Abilities

EMCC recognizes seven general education areas that our courses address. Targeting these abilities will not only advance students' academic success, but help them to be more productive in their careers. Each semester, one of these abilities is targeted for campus-wide assessment.

Communication
Composition/Writing
Quantitative Reasoning
Critical Inquiry
Information Literacy
Technological Literacy

Social, Civic and Global Responsibility

For more information, visit
http://www.estrellamountain.edu/employees/committees/saac/gen-ed-abilities.

Participation Policy

Being successful in a biology course requires a great amount of self-discipline, and students are expected to spend about three times as many hours outside of class as will be spent in class. These hours outside of class should be devoted to listening to lecture recordings, revising notes, studying slides shows, reading, and completing assignments.

Technology Policy

Students who take online courses need reasonable computer competence and good study, Internet, and reading comprehension skills to be successful. Skills specific to individual courses may also be required; for example, proficiency with a word processing package may be needed for an online English course.

Please visit **Is Your Computer Ready for E-Learning?** (http://www.estrellamountain.edu/academics/distance-learning/orientation) for complete list of requirements.

Your instructor is not the technology support staff. Questions and problems concerning technology, computers, Canvas, software, etc. must be directed to the Information Commons in Estrella Hall: 623-935-8150. A 24/7 Maricopa Canvas help desk is also available at My .Maricopa.edu.

It is the student's responsibility to be proficient in using Canvas, its required processes, and Microsoft programs to be successful in an online/hybrid learning environment. Students need to be proactive in ensuring they are skilled in Canvas' processes in order to complete all assignments on time. Technology excuses for late or incomplete assignments will not be accepted.

All examinations will require Respondus Lockdown Browser and a working webcam. **The Lockdown Browser software is probably not compatible with Chromebooks.** If you do not have a compatible computer onto which you are able to install the required Lockdown Browser software, or if you do not have a working webcam, then you will be required to make appointments to take your examinations on campus.

Communication Policy

Every MCCCD student has been issued an active Maricopa Gmail account through My.Maricopa.edu. All Communications initiated from CANVAS and official school notifications will come via your Maricopa.edu account. Every student must check their Gmail account daily, or strongly recommend you forward all maricopa.edu to a personal email address so you can review messages daily. You can expect an answer within two business days.

Please visit Gmail at Maricopa (http://www.estrellamountain.edu/academics/classes/getting-started) to learn how to set up your Gmail.

Canvas Notifications Policy

Canvas Notification Preferences allow you to select how and when to be notified (via email, text message, twitter or Facebook) when there's an announcement or a message sent from within Canvas. Students will be notified whenever there is a change in a change in a due date, an updated assignment, or a message sent from within Canvas.

Canvas supports notification through email, SMS text message, twitter, and Facebook. Canvas. You can choose to receive notification alerts immediately, daily, weekly, or never.

Please follow these steps:

- Click the Setting tab on the top of orange bar.
- Click Notifications locates on the left side of navigation
- Review/update all the notification
- Click Save Preferences

You can also visit this tutorial for Notification Preferences:
http://guides.instructure.com/s/2204/m/4144/l/73162-how-do-i-set-my-notification-preferences

Academic Integrity Policy

All students assume as part of their obligation to the college the responsibility to exhibit in their academic performance the qualities of honesty and integrity. All forms of student dishonesty are subject to disciplinary action. Students are responsible for familiarizing themselves with EMCC's Students Rights and Responsibilities (http://www.estrellamountain.edu/students/policies/rights-responsibilities).

Academic misconduct includes but is not limited to misconduct associated with the classroom, laboratory, or clinical learning process. Some examples of academic misconduct are cheating, plagiarism, and excessive absences. For more information, please refer to the Student Handbook, Section 2.3.11 (https://chancellor.maricopa.edu/public-stewardship/governance/administrative-regulations/2-students/2.3-scholastic-standards/2.3.11-academic-misconduct).

Disability Policy

If you have a documented disability, including a learning disability, and would like to discuss possible accommodations, please contact the Disability Resource Center (KOM B-125) at 623.935.8863 or 623.935.8928 VP or drc@estrellamountain.edu.

To ensure equal access, all required course materials provided in web links are expected to meet AA Standard of Compliance with the Web Content Accessibility Guidelines (WCAG) 2.0. All internal and external course links should be evaluated by the WAVE Web Accessibility Evaluation Tool. Course materials are expected to be in compliance, or an alternative option provided upon a student's request. Students with disabilities must have an equally effective and equivalent educational opportunity as those students without disabilities. Students experiencing difficulty accessing course materials because of a disability are expected to contact the course instructor so that a solution can be found that provides all students equal access to course materials and technology.

Information for Pregnant or Parenting Students: If you are a pregnant or parenting student you are protected under Title IX regarding classroom accommodations. Please request please contact the Disability Resource Center (KOM B-125) at 623.935.8863 or 623.935.8928 VP or drc@estrellamountain.edu.

Classroom Accommodations for Students with Disabilities

In accordance with the Americans with Disabilities Act, the Maricopa County Community College District (MCCCD) and its associated colleges are committed to providing equitable access to learning opportunities to students with documented disabilities (e.g. mental health, attentional, learning, chronic health, sensory, or physical). Each class/term/semester that a student is in need of academic adjustments/accommodations, the qualified student is required to work with the Disability Resources & Services Office (DRS) at their individual college(s). Contact with the DRS should be made as soon as possible to ensure academic needs are met in a reasonable time. New and returning students must request accommodations each semester through DRS Connect online services. To learn more about this easy process, please contact your local DRS office.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations, you are welcome to contact DRS at [insert DRS office phone number] or [insert web address]. The DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions qualifying for accommodations/academic adjustments. Reasonable accommodations are established through an interactive process between you, your faculty, and DRS; and only those academic adjustments/reasonable accommodations granted by the DRS are recognized by the college and District. It is the policy and practice of the MCCCD to create inclusive and accessible learning environments consistent with federal and state law.

Sexual Harassment

Sexual harassment is any unwelcome, verbal or physical conduct of a sexual nature that is sufficiently severe, persistent, or pervasive that it alters learning conditions and creates a hostile environment or reasonably interferes with, limits, or deprives a student of the ability to participate in or benefit from any educational program or activity.

Maricopa County Community College District's (MCCCD) Preventing Sexual Harassment and Sexual Violence course is now available to all students. Please check for your self-enrollment link in your Message Center within your Online Student Center via My.Maricopa.edu.

Students should report any discrimination and/or harassment they experience and/or observe to the Vice President of Student Affairs/Title IX Coordinator, Dr. Patricia Cardenas-Adame, located in Estrella Hall room 221, 623-935-8812.

Updated 2/8/2017

Public Safety

The EMCC Public Safety Department provides assistance and security for people on campus, protection of district and personal property, traffic control, visitor assistance, operation of a lost and found function, loss prevention and loss reporting, identification of safety hazards, training and orientation of employees and students. The Public Safety building is located at the North-end of Parking Lot A and can be reached at (623) 935-8915.

For more information visit: https://www.estrellamountain.edu/mems.

Addressing Incidents of Sexual Harassment/Assault, Dating/Domestic Violence, and Stalking

In accordance with Title IX of the Education Amendments of 1972, MCCCD prohibits unlawful sex discrimination against any participant in its education programs or activities. The District also prohibits sexual harassment—including sexual violence—committed by or against students, university employees, and visitors to campus. As outlined in District policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by District policy.

District policy requires all college and District employees in a teaching, managerial, or supervisory role to report all incidents of Sexual Misconduct that come to their attention in any way, including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Incidents of Sexual Misconduct should be reported to the college Title IX Coordinator. For a list of Title IX Coordinators, click here. Reports may also be reported at: https://district.maricopa.edu/consumer-information/reporting.

Disclaimer

This syllabus is subject to change. Students will be notified of any changes to this syllabus. The student is responsible for making note of all such announcements concerning syllabus revisions.

Schedule of Lectures and Examinations (This could change before or after the term starts.)

Date	Topic for lecture
Always available	Course Overview
	Introduction: Themes in the Study of Life
	The Chemical Context of Life
	Water and the Fitness of the Environment
	Carbon and the Molecular Diversity of Life
09 February	Lecture Examination 1
Always available	The Structure and Function of Large Biological Molecules
	A Tour of the Cell
	Membrane Structure and Function
08 March	Lecture Examination 2
Always available	An Introduction to Metabolism
	Cellular Respiration: Harvesting Chemical Energy
	Photosynthesis
05 April	Lecture Examination 3
Always available	The Cell Cycle
	The Molecular Basis of Inheritance
	From Gene to Protein
30 April	Lecture Examination 4
Always available	Meiosis and Sexual Life Cycles
	Mendel and the Gene Idea
	The Chromosomal Basis of Inheritance
15 May	Lecture Examination 5

Schedule of All Graded Items (This could change before or after the term starts.)

Due Date **(23:59 MST)**	Graded Item(s)	Link to use in Canvas	Lateness Penalty
19 January	First Day Attendance	Course Navigation	Withdrawal
20 January	CQ01 An Introduction to Biology	Connect Homework	10% per day
21 January	LockDown Practice	Course Navigation	Exams Locked
22 January	Virtual Lab: Metric System	Laboratory Activities	10% per day
23 January	Metric System Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day
25 January	CQ02 The Chemical Basis of Life I: Atoms, Molecules, and Water	Connect Homework	10% per day
26 January	Atoms, Molecules and Bonds Quiz	Topic Quizzes	10% per day
30 January	Virtual Lab: Graphing	Laboratory Activities	10% per day
02 February	Graphing Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day
04 February	Virtual Lab: Organic Macromolecules and pH	Laboratory Activities	10% per day
05 February	Organic Macromolecules and pH Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day
07 February	Water and Functional Groups Quiz	Topic Quizzes	10% per day
09 February	Examination 1	Examinations	Not Allowed
12 February	Macromolecules, Carbs and Fats Quiz	Topic Quizzes	10% per day
14 February	Virtual Lab: Determining the Solute Concentration of Potato Cells	Laboratory Activities	10% per day
16 February	Determining the Solute Concentration of Potato Cells Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day

19 February	CQ03 The Chemical Basis of Life II: Organic Molecules	Connect Homework	10% per day
20 February	Proteins Quiz	Topic Quizzes	10% per day
22 February	Virtual Lab: Microscopes	Laboratory Activities	10% per day
26 February	Microscopes Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day
01 March	CQ04 Evolutionary Origin of Cells and Their General Features	Connect Homework	10% per day
03 March	Cells Quiz	Topic Quizzes	10% per day
04 March	CQ05 Membranes: The Interface Between Cells and Their Environment	Connect Homework	10% per day
05 March	Membranes and Osmosis Quiz	Topic Quizzes	10% per day
08 March	Examination 2	Examinations	Not Allowed
13 March	Virtual Lab: Food Calorimetry	Laboratory Activities	10% per day
14 March	Calorimetry Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day
23 March	Energy and Metabolism Quiz	Topic Quizzes	10% per day
25 March	Virtual Lab: BioIndustrial Production	Laboratory Activities	10% per day
14 March	BioIndustrial Production Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day
27 March	CQ06 How Cells Utilize Energy	Connect Homework	10% per day
29 March	Cellular Respiration Quiz	Topic Quizzes	10% per day
01 April	CQ07 How Cells Capture Light Energy via Photosynthesis	Connect Homework	10% per day
03 April	Photosynthesis Quiz	Topic Quizzes	10% per day
05 April	Examination 3	Examinations	Not Allowed
11 April	DNA Structure and the Cell Cycle Quiz	Topic Quizzes	10% per day
12 April	CQ08 The Information of Life: DNA and RNA Structure, DNA Replication, and Chromosome Structure	Connect Homework	10% per day
15 April	Virtual Lab: DNA, PCR and COVID-19	Laboratory Activities	10% per day
16 April	DNA and PCR Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day
18 April	DNA Replication Quiz	Topic Quizzes	10% per day
21 April	CQ09 The Expression of Genetic Information via Genes I: Transcription and Translation	Connect Homework	10% per day
25 April	Genes and Proteins Quiz	Topic Quizzes	10% per day
30 April	Examination 4	Examinations	Not Allowed
02 May	CQ10 How Eukaryotic Cells Sort and Transmit Chromosomes: Mitosis and Meiosis	Connect Homework	10% per day

04 May	Virtual Lab: Meiosis and Reebops	Laboratory Activities	10% per day
05 May	Meiosis and Reebops Virtual Lab: Lab Quiz	Laboratory Quizzes	10% per day
07 May	Meiosis and Cell Reproduction Quiz	Topic Quizzes	10% per day
09 May	CQ11 Transmission of Genetic Information from Parents to Offspring I	Connect Homework	10% per day
11 May	CQ12 Transmission of Genetic Information from Parents to Offspring II	Connect Homework	10% per day
13 May	Mendel and Heredity Quiz	Topic Quizzes	10% per day
14 May	Laboratory Practicum	Laboratory Activities	Not Allowed
15 May	Examination 5	Examinations	Not Allowed