

Course Syllabus, Autumnal Term 2023 C.E. (Last Modified 10 August 2023 C.E.)

Yavapai College

BIO156: Human Biology for Allied Health (4 Credit Hours)

Course Reference Numbers 31852, 32991

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. Prerequisite: Reading Proficiency. One year of high school chemistry or one semester of college-level chemistry is strongly recommended.

Instructor Information

Ty C.M. Hoffman, Ph.D.

thoffma1@yc.edu

Office Hours: via tinyurl.com/tycmhoffmanzoom, by appointment via email

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 fundamental characteristics of bacteria.
11. Compare and contrast the various types of animal tissue.
12. Describe the biological processes of mitosis, meiosis, DNA duplication, and protein synthesis.
13. Compare Mendelian and non-Mendelian genetics and use problem solving to predict the outcome of genetic crosses.
14. Describe gene regulation and effectively analyze the various biotechnological applications.
15. Describe the genetic basis of development.
16. Demonstrate knowledge of laboratory safety skills and procedures.
17. Practice principles of scientific method while conducting laboratory activities and experiments.
18. Perform laboratory activities using relevant laboratory equipment, chemical reagents, and supplies to observe biological specimens, to measure variables, and to design and conduct experiments.
19. Operate light microscopes, prepare wet-mount slides, and use stains.
20. 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 and electrophoresis to perform activities relevant to other course competencies.
21. Develop graphing skills manually and/or by using appropriate computer software.
22. Calculate and make molar and/or percent solutions of varying concentrations.
23. Analyze and report data generated during laboratory activities and experiment.

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, biological structure, and histology, will learn major biochemical pathways including glycolysis, and cellular respiration, 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 site) in addition to Canvas. The URL for the Hoffman site is:

<https://www.tycmhoffman.com>

From that site, you can find the link to your specific section (31852). 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 site)

You are required to purchase access to my Mastering (Pearson) course directly through Canvas. While the Mastering site is required to complete some assignments, access to Mastering can also (optionally) provide you with access to an electronic textbook that can be used for studying in general, for completing topic quizzes, and for more easily completing the Mastering assignments. That will depend on which package you choose to purchase, but at the very least, you must have access to the Mastering course, so you will be able to complete the Mastering assignments.

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 overstate 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

Examinations	5 @ 8.00% each; 40.0% total
Virtual Laboratory Activities	10 @ 2.45% each; 24.5% total
Laboratory Quizzes	9 @ ca. 1.17% each; 10.5% total
Topic Quizzes	13 @ ca. 0.769% each; 10.0% total
MasteringBiology Activities	15 @ ca. 0.667% 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

All laboratory activities are virtual and are accessed via Canvas, like other assignments. There is no face-to-face component in this course.

Student Email

Yavapai College provides enrolled students with an official username@scholar.yc.edu email address. Yavapai College requires enrolled students to utilize the YC email system for official college-related communications. Students are expected to check their Yavapai College email account as directed by their instructor. If you need assistance, go to [Information Technology Services](#) or 928.776.2168 (www.yc.edu/its).

Course Withdrawal

A student initiated withdrawal deadline is established by the College. If a student has not withdrawn from a class by the deadline, a student will receive the letter grade earned in the course at the end of the semester. An instructor can choose to withdraw a student from the class after the deadline depending upon the instructor's withdrawal policy. If a student does not follow official procedures for withdrawing from a course, earned grades will be posted on the student's permanent record.

Faculty initiated withdrawals for non-attendance are in place for both the benefit of the college in assuring compliance with financial aid requirements and to benefit students. When students do not participate in classes during the first week of the semester, faculty will withdraw them from their classes unless they have been in contact with faculty member. At FTSE date, faculty should withdraw students that have not been attending..

Academic Integrity

Honesty in academic work is a central element of the learning environment. It is expected that students will submit their own work. The presentation of another individual's work as one's own or the act of seeking unfair academic advantage through cheating, plagiarism or other dishonest means are violations of the College's Student Code of Conduct.

Definitions of plagiarism, cheating, and violation of copyright and penalties for violation are available in the [Yavapai College Student Code of Conduct](#).

Student Code of Conduct

All students need to be aware of and comply with the safety and operational protocols for COVID-19 while on Yavapai College's campuses or centers. Safety protocols can be found at <https://www.yc.edu/v6/college-police/covid-19/reentry/>.

Respect for the rights of others and for the College and its property are fundamental expectations for every student. The [Student Code of Conduct](#) outlines behavioral expectations, and explains the process for responding to allegations of student misconduct.

Students are expected to respond and write in a respectful, professional and appropriate manner in all forms of communication and when activities are assigned to create scenarios, discuss opinions, present on a selected subject, or post to the web board. Inappropriate language or objectionable material will not be tolerated and could result in disciplinary measures and/or a failing grade for the class. (www.yc.edu/codeofconduct)

Use of Technology

All examinations will require Respondus Lockdown Browser and a working webcam. **The Lockdown Browser software might not be 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.

Academic Complaint Form

A student may appeal an academic or instructional decision by faculty if s/he deems the decision to be made in error. The appeal must be made in a timely manner in accordance with established procedures. (www.yc.edu/academiccomplaints).

Acceptable Use

Yavapai College technological equipment and resources must be used in accordance with the [Technology Resource Standards \(5.27\)](#), [Copyright Use \(2.28\)](#) and [Peer-to-Peer \(P2P\) File Sharing \(5.26\)](#) policies. Use of Yavapai College equipment and resources to illegally copy, download, access, print or store copyrighted material or download pornographic material is strictly prohibited. For example, file swapping of copyrighted material, such as music or movies is strictly prohibited. Users found to violate this policy will have their privileges to use Yavapai College technological equipment and resources revoked. (www.yc.edu/policies)

Mobile Devices

Yavapai College is committed to providing a quality learning environment. All cell phones and mobile devices must be placed in silent mode while in classrooms, computer labs, library, learning center, and testing areas. Cell phones must be used outside these facilities.

Smoking and Tobacco Use

Yavapai College is committed to limiting exposure to the harmful effects of primary and secondary smoke to campus students, visitors, and employees. In order to reduce the harmful effects of tobacco use and to maintain a healthful working and learning environment, the College prohibits smoking, including vaping, on all campuses except in designated smoking areas as per the [Smoking & Tobacco Use Policy \(10.09\)](#). (www.yc.edu/v6/policies/docs/1000d/1009-smoking.pdf)

Title IX - Sexual Misconduct

Yavapai College does not deny or limit any student or employee the ability to participate in or benefit from any program offered by the institution on the basis of sex or gender. Sexual harassment, which includes acts of sexual violence such as rape, sexual assault, sexual battery, sexual coercion, unwanted touching, dating/relationship violence and stalking, are forms of gender-based discrimination prohibited by Title IX.

The college encourages students and employees to report incidents of sexual misconduct as soon as possible to the Title IX Coordinator or to a Deputy Title IX Coordinator. Contact information for Coordinators can be found at [Sexual Misconduct Resources](#). (www.yc.edu/v6/student-services/sexualmisconduct.html)

Disability Resources

Disability Resources ensures qualified students with disabilities equal access and reasonable accommodations in all Yavapai College academic programs and activities. YC supports disability and accessibility awareness and promotes a welcoming environment to all. The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 prohibits discrimination on the basis of disability and requires Yavapai College to make reasonable accommodations for those otherwise qualified individuals with a disability who request accommodations. (www.yc.edu/disabilityresources)

Yavapai College is committed to providing educational support services to students with documented disabilities. Accommodations for a student must be arranged by the student through Disability Resources by phone 928.776.2085 or email disabilityresources@yc.edu.

Faculty Response Time

I strive to grade assignments as soon as possible after each due date. Except for extraordinary circumstances, assignments will be graded within two days. I usually respond to email within minutes of receiving each message.

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
06 September	Carbon and the Molecular Diversity of Life
	Lecture Examination 1
	The Structure and Function of Large Biological Molecules
	A Tour of the Cell
Always available	Membrane Structure and Function
	Lecture Examination 2
05 October	An Introduction to Metabolism
Always available	Cellular Respiration: Harvesting Chemical Energy
	Basic Principles of Animal Form and Function
	Lecture Examination 3
24 October	The Cell Cycle
Always available	The Molecular Basis of Inheritance
	From Gene to Protein
	Lecture Examination 4
15 November	Meiosis and Sexual Life Cycles
Always available	Mendel and the Gene Idea
	The Chromosomal Basis of Inheritance
	Lecture Examination 5
09 December	

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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
12 August	First Day Attendance	Canvas Menu
13 August	Unit One Mastering Biology Activities - Scientific Method	MyLab and Mastering
14 August	Virtual Lab: Metric System	Laboratory Activities
16 August	Metric System Virtual Lab: Lab Quiz	Laboratory Quizzes
18 August	Unit One Mastering Biology Activities - Atoms, Molecules and Bonds	MyLab and Mastering
20 August	Atoms, Molecules and Bonds Quiz	Topic Quizzes
22 August	Virtual Lab: Graphing	Laboratory Activities
24 August	Graphing Virtual Lab: Lab Quiz	Laboratory Quizzes
27 August	Virtual Lab: Organic Macromolecules and pH	Laboratory Activities
29 August	Organic Macromolecules and pH Virtual Lab: Lab Quiz	Laboratory Quizzes
31 August	Unit One Mastering Biology Activities - Water	MyLab and Mastering
02 September	Water and Functional Groups Quiz	Topic Quizzes
06 September	Exam 1	Examinations
09 September	Unit Two Mastering Biology Activities: Biological Macromolecules (Carbs and Fats)	MyLab and Mastering
11 September	Macromolecules, Carbs and Fats Quiz	Topic Quizzes
13 September	Virtual Lab: Determining the Solute Concentration of Potato Cells	Laboratory Activities
15 September	Determining the Solute Concentration of Potato Cells Virtual Lab: Lab Quiz	Laboratory Quizzes
17 September	Unit Two Mastering Biology activities - Biological Macromolecules (Proteins)	MyLab and Mastering
19 September	Proteins Quiz	Topic Quizzes
22 September	Virtual Lab: Microscopes	Laboratory Activities
24 September	Microscopes Virtual Lab: Lab Quiz	Laboratory Quizzes
26 September	Unit Two Mastering Biology activities: Prokaryotic and Eukaryotic Cells	MyLab and Mastering
28 September	Cells Quiz	Topic Quizzes
30 September	Unit Two Mastering Biology activities: Membranes and Osmosis	MyLab and Mastering
02 October	Membranes and Osmosis Quiz	Topic Quizzes
05 October	Exam 2	Examinations
07 October	Virtual Lab: Food Calorimetry	Laboratory Activities
09 October	Calorimetry Virtual Lab: Lab Quiz	Laboratory Quizzes
11 October	Unit Three Mastering Biology activities - Enzymes	MyLab and Mastering
13 October	Energy and Metabolism Quiz	Topic Quizzes
15 October	Virtual Lab: BioIndustrial Production	Laboratory Activities
18 October	BioIndustrial Production Virtual Lab: Lab Quiz	Laboratory Quizzes
20 October	Unit Three Mastering Biology activities - Cellular Respiration	MyLab and Mastering
22 October	Cellular Respiration Quiz	Topic Quizzes
24 October	Exam 3	Examinations
26 October	Histology Laboratory and Quiz	Laboratory Activities
28 October	Unit Four Mastering Biology activities - DNA Structure and Cell Cycle	MyLab and Mastering
31 October	DNA Structure and the Cell Cycle Quiz	Topic Quizzes
02 November	Unit Four Mastering Biology activities - DNA Replication	MyLab and Mastering
04 November	DNA Replication Quiz	Topic Quizzes
06 November	Virtual Lab: DNA, PCR and COVID-19	Laboratory Activities
08 November	DNA and PCR Virtual Lab: Lab Quiz	Laboratory Quizzes
09 November	Unit Four Mastering Biology activities - Gene Expression	MyLab and Mastering
12 November	Genes and Proteins Quiz	Topic Quizzes
15 November	Exam 4	Examinations
17 November	Unit Five Mastering Biology activities - Meiosis	MyLab and Mastering
19 November	Virtual Lab: Meiosis and Reebops	Laboratory Activities
21 November	Meiosis and Reebops Virtual Lab: Lab Quiz	Laboratory Quizzes
23 November	Meiosis and Cell Reproduction Quiz	Topic Quizzes
30 November	Unit Five Mastering Biology activities - Genetics I	MyLab and Mastering
02 December	Unit Five Mastering Biology activities - Genetics II	MyLab and Mastering
04 December	Mendel and Heredity Quiz	Topic Quizzes
06 December	Laboratory Practicum	Laboratory Activities
09 December	Exam 5	Examinations