

BIOLOGY 1620 - College Biology II
Utah Valley University
Fall, 2020

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Office Hours: Virtual - by appointment (email)

Course Website: <https://gzahn.github.io/BIOL1620/>

Communication: We have a shared Slack channel. You will get an invite link sent to your UVU email address. This is a good communication tool and is easier for me to engage with than email. You can also send private messages to me there.

Course Description:

BIOL 1620 provides the second semester material in the two semester introductory course designed for biology majors. We cover the origin and early evolution of life, plant structure and function, plant diversity, animal structure and function, animal diversity, and animal behavior.

Text Book (Required):

Campbell, Neil A. and Reece, Jane B. **Biology**. Benjamin Cummings. San Francisco.
Any edition 8th or newer is fine with me.
Here's a cheap option: <https://amzn.to/2Z0g2P4>

Co-requisite LABORATORY (BIOL 1625):

Concurrent enrollment in the laboratory section is **required**.

Upon successful completion, students should be able to:

1 -	Describe how the chemical and physical conditions present on Earth about 4 billion years ago could lead to the origin of living organism, the evidence that supports current theories on origin of life, origin of metabolic diversity, and the mechanisms of evolution of eukaryotic organisms from prokaryotic ancestors;
2 -	Describe the diversity of prokaryotes, algae, fungi, and plants and their reproductive life cycles;
3 -	Describe the growth, metabolism, and anatomy of vascular plants, their growth and its control, transport of nutrients into and throughout the plant;
4 -	Describe the diversity of prokaryotes, algae, fungi, and plants and their reproductive life cycles;
5 -	Describe how the principles of bioenergetics and homeostasis with emphasis on temperature regulation and water balance;
6 -	Describe diversity of protozoans, invertebrate and vertebrate animals and the processes of gametogenesis, fertilization, and embryo development in animals;
7 -	Describe the scientific interpretation of animal behavior;
8 -	Describe the principles of population dynamics, species interactions, ecosystem structures, and biome characteristics;
9 -	Describe the major nutrient cycles and interaction of biotic and abiotic factors.

Upon successful completion, students should have the following attitude(s)/traits:

1 -	Confidence in understanding that scientific principles and processes of evolution are sufficient to describe how living organisms originated and diversified;
2 -	Appreciation of the diversity of living organisms, their structure and function;
3 -	Appreciation of the dynamics of interactions and interdependencies of biotic and abiotic components of the biosphere, the impact of humans on the biosphere.

Americans with Disabilities Act:

Students with disabilities that may negatively impact their ability to successfully complete this course should let the instructor know as soon as possible, with documentation from the ASD.

"Students who need accommodations because of a disability should contact the UVU Accessibility Services Department (ASD), located on the Orem Campus, in LC 312. To schedule an appointment, or speak with a counselor, call the ASD office at 801-863-8747, or for Deaf/Hard of Hearing individuals, use the video phone number, 886-760-1819."

COURSE STRUCTURE

Grading:

ITEM	VALUE	TOTAL
Pre- and Post-tests	50 pts each	100 (All completed pre-tests receive full credit)
4 exams	100 pts each	400
10 reading quizzes	10 pts each	100
Your-Choice	Varies	100 (See below for how to earn these points)

		700 (Total points possible)

There will be no differential weighting of exams or grades, including the final.

Grading Scale:

There won't be any rounding and there won't be any exceptions. There are plenty of opportunities to earn points and the cutoff for an A is 85.7%, so if at the end of the semester you suddenly realize that you have 599 points, you have earned a B.

A 2-point penalty will be taken if you ask the instructor to bump your grade at the end of the semester.

A	=	600	-	700	points
B	=	540	-	599	points
C	=	480	-	539	points
D	=	400	-	479	points
E	=	0	-	399	points

ANY academic misconduct will result in a failing grade in the course and will be reported to the Office of Student Conduct and Conflict Resolution.

Readings:

Chapters from the text are assigned every week and the material in those chapters will form the basis of the reading quizzes. The assigned chapters can be found on the weekly schedule below. I've been careful not to assign more than 2 chapters for any given week, and some weeks have no assigned readings (use this extra time to work on the your-choice assignments). Be sure to read the chapters ahead of time so you are prepared for the quizzes and lectures. **This means that you will be responsible for the material in the book before the associated lectures.**

ALL EXAMS AND QUIZZES WILL TAKE PLACE ON CANVAS AT SPECIFIC TIMES!

Exams:

Exams will strive to test your critical thinking skills and general knowledge of biological principles. They will not focus on memorizing and regurgitating "bold words," though it should be noted that you will need to *understand* the key terms and concepts from the readings and lectures.

You should prepare a legal-sized sheet of paper with **hand-written** notes **ON ONE SIDE ONLY** for the exams. Anything you want to put on there is fine... definitions, graphs, drawings, whatever! Notes printed from a computer are not acceptable for exams. The point is that the act of writing/drawing the notes yourself helps you to learn the concepts. Allowing you to have a curated reference also enables me to write exam questions that try to apply your knowledge and to actually see if you *understand* the material without getting bogged down in memorization questions. If you are thoughtful about what to put in your exam notes, at the end of the semester you will have a 4-page summary of the entire course.

All exams are comprehensive in nature. They will focus mostly on the material covered since the previous exam, but some questions will require you to remain familiar with topics covered earlier in the course.

Pre- and Post-tests

These smaller tests are worth 50 points each. Everyone who turns in a pre-test gets the full 50 points. The post-test will be graded and will cover the same material as the pre-test. You will not be allowed to use notes for the 50-point post-test. This is my way of comparing your knowledge before and after the course.

Reading quizzes

These short 10-point quizzes will be given on Canvas and are due before noon on the Monday of the corresponding lecture week. No notes or books can be used. Questions will come from the assigned readings. The format will be a combination of multiple choice, True/False, and short answer.

Extra Credit

Any "Your-Choice" assignments that you turn in whose cumulative possible point value exceeds 100 points will be counted as extra credit, up to 50 points. Check Canvas for the due dates.

Extra credit is not a last-minute thing. Any assignments turned in the last two weeks of the course will not be graded.

Your-Choice Assignment Options

Half of these (50 points) are due at midterm. If you earn more than 50 points by midterm, those extra points will roll over into the second half of the course. If you earn fewer than 50 points by midterm you will not have a chance to earn those missing points during the second half of the course. We will discuss specifically how to earn these points in class and details will be available on Canvas.

Zoo Visit (Photo/Ticket)	10
Greenhouse inventory	10
Bibliography on selected topic using Zotero (minimum 10 <u>primary</u> articles)	10
DataCamp certificate - Free introduction to R https://www.datacamp.com/courses/free-introduction-to-r	30
Obtain official plots of CO ₂ concentration from MLO	10
Interview a farmer about crop pests/pathogens How does biology help them?	10
Interview a health professional What are current biological challenges/frontiers in health care?	10
Interview a Biology Professor What does s/he think are some of the most exciting questions in biology today?	10

Book reports

Short (~1000 words) reports on the books below are worth varying amounts of points, based on the length/difficulty of the book. To earn credit, you will have to 1) Convince me you actually read the book, and 2) Have something intelligent to say about it. Outside readings like these are the best way to enrich your education, build real knowledge, and uncover fascinating questions.

If there is reasonable doubt that you read the book(s), the instructor reserves the right to have a discussion with you about the book content before determining whether to award points. Best way to avoid this is to actually read the book(s) before writing a critical review.

These books are easily found in the library, used book stores, or Amazon. Where available, I have included the Orem Campus Library call numbers.

Plagiarism earns an automatic ZERO (in the course) and gets you reported to the office of student conduct.

Book Title	UVU Call No. (if available)	Points Possible
The Ancestor's Tale	QH361 .D39 2004 191519	80
She Has Her Mother's Laugh	QH431 .Z53 2018	80
Entangled Life		50
Last Chance to See	QL82 .A33 1991	30
Demon in the Freezer	RA644.S6 P74 2002	30
Silent Spring	QH545 .P4 C38 1987	30
Sand County Almanac	QH81 .L56 2013	30
What is Life?	QH331 .S3557 1989	20
The Origins of Virtue	QH366.2 .R527 1997	30
Bad Science - Ben Goldacre		30
Genome - Matt Ridley	QH431 .R475 2000	30

See the course website for more info

Advice

Read the book chapters *before* class. Look up concepts online from reputable sources to supplement the book and lectures. Quizzes over the book material at the start of class periods account for a full letter grade worth of points. Do the reading, and come to class. It will seriously help you to understand what is going on in lectures and discussions...and you'll get those points.

Do the Your-Choice assignments early and throughout the semester whenever you find the time. No need to cram them all into the first month, but make sure that at the end of the semester you have them and any extra credit turned in. Get started reading one of those optional books ASAP.

A picture can be worth a thousand words. . . sometimes key concepts are better represented visually than written down. A few solid drawings can be worth more than a whole page of definitions for your exam notes.

Don't plagiarize. You will get caught and you will fail the course and be reported.

Real advice from students who took this course before can be found at the following link:
https://github.com/gzahn/Protocols/blob/master/BIOL_1620_Advice_from_Students.pdf

Look at that advice and take it.

(Tentative course schedule on next page)

Tentative Course Schedule (see the course website for details and up-to-date info)

Week 1: Readings - Chapter(s) 25, 26
Early earth, evolution, phylogenies

PRE-TEST

Week 2: Readings - Schrodinger, "What is life?" (Recommended)
What is life? Metabolism, thermodynamics, organisms, ways to make a living...

Week 3: Readings - Chapter(s) 22, 23
Mechanisms of evolution

Week 4: Readings - Chapter(s) 27
Bacteria and Archaea

EXAM 1

Week 5: Readings - Chapter(s) 28
Eukaryotic supergroups, overview of protist groups

Week 6: Readings - Chapter(s) 32
Animals - defining characteristics, evolution, phylogeny, metabolism, life cycles

Week 7: Readings - Chapter(s) 33, 34
Invertebrates / Vertebrates classes

Week 8: Readings - Chapter(s) 31

EXAM 2

Fungi - defining characteristics, evolution, phylogeny, metabolism, life cycles

Week 9:
Amoebae/ Slime molds / Other weird ways of making a living

Week 10: Readings - Chapter(s) 29, 30
Plants - defining characteristics, evolution, phylogeny, metabolism, life cycles

Week 11: Readings - Chapter(s) 35, 37
Major plant groups / anatomy

Week 12: Readings - Chapter(s) 39, 51
How do groups detect and respond to their environments?

EXAM 3

Week 13: Readings - Chapter(s) 52, 53
Populations (ecology and evolution)

Week 14: Readings - Chapter(s) 54, 55
Communities (ecology) and symbioses / microbiomes / thermodynamics

Week 15:
Biogeochemistry - Climate, feedbacks, nutrient cycling

POST-TEST

EXAM 4 is your final exam. Consult the university's final exam calendar for the exact date and time:
https://www.uvu.edu/asc/exam_schedule.html

Biology Department Policy

Students in this class are expected to understand and use proper English grammar, sentence structure, and spelling. Use of dictionaries during quizzes and exams is NOT allowed. Students are also expected to have basic calculating skills that include fractions, decimals, exponents (e.g., squares & square roots, powers of ten) and the ability to solve simple algebraic expressions. In addition, they must be able to add, subtract, multiply, and divide small numbers without a calculator. Understanding of logarithms (logs) will be helpful. Course rigor level should be such that the average grade is about a C.

Student Responsibility

It is up to you to see that the requirements for this course are completed. This syllabus is your guide to those requirements. Make certain that you understand what is expected of you. It is up to you to attend class and arrange for time to complete the readings, assignments, and exams. This course is designed for biology majors. If you are not reading at a college level, you WILL have difficulty with this course. There is only one type of “excused” absence, and that is an absence for an official University activity, such as participation in athletics, not just watching but doing, field trip for another course, etc. Make-up exams will NOT be given except for a situation beyond your control for which you provide **verifiable** (I will verify), **written documentation**. Family vacations, illness, family crises, vehicle problems, legal problems, weddings, not studying, or forgetting to take an exam are NOT valid excuses or excused absences, even if you tell me beforehand; emergencies are. If such difficulties require a significant number of absences during the semester, you are advised to drop the course and take it at another time. You do not need to call me if you will not be in class, I don’t take roll. Class attendance and obtaining the information for the tests is your responsibility.

Academic Honesty and Integrity

Utah Valley University expects all students to maintain integrity and high standards of individual honesty in academic work, to obey the law, and to show respect for others. Students of this class are expected to support an environment of academic integrity, have the right to such an environment, and should avoid all aspects of academic dishonesty. Examples of academic dishonesty include plagiarizing, faking of data, sharing information during an exam, discussing an exam with another student who has not taken the exam, consulting reference material during an exam, submitting a written assignment which was authored by someone other than you, and/or cheating in any form.

In keeping with UVU policy, evidence of academic dishonesty may result in a failing grade in the course and disciplinary review by the college. Any student caught cheating will receive, at minimum, zero points on that particular assignment for the first offense. A second offense can result in failing the course and will entail being reported to Student Advising. Academic dishonesty includes, in part, using materials obtained from another student, published literature, and the Internet without proper acknowledgment of the source. Additional information on this topic is published in the student handbook and is available on the UVU website.

Situation of academic dishonesty will be reported to the [Student Conduct and Conflict Resolution](#) office as, at a minimum, an informational item and potentially as an item for investigation, resolution, or other.

Student Code of Conduct

All UVU students are expected to conduct themselves in an appropriate manner acceptable at an institution of higher learning. All students are expected to obey the law, to perform contracted obligations, to maintain absolute integrity and high standards of individual honesty in academic work, and to observe a high standard of conduct for the academic environment.

The Student Rights and Responsibilities Code, or Code of Conduct, outlines for students what they can expect from the University and what the University expects of them. It can be found at <http://www.uvu.edu/studentconduct/students/>

Student Timelines

You are responsible for being aware of and abiding by the dates and deadlines on the student timelines for this term found at [UVU Schedule \(http://www.uvu.edu/schedule/\)](http://www.uvu.edu/schedule/)

Understand When You May Drop This Course

It is the student's responsibility to understand when they need to consider dropping from a course. Dates and deadlines for dropping a course can be found in the student timetables located at <http://www.uvu.edu/schedule/>. After the period specified, a serious and compelling reason is required to drop from the course and would need approval from not just the faculty but also the department chair as well as the Dean's Office.

Incomplete Policy

An Incomplete (I) Grade is only given due to an extenuating circumstance. The final decision to issue an Incomplete grade is up to the instructor. Review the following criteria taken from [Policy 523](#) at for information on when an incomplete grade can be given:

The student was unable to complete the course due to extenuating circumstances:

- Incapacitating Illness
- Death in the immediate family
- Change in the student's work schedule by the employer
- Other deemed acceptable by the instructor
- **The student must have completed a minimum of 70% of the required work**

An Incomplete Grade form indicating work completed and work to be completed must be signed by the department chairperson, and turned into the [Registrar's Office](#) at the end of the semester. Incomplete Grade forms can be obtained from the Registrar's Office.

Unofficial Withdrawals

UW will be given only when a **student stops attending and completing work before the regularly scheduled date to officially withdraw** as found in the [Student Timetable](#) but did not actually officially withdraw. Rationale: The assumption here is that the student did not realize the necessity to physically

withdraw or made an error in this process, but all intentions of the student were to withdraw from the class prior to the withdrawal deadline

See also [Academic Policies and Standards](#) in the UVU Catalog which notes, "If a student stops attending (but does not officially withdraw) before the last day to withdraw, he/she should receive a UW."

Late Work

Late work will not be accepted without a doctors or lawyers note unless *previously* discussed with and approved by your instructor. Computer problems, work schedule, lack of internet access, traffic, travel, or similar do not constitute rationale for late homework. Your instructor has the right to modify their handling of late work.

Individual versus Group Work

All work is to be done individually unless it is clearly identified as group work. By default all assignments are not group work. This means that you cannot work on assignments with others, even if your spouse, friends or family, and turn them in as your own. A "group" in this context means more persons than yourself. You also cannot have others complete the work for you or in part on your behalf.

Inclusivity Statement

We understand that our members represent a rich variety of backgrounds and perspectives. The Technology Management department is committed to providing an atmosphere for learning that respects diversity. While working together to build this community we ask all members to:

- share their unique experiences, values and beliefs
- be open to the views of others
- honor the uniqueness of their colleagues
- appreciate the opportunity that we have to learn from each other in this community
- value each other's opinions and communicate in a respectful manner

Academic Freedom

For the purposes of this class, academic freedom is generally defined as follow: For faculty and students alike, you have the freedom to disagree with the views and statements of others, but academic freedom should entail tolerance and respect for others, professionalism, and, to the degree possible, fact-based information. Intellectual vigor is best sustained when the free exchange of ideas is carried on within an environment supportive of human dignity and self-esteem. For full guidelines see <http://www.uvu.edu/tm/pages/department/acad-freedom.html>

Discrimination / Harassment / Sexual Misconduct

It's On Us to prevent discrimination/harassment against members of protected classes. **If you see something, step up and say something.** If you encounter discrimination, harassment, or gender-based discrimination (including discrimination or harassment based on pregnancy, pregnancy related conditions, sexual orientation or gender identity) or sexual violence (dating violence, domestic violence, stalking including unwanted electronic contact), please contact the Office for Equal Opportunity/Affirmative Action and Title IX. Additional information regarding options and services can be found at: <http://www.uvu.edu/equalopportunity/> and <http://www.uvu.edu/studentconduct/docs/title9optionsbrochure.pdf>

Consistent with State and Federal Law such as Title VI of the Civil Rights Act of 1964 and Title IX of the Education Amendments of 1972, Utah Valley University is committed to maintaining a respectful and safe environment for its students, faculty, staff, and visitors. UVU policies 162 and 165 define and prohibit all forms of unlawful discrimination, harassment, sexual misconduct and retaliation in its programs services and activities. Utah Valley University policy 165 prohibits any form of:

- (a) Discrimination based on one or more protected classes, (Race, color, religion, national origin, sex, sexual harassment, sexual orientation, gender identity, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, genetic information, or other bases protected by applicable federal, state, or local law)
- (b) Harassment based on one or more protected classes, including sexual harassment (policy 162), or
- (c) Retaliation(a negative action or discouraging someone from reporting discrimination/harassment or participating in a University internal investigation).

If you need accommodations, please see the appropriate contact below:

- ADA: Students who need accommodations because of a disability may contact the UVU Accessibility Services Department (ASD), located on the Orem Campus in LC 312. To schedule an appointment or to speak with a counselor, call the ASD office at 801-863-8747. Deaf/Hard of Hearing individuals, email nicole.hemmingsen@uvu.edu or text 385-208-2677.
- Pregnancy: Accessibility Services or Office for Equal Opportunity & Affirmative Action (EOAA) - <http://www.uvu.edu/equalopportunity/>, ext. 5704, BA 203.
- Religious: You may begin by asking your professor. If you have questions or concerns, contact the EOAA.
- Veterans (Military Leave, Course Withdraw, or Other Assistance): Veteran Services - <http://www.uvu.edu/veterans/>, ext. 8212, WB100.
- As the result of unwanted sexual harassment, contact, stalking, dating or domestic violence:
- EOAA or Student Ombuds - ext. 7237, SC 107
- Student Health Services, if Anonymity is desired- ext. 8876, SC 221
- UVUPD, if you wish to press criminal charges - ext. 5555, GT 331

Information about **gender neutral facilities or gender personal pronouns**: You may ask professor/supervisor to use your personal name and pronouns. If you are unclear about pronouns or identifiers, you may request clarification. If you have questions or concerns contact LGBT Student Services - <https://www.uvu.edu/multicultural/lgbt/> LA 126, ext. 8885 or the EOAA.

Disability Services

Students who need accommodations because of a disability may contact the UVU Accessibility Services Department (ASD), located on the Orem Campus in LC 312. To schedule an appointment or to speak with a counselor, call the ASD office at 801-863-8747. Deaf/Hard of Hearing individuals, email nicole.hemmingsen@uvu.edu or text 385-208-2677.

Veteran's Services

UVU is committed to providing a working and learning atmosphere for student veterans and their families. If you are a student veteran or a family member of a student veteran, you are eligible for support services from the Veterans Success Center and may be eligible for Post-9/11 GI Bill benefits. For help receiving your benefits, please contact the Veterans Success Center in the Woodbury Business Building, room 100, via email at veterans@uvu.edu or by calling 801-863-8212. Learn more: <http://www.uvu.edu/veterans/>