

Spring 2020 BIOL-1615-AL1 Syllabus

BIOL 1615 Course Syllabus

□ Course Description

Principles of cell biology, energetics, and genetics; plant structure, function, and development. Three lectures. BIOL 1615 (https://catalog.usu.edu/content.php?filter%5B27%5D=BIOL&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D) Biology I Laboratory, should be taken concurrently with BIOL 1610. Animal structure, function, and development; principles of evolution, ecology, and behavior. Three lectures. BIOL 1625, Biology II Laboratory, should be taken concurrently with BIOL 1620. To receive University Studies Breadth Life Sciences (BLS) credit, students must complete BIOL 1610 and BIOL 1615 (https://catalog.usu.edu/content.php?filter%5B27%5D=BIOL&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D) and BIOL 1620 (https://catalog.usu.edu/content.php?filter%5B27%5D=BIOL&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D) and BIOL 1625.

BIOL 1615/25 are investigative laboratory courses with projects emphasizing genetics, cell, molecular biology, ecology, evolution, and behavior. Students ask and answer authentic biological questions while developing the skills and competencies needed for biological research.

Fees

Students are charged a lab fee of \$80. This covers the cost of materials and equipment



© Course Objectives

This is a laboratory course focused on the process of science in the context of following broad topics: genetics, cell, and molecular biology. This course will give you substantial experience with discovery-based

science, whereas BIOL 1625 in the spring semester is largely focused on hypothesis-driven science. It is designed to be taken concurrently with BIOL 1610. By the end of BIOL 1615, you will be able to:

After successful completion of this course, students should be able to:

[IDEA Center Learning Objectives Course Learning Objectives](#)

Upon successful completion of this course you will be able to

Objective 1. Learn fundamental principles, generalizations, or theories

REMEMBERING, COMPREHENDING

Use appropriate terms to describe biological instruments, procedures and protocols

Objective 2. Learn to apply course material (to improve thinking, problem solving and decisions)

APPLYING, ANALYZING, EVALUATING, SYNTHESIZING

Apply the process of science

o Design experiments to test hypotheses

o Maintain an accurate laboratory notebook

o Generate data

o Predict experimental outcomes

o Present data in appropriate format (table, graph, etc.)

o Analyze and interpret data

Communicate research activities orally and in writing

Lab notebook to keep all paperwork and labs organized. You may wish to wear a lab coat, or I suggest old clothing. Binder, sharpie. Access to a laptop computer, this should be brought to lab frequently.

Course Requirements

Laboratory: Lab will be conducted in modules. First, you will gain knowledge of how to perform and analyze data for experiments. You will then design experiments to answer scientific questions(your own questions). Your data will be collected, represented with graphs, charts or images and written up in a laboratory report. This will be presented to the class. During the experimental phase, we will be meeting regularly and sharing progress reports as a group.

Preparing for Lab

Upon arrival in the lab, you should have recorded (at least in draft form) the date, purpose/background and objective of the experiment, hypothesis / expected outcomes, and technique or protocol you will use. You will use a spiral notebook with pages that make carbonless copies allowing you to submit your work while maintaining a consistent record. You are expected to come to lab prepared; upon arrival in lab, I will sign your lab manual to confirm that you have thoughtfully completed the pre-lab sections.

Research Poster (science writing)

You will summarize the major findings of your drug-discovery project in the form of a research poster. As you move through the stages of your research project, you will gradually assemble the components of a scientific report: Background, Methods, Results & Discussion, and Literature Review. Periodically throughout the semester, you will submit drafts of these components as well as the final poster, and will receive feedback for improvement.

Evaluation Methods and Criteria

Lab Reports (30 % of your grade): These will be submitted in Canvas and will be in APA format. These are completed individually.

Weekly in-class group scientific reflection (40% of grade). By the end of each lab session, you and your group members will collaboratively answer questions about the lab project you completed. You will turn this in on Canvas before you and your group members leave class. If you come to class more than five minutes late (in which case you will be told to leave with an unexcused absence) or leave before your group members, you will receive a zero. Canvas will automatically drop your lowest scientific reflection score.

Pre-Lab Quizzes and Discussions (30 % of your grade): You will read lab documents found on Canvas before coming to lab each week. You will answer a few questions on Canvas regarding this background information. Your experimental data will be collected, represented with graphs, charts or images and written up in a laboratory report. This will be presented to the class (oral presentations- with slides where appropriate). During the experimental phase, we will be meeting regularly and sharing progress reports as a group.

□ **Grade Scheme**

The following grading standards will be used in this class:

Grade	Range
A	100 % to 93.0%
A-	< 93.0 % to 90.0%
B+	< 90.0 % to 87.0%
B	< 87.0 % to 83.0%
B-	< 83.0 % to 80.0%
C+	< 80.0 % to 77.0%
C	< 77.0 % to 73.0%
C-	< 73.0 % to 70.0%
D+	< 70.0 % to 67.0%
D	< 67.0 % to 60.0%
F	< 59.0 % to 0.0%

Course Schedule/Outline

Schedule (Tentative)

Week		Topic	
1	Jan 6	NO LAB: Lab Safety in Canvas	
2	Jan 13	Introduction to Scientific Base Inquiry	
3	Jan 20	Quantify Intraspecific Variation in Humans	
4	Jan 27	Exploring Microbes in Soil: Literature Review	
5	Feb 3	Outlining: Soil and Strategies/ Growing Your Soil Microbes	Bring soil sample
6	Feb 10	Isolating colonies	
7	Feb 17	Isolating DNA/PCR	
8	Feb 24		
9	Mar 2	Spring Break	
10	Mar 9	Final Proposal for Field Project due	
11	Mar 16	Field work	
12	Mar 23	Field Work	
13	Mar 30	Project Experimentation	
14	Apr 6	Project Experimentation and Write up	
15	Apr 13	Project Class Presentation	
16	Apr 20	NO LAB	

Attendance and Excused Absences Policy

Lab attendance is required, if you miss 3 labs, you will receive an F for the course.

Nonattendance Policy

Students May Be Dropped For Nonattendance

If a student does not attend a class during the first week of the term or by the second class meeting, whichever comes first, the instructor may submit a request to have the student dropped from the course. ***(This does not remove responsibility from the student to drop courses which he or she does not plan to attend.)*** This option is typically used for classes that are full and the instructor is trying to make a seat available for another student, but may be considered for other courses. Requests must be made during the first 20 percent of the course and will be considered on an individual student basis. Students who are dropped from courses will be notified by the Registrar's Office through their preferred e-mail account (see 2018-2019 General Catalog (<http://catalog.usu.edu/content.php?catoid=12&navoid=3955>)).

* Assumption of Risk

All classes, programs, and extracurricular activities within the University involve some risk, and certain ones involve travel. The University provides opportunities to participate in these programs on a voluntary basis. Therefore, students should not participate in them if they do not care to assume the risks. Students can ask the respective program leaders/sponsors about the possible risks a program may generate, and if students are not willing to assume the risks, they should not select that program. By voluntarily participating in classes, programs, and extracurricular activities, a student does so at his or her own risk. General information about University Risk Management policies, insurance coverage, vehicle use policies, and risk management forms can be found at: <http://www.usu.edu/riskmgt/> (<http://www.usu.edu/riskmgt/>)

Library Services

All USU students attending classes in Logan, at our Regional Campuses, or online can access all databases, e-journals, and e-books regardless of location. Additionally, the library will mail printed books to students, at no charge to them. Students can also borrow books from any Utah academic library. Take advantage of all library services and learn more at libguides.usu.edu/rc. (<http://libguides.usu.edu/rc>)

Classroom Civility.

Utah State University supports the principle of freedom of expression for both faculty and students. The University respects the rights of faculty to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede the learning process. Disruptive classroom behavior will not be tolerated. An individual engaging in such behavior may be subject to disciplinary action. Read Student Code Article V Section V-3 (<https://studentconduct.usu.edu/studentcode/article5>) for more information.

University Policies & Procedures

Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 (<http://www.usu.edu/hr/files/uploads/Policies/403.pdf>) further defines academic freedom and professional responsibilities.

Academic Integrity – "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

Academic Dishonesty

The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined the University's Student Code. Acts of academic dishonesty include but are not limited to:

- **Cheating:** using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity. Unauthorized assistance includes:
 - Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually;"
 - Depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
 - Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
 - Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
 - Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
 - Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.
- **Falsification:** altering or fabricating any information or citation in an academic exercise or activity.
- **Plagiarism:** representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

For additional information go to: ARTICLE VI. University Regulations Regarding Academic Integrity (<https://studentconduct.usu.edu/studentcode/article6>)

Sexual Harassment/Title IX

Utah State University is committed to creating and maintaining an environment free from acts of sexual misconduct and discrimination and to fostering respect and dignity for all members of the USU community. Title IX and USU Policy 339 (<http://www.usu.edu/policies/339>) address sexual harassment in the workplace and academic setting.

The university responds promptly upon learning of any form of possible discrimination or sexual misconduct. Any individual may contact USU's Office of Equity (<https://equity.usu.edu/>) for available options and resources or clarification. The university has established a complaint procedure to handle all types of discrimination complaints, including sexual harassment (USU Policy 305 (<http://www.usu.edu/policies/305/>)), and has designated the Office of Equity Director/Title IX Coordinator as the official responsible for receiving and investigating complaints of sexual harassment.

Withdrawal Policy and "I" Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

Students with Disabilities

USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) (<http://www.usu.edu/drc/>) as early in the semester as possible (University Inn # 101, (435) 797-2444, drc@usu.edu (<mailto:drc@usu.edu>)). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

Diversity Statement

Regardless of intent, careless or ill-informed remarks can be offensive and hurtful to others and detract from the learning climate. If you feel uncomfortable in a classroom due to offensive language or actions by an instructor or student(s) regarding ethnicity, gender, or sexual orientation, contact:

- Division of Student Affairs: <https://studentaffairs.usu.edu> (<https://studentaffairs.usu.edu/>), (435) 797-1712, studentservices@usu.edu (<mailto:studentservices@usu.edu>), TSC 220
- Student Legal Services: <https://ususa.usu.edu/student-association/student-advocacy/legal-services> (<https://ususa.usu.edu/student-association/student-advocacy/legal-services>), (435) 797-2912, TSC 326,
- Access and Diversity: <http://accesscenter.usu.edu> (<http://accesscenter.usu.edu/>), (435) 797-1728, access@usu.edu (<mailto:access@usu.edu>); TSC 315
- Multicultural Programs: <http://accesscenter.usu.edu/multiculture> (<http://accesscenter.usu.edu/multiculture>), (435) 797-1728, TSC 315
- LGBTQA Programs: <http://accesscenter.usu.edu/lgbtqa> (<http://accesscenter.usu.edu/lgbtqa/>), (435) 797-1728, TSC 3145
- Provost's Office Diversity Resources: <https://www.usu.edu/provost/diversity> (<https://www.usu.edu/provost/diversity/>), (435) 797-8176

You can learn about your student rights by visiting:

The Code of Policies and Procedures for Students at Utah State

University: <https://studentconduct.usu.edu/studentcode> (<https://studentconduct.usu.edu/studentcode/>)

Grievance Process

Students who feel they have been unfairly treated may file a grievance through the channels and procedures described in the Student Code: Article VII (<https://studentconduct.usu.edu/studentcode/article7>).

Full details for USU Academic Policies and Procedures can be found at:

- Student Conduct (<http://www.usu.edu/studentconduct>)
- Student Code (<https://studentconduct.usu.edu/studentcode/>)
- Academic Integrity (<https://studentconduct.usu.edu/studentcode/article6>)
- USU Selected Academic Policies and Procedures (<http://www.usu.edu/provost/faculty-life/syllabus.cfm>)
- USU Academic Policies and Procedures (<http://catalog.usu.edu/content.php?catoid=4&navoid=546>)
- Academic Freedom and Professional Responsibility Policy (<http://www.usu.edu/hr/files/uploads/Policies/403.pdf>)

Emergency Procedures

In the case of a drill or real emergency, classes will be notified to evacuate the building by the sound of the fire/emergency alarm system or by a building representative. In the event of a disaster that may interfere with either notification, evacuate as the situation dictates (i.e., in an earthquake when shaking ceases or immediately when a fire is discovered). Turn off computers and take any personal items with you. Elevators should not be used; instead, use the closest stairs.