

**Biology and the Citizen**  
Biology 1010, section 001  
Fall 2017, MWF 7:30-8:20 am in ESLC 130

**Course Instructor:** Lauren Lucas

**Contact information:** e-mail [llucas@usu.edu](mailto:llucas@usu.edu), office phone 797-9461

**Drop-in office hours in BNR 247:** Tues & Thus 1-2pm

**Supplemental Instruction (SI) Leader:** Camden Treat

**E-mail:** [treaty33@gmail.com](mailto:treaty33@gmail.com)

**SI sessions:** TBA

*Attending SI sessions will help you improve your understanding of the material and your grade.*

**Graduate Teaching Assistant (TA):** Zach Portman (*Zach will aid in grading.*)

**Course Format:** During class you will listen to lectures, watch video clips, participate in demonstrations, work through case studies, answer iClicker questions, and engage in discussion with your peers. Outside of class you will read the textbook and take weekly online quizzes. Your major assessments are four unit exams, participating in an authentic citizen science project, and writing a letter to your congressman about a biology-related issue.

Essential Learning Objectives (from the IDEA Center)	Learning Outcomes
<b>Objective 1.</b> Gaining factual knowledge (terminology, classifications, methods, trends)	You will be able to recall biological facts, such as how meiosis produces genetic variation.
<b>Objective 2.</b> Learning fundamental principles, generalizations, or theories	You will be able to combat misconceptions regarding the key processes of the natural world, such as evolution.
<b>Objective 3.</b> Learning to apply course materials (to improve rational thinking, problem solving and decisions)	You will be able to apply your biology knowledge to making decisions as a world citizen, such as when you propose solutions to real-world problems when writing a letter to your congressman.

### Required Course Materials

- **Canvas:** You will use our Canvas site to receive important course announcements, download class materials, submit assignments, take reading quizzes and exams, and view grades. Make sure you receive immediate or daily notifications for announcements.
- **Textbook:** You will have weekly reading assignments to engage with the course content outside of class to facilitate content retention. We will use a free online textbook, *Concepts of Biology*. Access it here: <https://openstaxcollege.org/textbooks/concepts-of-biology/get>. You may also buy it in print at the bookstore.
- **iClicker remote:** These electronic polling devices allow you to gauge and demonstrate your understanding and share your thoughts anonymously in class. Your use of an iClicker remote also helps your instructor determine whether she needs to use alternative instructional approaches to explain challenging concepts. Register your remote by Sept 6; see Canvas for details. You may not use another Biology 1010 student's remote. You may use the iClicker1 remote, iClicker2 remote or the REEF polling app for iPhone or Android.

### Assignments

- **In-class practice & discussion (iClicker).** I will ask a few practice or discussion questions each class session that you will answer with an iClicker remote for participation points. If you answer 75% or more of all the questions asked across the semester, you will receive full credit. You will receive 3/4 credit for answering 50-74.9% of the questions, 1/2 credit for answering 25-49.9% of the questions, and 1/4 credit for answering 0.1-24.9% of the questions. Note: The number of questions asked varies by class session. This grading scheme allows for seldom errors that may occur with the iClicker technology and rare unexcused absences. Having a functioning remote in class is your responsibility; carry an extra set of batteries with you.
- **Out-of-class practice (weekly reading quizzes).** Outside of class you will answer practice questions via online quizzes nearly every week regarding the background knowledge you'll gain from reading the textbook. They are always due by 7am on Fridays, and they become available to take at the beginning of each unit. You will be allowed

one attempt, the quizzes are not timed, and they are open-book. You may view the correct answers after submission. Your lowest quiz score automatically will be dropped.

- **Unit Exams.** The in-class practice questions and reading quizzes will help you prepare for the four unit exams, but exams will emphasize what we cover in class together. You will use both simple fact recall and higher-level scientific reasoning skills on the exams. We will not meet in class on exam days; you will take exams on Canvas using a reliable computer on campus. Exams are closed-book; see below for details about the university's Honor System. Requests to take exams at times other than the regularly scheduled times will be considered only for excused absences (see below for attendance policy). There will be a practice exam available on Canvas the second week of class to give you an idea of what to expect for the unit exams.
- **Citizen science.** You will apply your knowledge of the process of science and contribute to an authentic, national citizen science project, such as helping scientists identify proteins in microscope images. See Canvas for a list of projects and assignment instructions.
- **Letter to a congressman.** You will apply your biology knowledge as a citizen and write a succinct one-page, single-spaced letter to a congressman regarding a biology-related issue we cover in class that you are passionate about. Your letter will include: 1) a description of the issue, 2) a description of what is currently being done about the issue, and 3) an idea for a different solution or an explanation for why the current solutions are best. You will cite at least two reliable sources in your letter. See Canvas for details.

**Grading Policy:** Final course grades are based on the following scale and will not be rounded up to the nearest whole number: A (94-100%), A- (90-93.9%), B+ (87-89.9%), B (84-86.9%), B- (80-83.9%), C+ (77-79.9%), C (74-76.9%), C- (70-73.9%), D+ (67-69.9%), D (60-66.9%), and F (below 60%). Your grade will reflect your performance on the various assignments, which will be weighted as follows:

Assignment	Weight (%)
In-class practice and discussion (iClicker participation)	10
Out-of-class practice (weekly reading quizzes on Canvas)	10
Unit 1 exam	12.5
Unit 2 exam	12.5
Unit 3 exam	12.5
Unit 4 exam	12.5
Citizen science	15
Letter to a congressman	15
TOTAL	100

**Tentative Schedule:** See next page.

<b>Day</b>	<b>Date</b>	<b>Biology content</b>	<b>Social issue</b>	<b>Readings &amp; Assignments</b> (quizzes due by 7am on Canvas; pg numbers based on ConceptsOfBiology- LR.pdf)
M	8/28	<b>Course Introduction</b> How the brain learns		Syllabus and course Canvas site Ch 16.6 (pgs 441-449)
W	8/30	What is biology: what is life?	Creating life de novo; Artificial intelligence	Ch 1
F	9/1	What is biology: the nature and process of science	Politicization of science; Funding for basic science	Ch 1 <b>Course Intro Quiz</b>
M	9/4	<i>No class: Labor Day</i>		
W	9/6	Biology-related social issues		
F	9/8	<b>Unit 1: Cells and Human Physiology</b> Chemistry of life	Misleading food labels	Ch 2 <b>Unit 1 quiz 1</b>
M	9/11	Digestion & gut microbiome	Obesity epidemic	Ch 16.2 only (pgs 416-422)
W	9/13	Journey into the cell		Ch 3
F	9/15	ATP & cellular respiration & diabetes		Ch 4 <b>Unit 1 quiz 2</b>
M	9/18	Photosynthesis		Ch 5
W	9/20	Circulation and respiration		Ch 16.3 only (pgs 422-428)
F	9/22	PM <sub>2.5</sub>	Air quality in Cache Valley	Ch 17 <b>Unit 1 quiz 3</b>
M	9/25	Cell invasion and the immune system	The anti-vaccine movement	
W	9/27	<b>50 min. Unit 1 Exam on Canvas</b>		<b>Citizen Science project due on Canvas by 5pm</b>
F	9/29	<b>Unit 2: Genetics</b> Meiosis	Abortion; Gender identity	Ch 7
M	10/2	Hormones		Ch 16.4 (pgs 429-434)
W	10/4	Early development		Ch 18
F	10/6	Patterns of inheritance		Ch 8 <b>Unit 2 quiz 1</b>
M	10/9	DNA replication	Genetic testing	Ch 9.1-9.2 (pgs 205-215)
W	10/11	Mitosis		Ch 6
F	10/13	Cancer		<b>Unit 2 quiz 2</b>
M	10/16	DNA transcription and translation, gene regulation		Ch 9.3-9.5 (pgs 216-230)
W	10/18	Biotechnology: CRISPR	Gene editing	Ch 10
*Th	10/19	*Friday class schedule on Thurs <b>50 min. Unit 2 Exam on Canvas</b>		<b>Unit 2 quiz 3</b>
F	10/20	<i>No class: Fall break</i>		
M	10/23	<b>Unit 3: Evolution</b> Evidence and common misconceptions	Teaching evolution in public schools	Ch 11.3 & 11.5 (pgs 264-267, 273-280)

W	10/25	How populations evolve		Ch 11.1-11.2 (255-263)
F	10/27	How populations evolve		Ch 11.1-11.2 (255-263) <b>Unit 3 quiz 1</b>
M	10/30	How biodiversity evolves: <i>Rhagoletis</i> case study	Antibiotic resistance	Ch 11.4 (pg 268-272)
W	11/1	How biodiversity evolves: speciation		Ch 11.4 (pg 268-272)
F	11/3	The origin and history of life		<b>Unit 3 quiz 2</b>
M	11/6	The tree of life		Ch 12
W	11/8	Diversity of microbes, protists, fungi		Ch 13
F	11/10	Diversity of plants		Ch 14 <b>Unit 3 quiz 3</b>
M	11/13	Diversity of animals		Ch 15
W	11/15	Human evolution	Race inequalities	
F	11/17	<b>50 min. Unit 3 Exam on Canvas</b>		<b>Unit 3 quiz 4</b>
M	11/20	<b>Unit 4: Ecology</b> Population ecology	Endangered species act	Ch 19.1-19.2 (pgs 515-525)
W-F	11/22-24	<i>No class: Thanksgiving break</i>		
M	11/27	Conservation biology		Ch 19.1-19.2 (pgs 515-525)
W	11/29	The human population	GMOs; One child policy; High density housing; Mercy killing	Ch 19.3 (pgs 526-529)
F	12/1	Community ecology		Ch 19.4 (pgs 530-546) <b>Unit 4 quiz 1</b> <b>Letter to Congressman due on Canvas by 5pm</b>
M	12/4	Ecosystem ecology		Ch 20
W	12/6	Why is biodiversity important?	Protected public lands	Ch 21
F	12/8	Global climate change	Action on global climate change	Ch 21 <b>Unit 4 quiz 2</b>
F	12/15	<b>50 min. Unit 4 Exam on Canvas</b>		<b>Available 7:30am-9:20am</b>

**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. USU Policy 403 further defines academic freedom and professional responsibilities.

**Attendance Policy** (adapted from the USU Course Catalog): The university views class attendance as an individual student responsibility. Your instructor will not provide you an opportunity to make up work missed because of an unexcused absence. Unexcused absences include family vacations. The following are considered excused absences if properly documented: absences demanded by university-sponsored or sanctioned activities; mandatory participation as a student-athlete in NCAA-sanctioned competition; injury, illness or medical condition/status that is too severe or contagious for the student to attend class; major injury, illness, medical condition/status, or death in a student's immediate family; required participation in military duties; mandatory admissions interviews for professional or graduate school; participation in legal proceedings that require the student's presence. In the case of an excused absence, you must provide your instructor with written evidence substantiating the reason for the absence (for example, a medical confirmation note that contains the date and time of the visit and the medical

professional's confirmation) prior to the date of absence if feasible. In cases where advance notification is not feasible (e.g., accident or emergency), the student must provide written documentation by the end of the second working day after the absence. If the absence is excused and properly documented, you must meet with your instructor outside of class to discuss make-up work. Any make-up work must be completed within 14 calendar days of the last day of the absence. Your instructor will deny any excused absence make-up work requests that exceeds 20% of class sessions (more than eight class sessions).

**The Honor System and Plagiarism:** 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: 1) espouses academic integrity as an underlying and essential principle of the Utah State University community; 2) understands that each act of academic dishonesty devalues every degree that is awarded by this institution; 3) is a welcomed and valued member of Utah State University. Plagiarism includes knowingly "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 the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials." The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, and referral to psychological counseling.

**Students with Disabilities:** 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) 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.