



Instructor: Dr. Randy Brewton; General Biology Lab Coordinator/Senior Lecturer,
Division of Biology

Office Location: 241 Strong Hall, email: rbrewton@utk.edu, phone: 974-6225

Office Hours: Wednesdays, 1:00-3:00pm, or by appointment

Where and When: Lecture: 101 Strong Hall, 11:10am-12:25pm, TR

Laboratory: meets according to individual schedule – refer to
Timetable

Course Description: Intended primarily for non-science majors, Biology 101 is designed to help you become scientifically literate citizens, develop curiosity, the willingness and freedom to ask questions, think critically and be more informed and aware of the world around you.

Learning Goals:

1. Explain the importance of each step in the scientific method and why society should rely on the process of science.
2. Relate biology to modern scientific issues.
3. Identify reliable sources of scientific information and explain why it is reliable.
4. Interpret scientific figures and tables.
5. Develop proficiency in asking questions in order to better understand biological systems (problem-solving, generating hypotheses)
6. Explain how proper nutrition provides the raw materials to build and power the cells in your body.
7. List the three domains of life and describe the characteristics that are common to all living things.
8. Explain how an organism's genotype determines its phenotype.
9. Define mutations and describe how they occur during cell division or exposure of a cell to mutagens.
10. Describe how cell division occurs and is regulated.
11. Explain how cells differ from one another.
12. Explain how energy is converted within cells of an organism via respiration or photosynthesis and how energy processing is different in aerobic and anaerobic situations.
13. Describe the immune system and explain how it protects against disease.
14. Compare and contrast sexual reproduction and asexual reproduction.

Learning Objectives; Lab:

1. Practice asking questions, making observations, and predictions in basic experimental settings.
2. Relate biology to modern scientific issues.
3. Practice finding reliable sources of information.
4. Practice oral and written communication skills.
5. Develop proficiency in using common tools of science.

Support for your Learning Success:

- 1) Registration for this class automatically enrolls you in the UT Canvas Course Management System (<http://online.utk.edu>). A course site, *BIOL101FALL2017 BREWTON*, will serve as a communication link and is the site where lecture information and clicker grades will be posted along with lab grades.
- 2) Attendance: Attendance of lectures and laboratory sessions is required. Quizzes and in-class participation exercises will be given without notice – some of which will contribute to your course grade. NOTE: Laboratories begin NEXT WEEK! (That's the week of August 28.)
- 3) **Text** (required): Biology for a Changing World, with Physiology, 2nd edition, with Sapling
Lab Manual (required): Laboratory Manual for Biology 101, Brewton and Guffey, 7th edition, 2014.
- 4) Email etiquette: Please, always enter **Biology 101** in the subject line to ensure a timely response – email received without a relevant subject line may be deleted.
- 5) We will utilize 'Clickers' in class for problem-solving exercises, to solicit classroom discussion, review questions and quizzes. The format and topics presented in the clicker questions will be utilized in the exams, so attending class will help you become familiar with styles of questions and higher-level problem solving that will be incorporated into exam questions. Clicker activities will count 10% toward your final course grade. It is your responsibility to bring your clicker to every class. Clickers are available at the UT Bookstore. In the event of clicker problems, contact OIT personnel in the Commons or the Help Desk, 974-9900.
- 6) We will also utilize "Sapling Learning." This is an online homework system that is demonstrated to help students master a variety of biology concepts. Students who complete online homework assignments consistently score better on exams than students who do not. Sapling homework assignments will count 10% toward your final course grade. Sapling assignments present regular opportunities to assess your learning and practice for the exams.
- 7) The reading assignments are to be completed PRIOR to coming to class. At least once per week, there will be online homework quizzes to assess your completion and

comprehension of material in the assigned readings. The basic information in the readings will form the foundation for more in-depth discussions and problem-solving opportunities during the lecture class periods. It takes time to work through real-world problems and to practice problem-solving skills, so you will find there may be at least as many questions on exams from the readings as from lecture.

Lecture Class Schedule:

Date:	Day	Topic
Section I: How does Energy move through organisms? Molecules and Nutrition		
Aug. 24	R	Introduction, Course Guidelines, How to Study?
29	T	What is Science? What Isn't? Science in the News / Hypotheses and Evolution; Chap. 1, pp. 1-18,
31	R	What is 'Life?' Characteristics of Life and Basic Building Blocks Essential Chemistry, Water; Chap. 2, pp. 22-43
Sept. 5	T	Molecules of Life, Structure matters – paper and prions, Chap. 2; pp. 22-43,
7	R	Cell Diversity – Antibiotics and Antibiotic Resistance, Chap 3; pp. 45-65
12	T	Cell Diversity – Antibiotics and Antibiotic Resistance, (Cont'd); Endosymbiosis, pp. 67-73.
14	R	EXAM 1
Section II: Metabolism – Nutrients, Respiration, and Photosynthesis		
19	T	Nutrition, Metabolism and Enzymes – The Peanut Butter Project, (Nutrients and Micronutrients) Chap 4; pp. 74-93. <i>My Plate – Supplement (article on Canvas)</i>
21	R	Essential Nutrients and Nutritional Disorders; Review
26	T	Energy and Photosynthesis – Algae and Biofuels Chap. 5; pp. 94-113, <i>Cellulosic Ethanol – Green Dreams (article on Canvas)</i>
28	R	Photosynthesis, Cont'd
Oct. 3	T	Dietary Energy and Energy and Cellular Work – What is ATP?; Chap. 6; pp.114-135; <i>What is Fitness? (Supplement on Canvas)</i>
5	R	No class - Fall Break (Oct. 5-6)
10	T	Cellular Respiration; Aerobic and Anaerobic, Chap. 6
12	R	EXAM 2
Section III: Physiology, Genetics and Molecular Biology - Can cancer be cured?		
17	T	No class – Fall Break, Oct. 6-7
19	R	The cardiovascular system; evolution, anatomy, heart attacks, blood pressure; Chap. 27; pp. 596-619.
24	T	Lung capacity and athletic performance, basics of gas exchange, Respiratory System, Chap. 28, pp. 620-641.

Oct	26	R	DNA Structure and Replication; Chap. 7; pp. 137-153.
	31	T	The Model Makers, pp. 155-161.
Nov.	2	R	Medicine from Milk Genetically Modified Organisms and Biotechnology, Chap. 8; pp. 163-181
	7	T	Cell Division and Cancer, Chap. 9; pp. 193-211.
	9	R	Mutations and Cancer, Chap. 10; pp. 212-227.
	14	T	Lifestyle Choices, Risks and Cancer treatments
	16	R	EXAM 3

Section IV: Immunity, Infection and Emerging Diseases

	21	T	Stem Cells, Chap. 13; pp. 282-301
	23	R	No Class (Thanksgiving Day Break, Nov. 23-24)
	28	T	Viruses and emerging diseases; Ebola, Zika, Chikungunya, and other viruses in the news; <i>Deadly Contact</i> (Supplement on Canvas)
	30	R	Immune System, Chap. 31; pp. 690-715
Dec.	5	T	Immune System, Antibodies and Vaccinations

FINAL EXAM – 10:15am-12:15pm, FRIDAY, DEC. 8, in Lecture Room

***NOTE – The lecture syllabus can be changed at any point in the semester to accommodate class interests/progress and to incorporate relevant Biology stories in the news.**

Important Dates:

Last Day to add, change grading options or drop without a W – Sept., 1, 2017.

Last Day to drop with a W – Nov. 14, 2017.

Course Assessments:

Lecture (75% of course grade):	
Exams 1-3 (100 points each)	300
Final exam	100 - (the Final is not comprehensive)
(Lecture will be weighted so that it is worth 440 points)	
Clickers/Sapling Learning	TBD – 10%/10% of course grade; 80
points each	
Laboratory (25% of course grade)	<u>200</u>
Course Total	800

Grades :

I issue the following letter grades – A, B+, B, C+, C, D and F. I generally do NOT give minuses (A-, etc.)

You may replace one of your midterm exams with the score of your Final exam (i.e., your Final can count twice.)

Students who use multiple clickers are violating the University Honors Code by misrepresenting their academic efforts and those of their classmates. In the event that a student is identified using the clickers of other students, all clickers will be confiscated and the clicker points for all students will be forfeit for the entire semester.

Students who plagiarize are also violating the University Honor Code. Please do your own work. Violation of the Honor Code can result in a failing grade for the course as well as dismissal from the University.

Make-up Exams:

No make-up Exams will be given. If an individual exam is missed for a reason approved by Dr. Brewton, your Final Exam will be counted twice to replace the missed exam. **YOU MUST CONTACT DR. BREWTON BY PHONE OR EMAIL PRIOR TO THE START OF THE EXAM TO HAVE YOUR FINAL EXAM COUNTED TWICE.** If you have a conflict with a scheduled exam, notify Dr. Brewton beforehand if possible.

Course Content:

The syllabus will be adjusted as needed – additional readings may be assigned or substituted to best address the interests/needs of the class.

How can I do well in this class? What are my responsibilities?

- Most biological problems can be dissected using the following Core Principles:

Energy flow – how is energy moving and changing forms in the organism/system of interest? Thermodynamics, efficiency...

Nutrient flow – how are nutrients moving and being utilized in the organism/system of interest? This is closely related to the movement of energy.

Information flow – What kinds of molecules contain biological information? Origins of genetic diversity? Advantages? Disadvantages?

Natural Selection/Evolution – Genetic diversity in a population and differential reproductive success leads to changes in populations over time.

Systems/Integrations – Cell Structures/Tissues/Organ systems? Populations, Communities, Ecosystems... Digestion, Cardiovascular, Immune system, etc...

- Come to class! Students who come to class tend to earn higher grades than those who slack off and do other things during class time.

- Typically, you should spend twice as much time studying class material than you spend in class (that means, if class meets three hours each week, you should spend SIX hours studying Biology each week!).

- Keep current – at least skim over the chapters or assigned readings prior to class. Please complete Sapling assignments to ensure you are prepared for class.
- Powerpoint slides are guides only. They are never meant to contain all the material that will be on the exam. Take notes on classroom discussions.
- Always think about how the class content affects YOU. Try to find ways to apply class content to your everyday life.
- There is no such thing as a stupid question. Get in the habit of asking ‘Why?’
- There are summaries and practice questions interspersed throughout and at the end of each chapter. Try the practice quizzes – it’s important to assess what you do and do not understand.
- Ask for help! Ask questions during class... Shoot me an email...

Biggest mistakes

- **Forgetting that meaningful learning takes effort** - it is creating new neural connections in your brain... of course it is hard!
- **Thinking that intelligence is fixed** - intelligence has no limit and can always be increased over time.
- **Not changing course approach after not doing well on a quiz or exam** - see fixed intelligence above; students give up because decide they “aren’t good at XX.”
- **Using passive study approaches versus active testing of knowledge** - re-reading notes or highlighting doesn’t build neural connections; studies show that re-writing, re-organizing, and testing yourself are the most effective ways to learn.
- **Studying for memorization instead of application** - many high school courses test for memorization (regurgitation of information) while college exams ask students to apply information to a new problem – this requires a different way of studying (see above!)
- **Thinking that grades in high school determine grades in college** - see above; the ways you are tested will be different, so your studying has to be different; it is basically a clean slate for your GPA
- **Assuming that multi-tasking in class is no big deal** - every time you switch to a new task requires a pause in brain function, which means you can’t re-capture what you missed; plus, your brain literally cannot process two streams of information at one time (no matter how awesome you think you are at it).

- **Skipping labs or not doing online homework** - just because it is a smaller part of the course grade doesn't mean it isn't significant (a loss of 10% means your highest possible grade is a B+)

- **Being too afraid to ask for help from peers or teachers** - seeing an idea from a different perspective can be the key to understanding.

- **Thinking that college won't be a struggle sometimes** - everyone struggles to reach their potential; that effort is valuable and worth the effort.

Classroom Etiquette

The following guidelines are intended to ensure a positive, respectful, constructive and education-friendly environment for all students. If you feel you cannot abide by these rules, please see Dr. Brewton for transfer to a different class. By remaining enrolled in this lecture section, you agree to abide by the following Code of Conduct:

1. Arrive on time! Class will start promptly within a couple of minutes of the scheduled time. If you arrive late, please take the first available seat at the back of the classroom.
2. Turn off or silence all electronic devices – no cell phones, Blackberrys, iPods, MP3 players, etc.
3. Use of laptop computers should be limited to class functions – class is not the appropriate place for surfing the internet or answering emails.
4. Your questions, thoughts and input regarding class material are welcome and expected. However, idle chit-chat with your neighbors is disruptive. Please refrain from talking when the Instructor, or other students have the floor.
5. I will end class approximately two minutes early each lecture period to ensure you have time to pack up your class materials and proceed to your next class. Class is scheduled for 11:10am-12:25pm.
6. If you want to read the newspaper or take a nap, do it elsewhere – this is not the time or place!
7. In case you need to leave class early for a doctor's or advising appointment, etc., please sit close to the back so your departure will not unduly disrupt your classmates.

Academic Resources:

Student Success Center – 1817 Melrose Avenue (946-HELP [4357]) and Greve Hall, room 324 <http://studentsuccess.tennessee.edu/studentsuccesscenter/>

- Any questions, comprehensive study help, life and study skills, referrals to all resources.

Student Disability Services (SDS) – 1000 Dunford Hall, (974-6087) <http://sds.utk.edu/>

- If you need course adaptations or accommodations because of a documented disability, please contact SDS.

Counseling Center – 1800 Volunteer Blvd. (974-2196) <http://counselingcenter.utk.edu>

- Personal counseling, and psychological outreach and consultation services.

Black Cultural Center / Minority Student Affairs – 1800 Melrose Avenue (974-6861) <http://web.utk.edu/~omsa/>

- Tutoring options for various 100 level courses in math, biology, chemistry, and foreign languages. Contact **now** to meet deadline.

Hodges Library – 1015 Volunteer Blvd (974-4357) <http://www.lib.utk.edu>

- Consult with Reference Librarian by chat, phone, email or in person.
- Commons – (974-4624) for comprehensive help.

OIT Helpdesk – for assistance with Blackboard, email and campus-based technology issues, 974-9900, personal assistance can be obtained at The Commons North, Hodges Library, 2nd floor.

Sapling Technical Support – If you encounter any problems with Sapling Learning, please email the Student Support Team at support@saplinglearning.com