



**Minzu University of China**  
**BIOL101 Introduction to Biology (with lab)**  
**Summer 2020**

**Basic Information**

**Class hours:** Monday through Thursday, 2 hours each day  
**Discussion:** Friday, 1 hour (60 minutes)  
**Review Section:** Saturday, 1 hour (60 minutes)  
**Office Hour:** 2 hours (According to professors' teaching plan)  
**Field trip:** According to professors' teaching plan  
**Credit:** 4  
**Total contact hours:** 60 (50 minutes each)  
**Instructor:** Marlene N. Murray

**Textbook**

Raven, Johnson, Losos, and Singer. 2014 Biology, 10th Ed. McGraw-Hill Companies Inc. NY.

**Course Objectives**

This introductory biology course will examine the basic biological structure and function at several levels; including molecular, cellular, and organismal.

**Course Outline**

Week 1	Topics	Textbook Readings
Mon	We will examine basic properties of the chemicals that comprise life including carbohydrates, proteins, lipids, and nucleic acids.	1, 2, and 3
Tue	We will examine, using the membrane as a model, how these macromolecules interact to allow the formation of the cell	4 and 5
Wed-Thur	We will examine cellular functions such as energy conversion, transport of nutrients, and communication	6, 7, 8, and 9
<b>Week 2</b>		
Mon Tue	We will examine how traits are passed on from parent to offspring during reproduction	10, 11, 12, and 13
Wed	We will examine how the information on the DNA is used to create proteins	14, 15, and 16
Thur	We will examine how DNA sequences are manipulated using biotechnology approaches.	17 and 18
<b>Week 3</b>		
Mon-Wed	We will examine how cells are used to form tissues, tissues form organs, and organs form organisms.	36, 41, 42, 52 and 53
Thur	MIDTERM	



<b>Week 4</b>		
Mon-Thur	We will examine the diversity of life by comparing different groups of organisms such as bacteria, fungi, plants, and animals.	26, 28, 29, 30, 31, and 32, 33
<b>Week 5</b>		
Mon Tue	We will examine how evolutionary processes provide the diversity of life.	21-24
Wed	We will examine how organisms interact to form ecological patterns.	55-58
Thur	Group Presentations of Lab Reports	
Fri	FINAL EXAM	

### Lab Activities

<b>Week 1</b>	<b>Light Microscopy</b>	Learning to use the microscope to distinguish between animal and plant cells.
<b>Week 2</b>	<b>Diffusion</b>	Experiment with movement of fluid across membranes.
<b>Week 3</b>	<b>DNA Analysis</b>	Analyzing DNA using both in-vitro and in-silico methodology.
<b>Week 4</b>	<b>Mendelian Genetics</b>	Analyzing genetic traits and predicting offspring with simple statistics.

### Objectives

After completing this course, students should be able to:

- 1) Describe how chemical properties allow molecules to interact to form proteins, carbohydrates, lipids, and nucleic acids.
- 2) Discuss how macromolecules interact to form the membrane and provide the membrane with its properties.
- 3) Explain how living cells convert and store energy.
- 4) Relate the cellular processes involved with transport and communication.
- 5) Discuss the difference between mitosis and meiosis.
- 6) Describe how traits are related to the information on the DNA.
- 7) Relate the different levels of organization from the cell to the organism.
- 8) Describe the major branches of the Tree of Life.
- 9) Discuss what is meant by last common ancestor and how that concept impacts evolution.
- 10) Relate different interactions between organisms in an ecological system.
- 11) Engage in critical thinking.
- 12) Improve oral and writing communication skills

### Assessment

Assessments	Points per assignment	Percentage of total points
Weekly homework/in class assignments	5	20
Lab report	20	20
Lab presentation	20	10



Midterm Exam	100	25
Final Exam	100	25

### Grades

Grade	Percent	GPA
A+	97-100	4.0
A	94-96	3.8
A-	90-93	3.6
B+	87-89	3.47
B	84-86	3.33
B-	80-83	3.2
C+	77-79	3.07
C	74-76	2.93
C-	70-73	2.8
D+	67-69	2.67
D	64-66	2.53
D-	60-63	2.4
F	<60	0

### Exam Format

Exams may consist of multiple choice, fill-in-the-blanks, matching, and short answer questions. The questions will cover concepts and skills learned during lecture and lab.

### How to Prepare and Participate in Lecture

It is highly recommended that you read the chapters before lecture. Because of the concentrated nature of the course, you are responsible for keeping up with the readings each day. During lectures we will have quizzes over the material, these quizzes assume you have read the chapters for that day. Each week, homework assignments will be given from the questions at the end of the chapters. These assignments will be collected during the review sessions on Saturday. It is expected that you will attend the discussions on Friday and the Review on Saturday. These sessions will provide opportunity for the students to ask questions about the material covered that week. Of course, questions during lecture are always welcomed.

Homework should contain the question and text page number as well as the answer. All homework should be prepared by word processor.

### Class Policies

Cell Phones- during lecture your cell phones should be turned off. Laptop computers and tablets are permitted.

Academic Misconduct- Academic misconduct will not be tolerated. Each student should do their own work. To avoid plagiarism, always make sure that you correctly reference any material you use. Any images copied from the Internet should have the URL copied underneath the image. When using material from a source, we always paraphrase the material in our own words and then reference the source.

Referencing sources- When preparing the lab reports, one will need to find some reference material and use those references correctly. Within the text of the report, references are listed at the end of a sentence or paragraph that includes material from that reference. The reference will appear as follows: (first author last name, year of publication). If the reference is a web site, then the listing is: (title of web site, year referenced). At the end of the lab report, you will list the references in alphabetical order of the first author's last name as follows in this example:

Blair T, and Miller, HA. (2013), Effect of Vitamin K on Cell Growth Inhibition and Apoptosis on the U937 Cell Line, Journal of Cancer Therapy, 3, 167-172.



中央民族大学

MINZU UNIVERSITY OF CHINA

If you reference a web site, try to determine the author. If no author name available, use the following:  
Tree of Life web project at <http://tolweb.org/tree/> . Accessed on April 2, 2018.

Absences- Please try to attend lecture, if you have an issue that prevents attendance, please let me or the TA know. Attendance to the lab is mandatory.