



Shanghai Jiao Tong University

**BI003 Introduction to Biology (with Lab)**

<b>Instructor Information:</b>	Shichao Chen Home Institution: Tongji University Email: scchen@tongji.edu.cn Office Hours: Determined by Instructor		
<b>Term:</b>	May 25, 2020 - June 19, 2020	<b>Credits:</b>	4 units
<b>Class Hours:</b>	Monday through Friday, 120 minutes per teaching day		
<b>Discussion Sessions:</b>	2 hours each week, conducted by teaching assistant(s)		
<b>Total Contact Hours:</b>	66 contact hours (1 contact hour = 45 mins, 3000 mins in total)		
<b>Required Texts (with ISBN):</b>	Recommended: 1. Modern Biology, John H. Postlethwait & Janet L. Hopson, ISBN13: 9780030651786 2. What Is Life? 1st edition, Jay Phelan, ISBN: 1429246669		
<b>Prerequisite:</b>	N/A		



## Course Overview

In this course students will be introduced to the basic ideas, principles, theories, research methods, and important disciplines and cutting-edge knowledge of modern life sciences; introduce the latest research progress of modern life sciences, and the interaction and acquisition of modern life sciences and other disciplines; inspire and encourage students to think and understand life phenomena from different perspectives. Cooperate with other disciplines to promote scientific development.

## Course Goals

1. Students understand the basic facts, principles, theories and methods of basic biology;
2. Students learn key events in the history of biology;
3. Students provide examples of the interdependence of biological and technological developments;
4. Students discuss social and philosophical implications of scientific discoveries and;
5. Understand the potential of science and technology to address problems of the contemporary world.

## How students meet the objectives through this course

1. Students gain an understanding of the foundations of modern biology by studying organismal diversity, genetics, reproduction, and cell structure and function. Lectures will include references to the development of scientific concepts to help students understand the history and nature of science. The interactions among science, technology, and society are interwoven throughout the course, and assignments give students opportunities to personally consider the interactions. The course is designed to help prepare students to make intelligent, informed decisions on the biological and technological decisions that they will face in life;
2. Students will recall current and historical aspects of energetics, genetics, evolution, and ecology;
3. Students will describe biological processes related to energetics, genetics, Immunology, and cytology;
4. Students will analyze the current and future significance of energetics, genetics, Immunology, and cytology on society;
5. Students will apply skills that demonstrate their scientific literacy by communicating about the content and validity of articles related to science in the popular press;
6. Students will value the study of biology. " Students will demonstrate an understanding of the nature of science. This includes (1) the way that scientist develop and evaluate explanations of natural phenomena using criteria fundamental to scientific inquiry and (2) the understanding that science is a human endeavor;
7. Students will work productively and effectively in a group.



### Grading Policy

<b>Exam Paper (70%)</b>	Quiz 1	20%
	Quiz 2	20%
	Final exam	60%
<b>Daily Performance (30%)</b>	class performance	40%
	Attendance	60%

### Grading Scale

Number grade	Letter grade	GPA
90-100	A	4.0
85-89	A-	3.7
80-84	B+	3.3
75-79	B	3.0
70-74	B-	2.7
67-69	C+	2.3
65-66	C	2.0
62-64	C-	1.7
60-61	D	1.0
≤59	F (Failure)	0



**Absences:** If you are too ill to take the final exam or complete a quiz or assignment, please contact the teaching assistant within 24 hours of the class period in which the exam was taken. You must be seen by and receive written documentation from a professional health care practitioner on the day (or period) of the exam in order for a make up to be given. Persons arriving late for the final exam will not be offered an exam after the first person has finished. Other serious personal problems will be considered, in advance, but on an individual basis. In all instances, documentation supporting the excused absence will be required. Lack of transportation, loss of electricity, travel plans, etc. will not be considered as valid excuses and you will receive a “0”. Make ups for missed exams and quizzes may be in a different format than the scheduled exam or quiz.

**Note:** Check the date and time of the final examination now and make sure that this time does not conflict with your future plans. No early final exams will be given.

Students must contact their course teacher within two days of the original missed class date. There is no opportunity for a makeup assignment if a student contacts his/her course teacher on the third day or later.

**LATE ASSIGNMENTS POLICY:** Late assignments turned in within 24 hours after the due date is worth a maximum of half credit. Any assignment turned in past the 24 hour deadline is worth no credit. If possible, students should deliver late assignments directly to their course teacher in person. This policy will be enforced so that all students in the course are treated equally.

### **Class Policies**

**Attendance:** Missing three or more courses will result in the student being automatically assigned a failing grade for the course. If you have any questions about any of the above policies please contact the Teaching Assistant.



**Class Schedule**

Date	Lecture	Lab
Day 1	Introduction: What is life science?	<b>Lab 1: Microscopy</b> 1) Identification of parts and their function 2) Basic operation 3) Estimating the size of a specimen 4) Staining 5) Dissecting microscopy
Day 2	Basic chemistry	
Day 3	Cell structure and function	
Day 4	Membrane biology	
Day 5	Three Hours Lab Section: Microscopy	
Day 6	Quiz 1	<b>Lab 2: Cell Diversity, Animal Tissues</b> 1) Epithelial tissue or surface tissue 2) Connective tissue or structural tissue 3) Muscle tissue or contractile tissue 4) Nervous tissue or conducting tissue
Day 7	Metabolism and enzymes	
Day 8	Photosynthesis	
Day 9	Respiration and fermentation	
Day 10	Three Hours Lab Section: Animal Tissues and Cell Diversity	
Day 11	Basic concept of genetics	<b>Lab 3: Genetics</b> 1) Distribution of alleles in this lab section 2) Inheritance 3) Observe our own characteristics 4) Predict appearance of our children
Day 12	Principles and techniques of genetic engineering	
Day 13	Genetic engineering application	
Day 14	Quiz 2	
Day 15	Three Hours Lab Section: Genetics	
Day 16	History of life	<b>Lab 4: Campus plant diversity Observation</b> 1) Take a close look at the park 2) Learn about botany 3) Meet the plant friends around us.
Day 17	Theory of Evolution	
Day 18	Population Genetics and Speciation	
Day 19	The Great Tree of Life	
Day 20	Campus observation: Campus plant diversity observation	