



## Shanghai Jiao Tong University

### BI003 Introduction to Biology (with Lab)

#### Course Overview

<b>Instructor:</b>	Dr. Shichao Chen	<b>Email:</b>	scchen@tongji.edu.cn
<b>Home Institution:</b>	Tongji University	<b>Office:</b>	TBD
<b>Office Hours:</b>	TBD		
<b>Term:</b>	27 May – 27 June, 2019	<b>Credits:</b>	4 units
<b>Classroom:</b>	TBD	<b>Teaching Assistant(s):</b>	TBD
<b>Lecture Hours:</b>	Monday through Thursday, 120 mins per teaching day		
<b>Lab Session:</b>	3 hours each week		
<b>Total Contact Hours:</b>	69 contact hours (1 contact hour = 45 mins, 3000 mins in total)		
<b>Required Texts (w/ 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		

- ✧ Introduce 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.



## Learning Objectives

- ◇ Students understand the basic facts, principles, theories and methods of basic biology.
- ◇ Students learn key events in the history of biology.
- ◇ Students provide examples of the inter dependence of biological and technological developments.
- ◇ Students discuss social and philosophical implications of scientific discoveries and
- ◇ understand the potential of science and technology to address problems of the contemporary world.

## How students meet the objectives through this course:

- ◇ 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.
- ◇ Students will recall current and historical aspects of energetics, genetics, evolution, and ecology.
- ◇ Students will describe biological processes related to energetics, genetics, Immunology, and cytology.
- ◇ Students will analyze the current and future significance of energetics, genetics, Immunology, and cytology on society.
- ◇ 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.
- ◇ 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.
- ◇ Students will work productively and effectively in a group.



## Grading Policy

<b>Exam paper (70%)</b>	multiple choice	30%
	fills-up topic	30%
	short answer component	40%
<b>Daily performance (30%)</b>	class performance	40%
	Attendance + Quiz 1 and 2	80%

## Grading Scale

Your letter grade will be assigned according the following scale:

Number grade	Letter grade	GPA
90-100	A	4
85-89	A-	3.7
80-84	B+	3.3
75-79	B	3
70-74	B-	2.7
67-69	C+	2.3
65-66	C	2
62-64	C-	1.7
60-61	D	1
≤59	F(Failure)	0

## Course Policies

**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.



## Course Schedule

Date	Lecture	Lab
<b>WEEK 1</b>		
27-May	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
28-May	Basic chemistry	
29-May	Cell structure and function	
30-May	Membrane biology	
31-May	Three Hours Lab Section: Microscopy	
<b>WEEK 2</b>		
3-Jun	Quiz 1	<b>Campus Observation: Campus plant diversity observation</b> Take a close look at the campus, learn about botany, and meet the plant friends around us.
4-Jun	Metabolism and enzymes	
5-Jun	Photosynthesis	
6-Jun	Respiration and fermentation	
7-Jun	Campus observation: Campus plant diversity observation	
<b>WEEK 3</b>		
10-Jun	Basic concept of genetics	<b>Lab 3: Genetics</b> 1) Distribution of alleles in this lab section 2) Inheritance 3) Monohybrid cross in corn 4) Dihybrid cross in corn 5) Population genetics
11-Jun	Principles and techniques of genetic engineering	
12-Jun	Genetic engineering application	
13-Jun	Quiz 2	
14-Jun	Three Hours Lab Section: Genetics	
<b>WEEK 4</b>		
17-Jun	History of life	<b>Lab4: Animal Tissues and Organs</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
18-Jun	Theory of Evolution	
19-Jun	Population Genetics and Speciation	
20-Jun	The Great Tree of Life	
21-Jun	Three Hours Lab Section: Animal Tissues and Organs	
<b>WEEK 5</b>		



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24-Jun	Plants Diversity	N/A
25-Jun	From Animals to Human	
26-Jun	Ecosystems	
27-Jun	Final Exam	