



Hankuk University of Foreign Studies

2024 Summer Session

BIOL 101 Introduction to Biology with Lab

Course Outline

Course Code: BIOL 101

Instructor: Young Charles Jang, Ph.D.

Home Institution: Georgia Institute of Technology (Georgia Tech)/Emory University

Office Hours: TBA & By Appointment

Email: young.jang@gatech.edu

Credit: 4

Class Hours:

This course will have 52 class hours, including 32 lecture hours, professor 8 office hours, 8-hour TA discussion sessions, 4-hour review sessions.

Course Description:

This is an **active-learning** class that introduces students to basic principles of modern biology, including biomacromolecules, bioenergetics, cell structure, genetics, homeostasis, and integrative biology. This course will foster the development of critical scientific skills, including hypothesis testing, experimental design, data analysis and interpretation, and scientific communication. Class time will consist of a variety of **team-based activities** designed to discuss, clarify, and apply new ideas by answering questions, drawing diagrams, analyzing primary literature, and explaining medical phenomena in the context of biological principles.

Required Textbooks:

BIOL 101 will be taught without a textbook. All course readings and videos are available on the course website (TBD) or will be handed out before lectures. In certain cases, we will use an online



textbook found at **OpenStax Biology** (open source e-book):
<http://openstaxcollege.org/textbooks/biology>

Virtual Lab:

Lab. Section for this course will be composed online/virtual concepts of biological experiments.

1) Cellular morphology and function, 2) Enzymatic reactions, and 3) Genetics.
In the 4th week, students will each create a short presentation of the research paper.

Students will share responsibility for presenting research data from the paper.

Final Exam:

This course has a cumulative final exam. The final exam is a take-home exam with questions testing your ability to think. You will not be tested on memorization of concepts. The final Exam is due on the last day of the lecture.

Grading & Evaluation:

Your final grade will depend on the following combination of grades:

- 1) Class participation and discussion 20%
- 2) Lab 30%
- 3) Final Exam (Take home) 50%

Grading System (1 ~ 100)

A+ : 96 - 100	A : 91 - 95
B+ : 86 - 90	B : 81 - 85
C+ : 76 - 80	C : 71 - 75
D+ : 66 - 70	D : 60 - 65
F : 0 - 59	
Pa : Pass	Fa : Fail

Course Schedule:

The course is organized into four modules, each of which deals with a major area of modern biology.



Major theme	Teaching Goals
<u>Week 1.</u>	• Course intro
Introduction	• Study of Biology and Life Sciences
(Module 1)	• Scientific method
Lab 1	Scientific Methods
<u>Week 2.</u>	
Molecules, Cells,	• Overview of biomolecules and cells
and Metabolism	• Introduction to bioenergetics: respiration and metabolism
(Module 2)	• Chemiosmosis in respiration and photosynthesis
	• Diversity of metabolic pathways
Lab 2	Cellular morphology
<u>Week 3.</u>	
Genetics	• Mendelian genetics & DNA and genomics
(Module 3)	• Recombinant DNA technology & bioethics
	• Gene regulation in prokaryotes and eukaryotes
	• Genetic diseases as model biological systems
Lab 3	Computational biology
<u>Week 4.</u>	
Integrative Biology	• Stem cell biology & medicine
(Module 4)	• Biological engineering & Biotechnology
Lab 4	Group presentations