



Hankuk University of Foreign Studies

2020 Summer Session

BIOL 101 Introduction to Biology with Lab

Course Outline

Term: July 06-August 07,2020

Class Hours: 10:00-11:50 (Monday through Friday)

Course Code: BIOL 101

Instructor: Young Charles Jang, Ph.D.

Home Institution: Georgia Institute of Technology (Georgia Tech)

Office Hours: By Appointment

Email: young.jang@gatech.edu

Credit: 4

Class Hours: This course will have 72 class hours, including 40 lecture hours, 10 lecturer office hours, 10-hour TA discussion sessions, 2-hour review sessions, 10 laboratory hours.

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 phenomenon in the context of biological principles.

Required Textbook

BIOL 101 is taught on the flipped classroom model, meaning that you will need to complete your assigned readings before each lecture. **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. We will also use an online textbook found at **OpenStax Biology** (open source e-book): <http://openstaxcollege.org/textbooks/biology>



Homework:

Homework assignments will be made available each week in Learning Catalytics and are always due on Sundays at midnight. Homeworks close on Sunday at midnight, with few exceptions, and will not be reopened for credit, but you can review closed sessions for study purposes. In the week of Midterm and Final Exam, all homeworks for that module will be reopened for practice, not for credit. We will drop the lowest Homework from your participation grade.

Group Projects:

Groups of 4-5 students each will create a short video to explain a fundamental concept related to the course. Each student will be assigned to a group and a topic, and each group will complete only one group project during the semester. Group assignments, details, and deadlines will be provided in class. Video grades have a group and an individual component. The Group Component will be based on instructors’ grades and peer evaluations. The same group project grade will be assigned to all members of a group; each group member is fully responsible for all submitted project work. The group video projects consist of 3 deliverables: a story board, a transcript, and a video posted to *Youtube* or Kakao group chat. The Individual Component includes peer-evaluation of all members of your team and peer-review of a subset of videos from other groups.

Exams (Mid-term and Final):

This course has a midterm exam and the cumulative final exam. The midterm exams will be held as “closed-book,” and will be made up of multiple-choice questions based on topics, materials, and discussions presented in class, assigned readings, TICAs, and Homeworks.

Honor Code:

All students are expected to abide by the Academic Honor Code. Plagiarism is the unattributed use of the words or ideas of others; plagiarism on any assignment, including laboratory reports are strictly prohibited. If you have any questions regarding your assignments and plagiarism, we encourage you to come consult with me before you submit the assignment.

Grading & Evaluation

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

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|------------------|-----|
| 1) Mid-term exam | 35% |
| 2) Final exam - | 35% |
| 3) Group project | 15% |
| 4) Homework | 15% |

A: 94 – 100	A-: 90 – 93.99	
B+: 88 – 89.99	B: 85 – 87.99	B-: 82 – 84.99
C+: 78 – 81.99	C: 75 – 77.99	B-: 72 – 74.99
D: 67 – 71.99	D-: 64 – 66.99	F: Below 64



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

Modules

Major theme	Teaching Goals
1. Introduction (Module 1)	<ul style="list-style-type: none"> • Course intro • Study of life • Scientific method

Lab 1: Scientific Methods

2. Molecules, Cells, and Metabolism (Module 2)	<ul style="list-style-type: none"> • Overview of biomolecules and cells • Introduction to bioenergetics: respiration and metabolism • Chemiosmosis in respiration and photosynthesis • Diversity of metabolic pathways
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Lab 2: Enzymatic Reactions

MIDTERM EXAM

3. Genetics (Module 3)	<ul style="list-style-type: none"> • Mendelian genetics • DNA and genomics • Gene regulation in prokaryotes and eukaryotes
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Lab 3: Microscopy

4. Integrative Biology (Module 4)	<ul style="list-style-type: none"> • Recombinant DNA technology & bioethics • Genetic diseases as model biological systems • Stem cell biology & medicine • Biology & Biotechnology
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Lab 4: Genetics

5. Evolution (Module 5)	<ul style="list-style-type: none"> • Earth history • History of life on Earth • Mechanism of evolution
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6. Group project presentation

FINAL EXAM