國立臺灣科技大學
National Taiwan University of Science and Technology
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National Taiwan University of Science and Technology

2020 Summer Program

BIOL 101 Introduction to Biology with Lab

Course Outline

Term: June 01-July 03,2020

Course Code: BIOL 101

Instructor: Todd A. Wells, Ph.D.

Home Institution: University of Denver

Office Hours: TBA & By Appointment

Email: todd.wells@du.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-hour extra classes

Course Description: This course is an introduction to basic principles common to all facets of biology. Topics include a brief history of biology, the diversity of life, cell structure and reproduction, and metabolism.

Course Learning Outcomes:

1. Identify the internal and external structures of both the prokaryotic and eukaryotic cells.
2. Recognize energy pathways such as photosynthesis, respiration, and overall cellular metabolism.
3. Knowledge of basics in genetics, molecular/cellular biology.
4. Understanding of principles of evolution and phylogeny.
5. Ability to connect biological knowledge to society issues
6. Appreciation of biological diversity.

Required Textbooks: We will also use an online textbook found at OpenStax Biology (open source e-book): https://openstax.org/details/books/biology-2e

Homework: Each lecture has a group of homework problems assigned to it. The problems are chosen to

prepare you for the hour exams. If you understand and can do all the homework, you probably will do well on the exams. To get the most benefit from homework, you should **do the assignments on schedule**. It is important to keep up with these assignments!

Class Activities: Class activities will allow you to apply your knowledge. These activities may be more challenging than the assigned homework. You will work in small groups to complete these activities. The class activities will be graded.

Exams: There are two hour exams during the course, plus a cumulative final exam. Each exam counts 200 points. Exam problems will be similar to the problems assigned as homework and the problems worked in class.

Grading & Evaluation:

Your final grade is based on a maximum of 1000 points, distributed as follows:

Hour exams (200 points each)	**400 points**
Final exam	**200 points**
Homework	**100 points**
Class Activities	**100 points**
Lab	**200 points**

Grade Ranges

A ≥ 94%	B- 80-83%	D+ 67-69%
A- 90-93%	C+ 77-79%	D 64-66%
B+ 87-89%	C 74-76%	D- 60-63%
B 84-86%	C- 70-73%	F ≤ 59

Course Schedule:

Week 1

1. Introduction, Biological Macromolecules, Chemistry of Life
2. Cellular Structure
3. Bioenergetics: respiration and metabolism

   Lab1 – Cellular Morphology

Week 2

4. Bioenergetics: photosynthesis
5. The Cell Cycle
6. Meiosis and Sexual Reproduction

   Lab2 – Enzyme Catalyzed Reactions and Respiration

Week 3

7. Mendelian genetics and heredity
8. DNA Structure and Function
9. Gene expression and control

   Lab3 – Genetics

Week 4

10. Recombinant DNA technology
11. Bioethics
12. Genetic Diseases

    Lab4 – Molecular Biological Methods

Week 5

13. Biotechnology and Genomics
14. Evolution and the Diversity of Life
15. The History of Life