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**National Taiwan University of Science and Technology**

**2020 Summer Program**

**BIOL101 Introduction to Biology with Lab**

**Course Outline**

**Term: June 22-July 17, 2020**

**Class Hours: 10:30-13:00 (Monday through Friday)**

**Course Code: BIOL 101**

**Instructor: Prof. Wael Rabeh**

**Home Institution: New York University Abu Dhabi**

**Office Hours: Monday and Wed: hours TBD & by appointment**

**Email: wael.rabeh@nyu.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 is a general biology course that will cover the basic principles of biology that apply to all living systems. The course is a survey of topics including cell and tissue structure; the different building blocks of a cell; the macromolecules of a biological system; overview of metabolic pathways and their role in the function of cells; and basic principles of human genetics.

**Course Objectives**

Some of the main goals and objectives of this general biology course include:

- for the students to have an understanding of the principles of biology and research in the



major fields of biology.

- develop a good understanding of biological systems and how they function.
- understand the different cellular compartments and how they function.
- the major differences between cell structure of different species.
- draw a basic understanding of the major metabolic pathways that shape the metabolic landscape of the cell.
- the ability to critically analyze and present information and data in written and verbal form.

### Course Materials:

The following online textbook will be used as the main source for the course. It can be downloaded at OpenStax Concepts of Biology (open source e-book):

<https://openstax.org/details/books/concepts-biology>

Additional course materials will include extra readings, lecture PowerPoint slides and in-class practice problems.

### Grading & Evaluation:

Lab (20%) – Quizzes (20%) – Midterm exam (30%) – Final exam (30%)

90-100% (A), 80-89% (B), 70-79% (C), 60-69% (D), ≤ 60% (F)

### Course Schedule:

	Date	Topics	Assignments
Week 1	Jun 22, 2020	Chemistry of Life and Biological Molecules.	
	Jun 23, 2020	Cell Structure and Function.	
	Jun 24, 2020	Amino acids.	
	Jun 25, 2020	Protein structure and function.	Quiz 1
	Jun 26, 2020	Lab 1: amino acid properties.	
Week 2	Jun 29, 2020	DNA Structure & DNA Replication.	
	Jun 30, 2020	RNA Structure & RNA Transcription.	Quiz 2



	July 1, 2020	Protein translation.	
	July 2, 2020	Gene regulation in prokaryotes and eukaryotes.	Quiz 3
	July 3, 2020	Lab 2: 3D Structural fold of proteins by Pymol.	
Week 3	July 6, 2020	Midterm Exam	
	July 7, 2020	Recombinant DNA technology.	
	July 8, 2020	The molecules of life: Carbohydrates.	
	July 9, 2020	The molecules of life: lipids.	Quiz 4
	July 10, 2020	Lab 3: Molecular biology and DNA manipulation techniques.	
Week 4	July 13, 2020	The Cell Membrane.	
	July 14, 2020	Passive & Active Transport.	Quiz 5
	July 15, 2020	Subcellular Compartments and Protein Topogenesis.	
	July 16, 2020	Lab 4: Microscopy for cell analysis.	
	July 17, 2020	Final Exam	