



**Beijing Jiaotong University**

**2020 Summer Session**

**BIOL 101 Introduction to Biology with Lab**

**Course Outline**

**Term: July 13-August 7, 2020**

**Class Hours: 12:00-13:50 (Monday through Friday)**

**Course Code: BIOL 101**

**Instructor: Ravichandra Bachu, Ph.D.**

**Home Institution: Carnegie Mellon University**

**Office Hours: By Appointment**

**Email: rbachu.cmuq@gmail.com**

**Credit: 4**

**Class Hours:** This course will have 60 class hours, including 32 lecture hours, 8 lecturer office hours, 8-hour TA discussion sessions, 4-hour review sessions, 8 laboratory hours.

**Course Description:**

Introduction to biology will provide students with the basics of structure and function of major biomolecules and the role of these major biomolecules in cellular organization, gene replication and translation.

**Course Objectives:**

By the end of this course students will be able to:

- Understand the building blocks of macromolecules



- Describe the three parts of the central dogma i.e. DNA replication, transcription and translation
- Explain how gene regulation plays an important role
- Understand cell cycle.

**Required Textbooks:**

All course readings and lecture slides are available on the course website (TBD) or will be handed out before lectures. For additional reading we will also use an online textbook found at OpenStax biology (open source e-book): <https://openstax.org/details/books/concepts-biology>

**Grading & Evaluation:**

Lab 15%

Homework 15%

Midterm exams 30%

Final exam 40%

Homework will be given every week and is due on the first day of the following week.

Grade	Score
A	94 - 100
A-	90 - 93
B	83 - 89
B-	80 - 82
C	73 - 79
C-	70 - 72
D	63 - 69
D-	60 - 62
F	Fail



Course Schedule:

Week #	Lecture #	Topic
1	1	Introduction and Biological molecules
	2	Amino acids and protein structure
	3	Carbohydrates and Nucleic acids
	4	Lipids and Membranes
		Lab-1 building macromolecules
2	5	Enzyme kinetics
	6	DNA as hereditary material
	7	DNA replication
	8	Mid tem exam-1
		Lab 2- molecular biology methods, PCR and primer design
3	9	Central dogma, Genetic code
	10	Transcription
	11	Translation
	12	Gene regulation
		Lab-3 Restriction endonucleases, Gel electrophoresis
4	13	Cell cycle
	14	Mitosis
	15	Meiosis
	16	Final exam
		Lab-4 protein expression