



**University of International Business and Economics  
International Summer School**

**BIO 110 Introduction to Biology (with Lab)**

**Term: October 26<sup>th</sup> – November 20<sup>th</sup>, 2020**

**Instructor: Dr. and Professor Xin Mingxiu**

**Home Institution: Beijing Normal University**

**Email: ximingxiu@bnu.edu.cn**

**Class Hours: Monday through Friday, 120 minutes each day (2,400 minutes in total)**

**Office Hours: TBD**

**Discussion session: 2 hours each week**

**Total Contact Hours: 64 contact hours (45 minutes each, 48 hours in total)**

**Credit: 4 units**

**Course Description:**

This is an introductory course in biological systems focusing on major topics in biochemistry, cell biology, physiology, molecular biology, ecology and biodiversity of life sciences. It is a course that is intended for non-majors and majors and covers a variety of topics that impact our daily lives and the grand challenges of this decade and your generation. The goal is to provide an understanding of fundamental principles of life sciences and to develop analytical thinking skills in the context of modern biology.

**Learning Goals and Outcomes:**

1. Demonstrate mastery of the foundational knowledge and core concepts of biochemistry, cell biology, physiology, molecular biology, ecology and biodiversity of life sciences.
2. Apply foundational knowledge and core concepts in these areas to solve novel problems, analyze realistic scenarios, and make predictions.
3. Apply reasoning and methods to the analysis and solution of biological problems.

**Textbook:**

1. Biology (Tenth Edition) by Kenneth A. Mason
2. The Science of Biology (Ninth Edition) by David Sadava

**Grading policy:**

1. Homework and discussion 50 points
2. Lab Reports 50 points
3. Two scheduled Mid Term exams each worth 50 points for a total of 100 points
4. One Final Exam on last day of class worth 100 points

Total Course Points 300 points

**Grading Scale:**

<b>A</b>	90-100	<b>C+</b>	72-74
<b>A-</b>	85-89	<b>C</b>	68-71
<b>B+</b>	82-84	<b>C-</b>	64-67
<b>B</b>	78-81	<b>D</b>	60-63
<b>B-</b>	75-77	<b>F</b>	below 60

**Quizzes and Exams:**

These will be a combination of multiple choice, True or false, gap filling and short answer questions.

**Schedule:**

**Unit 1 (week 1) Introduction, Biochemistry and cell Structure**

Introduction 1

Introduction 2

Elements in Living system 1

Elements in Living system 2

Elements in Living system 3

Cell structure of Prokaryotes

Cell structure of Eukaryotes

Cell cycle and cell Division of amitosis

Cell cycle and cell Division of mitosis

Cell cycle and cell Division of meiosis

**Unit 2 (week 2) Physiology and Molecular Biology**

Metabolism, enzyme and cell respiration 1

Metabolism, enzyme and cell respiration 2

Photosynthesis 1

Photosynthesis 2

DNA is genetic materials

The structure of DNA

DNA replication

Gene and how they work

Genetic Engineering

Mid term Exam 1

**Unit 3 (week 3) Ecology, Evolution and Biodiversity**

Ecology

Classification of Organism

Biological Evolution



Biodiversity and Protection  
Biodiversity of Plant and Animal  
Biodiversity of Virus  
Biodiversity of Immunity  
Mid term Exam 2

**Unit 4 (week 4) Experiments**

Experiment 1 Light Microscope and Observation of cell  
Experiment 2 Cell, Tissue, Organs, System and Organism  
Experiment 3 Cellular Respiration and ethanol fermentation in yeast  
Experiment 4 Cell reproduction: Amitosis, Mitosis and Meiosis  
Experiment 5 DNA Extraction and Manipulation LAB Handout

**Final Exam**