한국외국어대학교
HANKUK UNIVERSITY OF FOREIGN STUDIES
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81, Oedae-ro, Mohyeon-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, 17035, Korea

Hankuk University of Foreign Studies

2019 Summer Session

BIOL 101 Introduction to Biology with Lab

Course Outline

Term: July 01-August 02,2019

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

Course Code: BIOL 101

Instructor: Dr. Aleksandar Jeremic

Home Institution: The George Washington University

Office Hours: Tuesdays and Thursdays (14:00-15:00) or By Appointment

Email: jerema@gwu.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

Introduction to Biology will provide students with an overview of the current trends and body of knowledge in Biology, including basics of the scientific method and of the analysis of scientific data.

Course Objectives

The main course goal is to allow students to reach a comprehensive understanding of the issues and method in Biology, in order to decide whether to pursue studies in the field. In the process of reaching this goal, our objectives are that each student will:

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- Become familiar with current scientific theories and research in the major topic areas of Biology.
- Discover the personal relevance of course material in their everyday and professional lives, in order to make fully informed decisions.
- Develop the skills necessary to evaluate and think critically about information concerning biological phenomena obtained from research, the general public, and the media.
- Be well prepared for advanced courses in Biology.

Required Textbooks

-*Concepts of Biology*, by Fowler, Roush and Wise.

Download for free at: https://openstax.org/details/books/concepts-biology.
Publisher: OpenStax
Publish Date: May 18, 2016
Print: ISBN-10: 1938168119 ISBN-13: 978-1-938168-11-6
Digital: ISBN-10: 1-947172-03-4 ISBN-13: 978-1-947172-03-6

Several readings will be required throughout the course, either to prepare for class or to complete an assignment. All materials will be posted online to provide a free and easy access to everyone.

Grading & Evaluation

Lab (20%) – Midterm exam (40%) – Final exam (40%)

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

Intermediary assignments will be posted throughout the course, to help students assess their needs and to ensure that all the important topics are well understood. Assignments and labs are also an opportunity for students to ask questions concerning unclear notions, as the main objective are not to grade but to help everyone reach an optimal level of comprehension. Midterm and final exams will target all topics previously covered in class. Lecture notes, labs and assignments are important to succeed in the midterm and final exams, yet some questions will be specifically intended to stimulate students' critical thinking.

Attendance is extremely important for success in this class. It is expected that each student will commit fully to the assignments and readings required. Exams will cover the required texts as well as material presented or discussed in class.

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Course Schedule

Week 1:

Lecture 1: Course Introduction –Biological Molecules and Chemistry of Life
Lecture 2: Principles of cellular organization in Animals and Plants
Lecture 3: The Cellular Energetics: Cellular Respiration
Lecture 4: The Cellular Energetics: Photosynthesis
LAB 1: Principles of Microscopy; Microscopic analysis of a cell

Week 2:
Lecture 5: Structure/Function of DNA and DNA replication
Lecture 6: Gene expression and control: Transcription
Lecture 7: Gene expression and control: Translation
Lecture 8: The Cell cycle
LAB 2: Overview of molecular biology methods: PCR, RT-QPCR, primers design

Week 3:
Lecture 9: Practice problems / Review session 1
Lecture 10: **MIDTERM EXAM**
Lecture 11: The Cellular Basis of Inheritance: Sexual reproduction and Meiosis
Lecture 12: Mandel's experiments and Laws of inheritance
LAB 3: Overview of biochemical methods and tools in biological research

Week 4:
Lecture 13: Theory of Evolution and Diversity of Life
Lecture 14: Development and Organogenesis
Lecture 15: Systems biology: The Nervous system and diseases
Lecture 16: Systems biology: The Endocrine system and diseases
LAB 4: Biotechnology in Action: overview of gene cloning strategies, vector design and synthesis, transfection approaches.

Week 5:
Lecture 17: Systems biology: The Immune system and diseases
Lecture 18: Practice problems
Lecture 19: General Review
Lecture 20: **FINAL EXAM**
LAB 5: Data Analysis