STANDARD COURSE OUTLINE

Annex 3

Hashemite University		Cell Biology 1801042231
Faculty of Science	**Course Syllabus**	**Pre-requisite: Biology 101**
Department of Biology and Biotechnology		

Course Information	
Lecture's Time	9:30-10:30 AM Sunday and Tuesday
Lecture Room	229 Chemistry Building
Instructor	Professor Rana Dajani
Office Location	219 Biology Building
Office Hours	By appointment
Text Book The World of the Cell, 10th Ed., Becker et al Benjamin Cummings 2017.	
References(s)	Molecular Biology of the Cell, 9th Ed., Lodish Macmillan

Grading Policy:

Theory		**Other**	
1st Exam	15 %	Community awareness project	5 %
2nd Exam	20 %	Service learning	10 %

Other	30%	Recycled Science art	10 %
Final Exam	35 %	News discussion.	5 %

Course Objectives

This course covers the study of the basic principles of Cell biology starting from cellular membranes structure and function, endomembrane system, cell division and cell death, signaling transduction, cytoskeleton and extracellulat matrix.

Objectives:

1. Understand the function and structure relationship of cellular membranes and intracellular components
2. Analyse signaling pathways using the terms necessary and sufficient
3. Understand the scientific tools used by researchers to answer questions in Cell Biology
4. Understand the scientific tools used by researchers to answer questions in Cell Biology
5. Explain how scientific models are formed and challenged and critiqued
6. Discuss art and science and science communication
7. Understand the concepts of stem cell research and its applications and limitations
8. Discuss the ethics of research and practical applications in our lives

Teaching and Learning Methods

1. Problem based learning through lectures and group work (Power point and movie presentations)

2. Assignments: Each topic is assigned an article to be discussed.

3. Students watch and discuss "Lorenzo's oil" a movie about Adrenoleukodystrophy that describes many aspects of cell biology as an application of basic sciences to real life.

4. Science News: students participate in online discussion of latest scientific news

5. Website for course (moodle: www.hlms.hu.edu.jo)

6. Community project

7.Service learning: science in the news, correcting science reporting in various media

Course Contents

Week	Topic
1	**Introduction to Cell biology**
2, 3	**Cell Membrane**
4, 5	**Signalling transduction**
6	**First Exam**
7,8	**Intracellular compartments**
9	**Cytoskeleton**
10	**Second Exam**
11	**Cell Junctions**
12	**The Nucleus**
13, 14	**The Cell cycle**
15	**Revision**
16	**Final Examination**

Course vision

In order to understand how something works it is sometimes easiest to break it into its smallest parts, figure out how they work and build up from there. It is known that the 'smallest part' of an organism is the cell. Research has shown that from organisms having only one cell (bacteria and yeast) to those with many multicellular organs (plants, insects and animals) complex sets of interactions between cellular components control how cells live and die. We will cover the basic parts of the cell in the context of these interactions by comparing normal and 'diseased' systems as case studies. The textbook and accompanying computer animations will be used as reference material and scientific journal articles on related topics will be used to bring the concepts into a broader context. The goal is to understand the concepts committed to textbooks, to be able to critically analyze current dogma and to suggest what the next questions might be and what approaches can be used to investigate them.

Community project. This project will aid in the development of an individual who is a responsible active participant in society. It will help develop confidence and leadership qualities in the students. These aspects are very important components of the student's university education. We will achieve these goals by teaching students to identify problems in their environment, analyse the problem. Create a plan to attempt to solve the problem. Carry out the proposed plan. Evaluate and criticize plan after applying it.

Service learning: science in the news, correcting science reporting in various media outlets. Service-learning combines service objectives with learning objectives with the intent that the activity change both the recipient and the provider of the service. This is accomplished by combining service tasks with structured opportunities that link the task to self-reflection, self-discovery, and

the acquisition and comprehension of values, skills, and knowledge content. Eyler and Giles (1999) summarize their observations by saying that in the service-learning model, "experience enhances understanding; understanding leads to more effective action".