Course Catalogue

Department of Chemistry

College of Science

Salahaddin University-Erbil

Cell Biology

Third Stage - First Semester

Lecturer's Name: Trefa Salih Mohamad
Mukhlis Hamad Ali
Awat Yaseen Haan
Azheen Subhi Abdulrahman

Academic Year 2022/2023

1. General information

Course Title: Cell Biology
Department: Chemistry
Course Level: Undergraduate
Stage: Third
Class hour/week: Theory - 2hrs Practical - 2hrs
Duration: 14 weeks
Course type: Compulsory
Mode of Delivery: Face to Face
Language: English and Kurdish (Sometimes Arabic)
Course Coordinator: Trefa Salih Mohamad
Email: trefa.mohamad@su.edu.krd
Mukhlis Hamad Ali
Email: mukhlis.aali@su.edu.krd
Awat Yaseen Haan
Email: awat.hasan@su.edu.krd
Azheen Subhi Abdulrahman
Email: azheen.abdulrahman@su.edu.krd
Office hours: To be return to the schedule on the office door
Course Policy:

- Attendance: students are strongly encouraged to attend in class on a regular basis, as participation is important to understanding of the material. This is students' opportunity to ask questions.
- The use of mobile phone during the class is prohibited.
- Only the students who are officially enrolled can attend the class.
- Daily participation and conducting assignments are required
- Electronic devices: All cell phones are to be turned off at the beginning of class and put away during the entire class and don't allow to use internet

The Course Keywords: Cell, Mitochondria, cell dimension, cell counting and cell death.

2. Course Description

The world of biology was evolved by recognizing the cell first time, because it's basic structural and functional unit of living organism.

This course is designed to provide information about introduction to the cell biology, characteristics, function and parts of the cell as well as different techniques for studying the cells. The material will be presented at a level suitable for advanced undergraduates by lecturing, discussion, video, power points and seminar. Cell biology has a good relationship with other science of biology such as molecular biology, genetics, histology, in cell biology lessons we will learn about general different terms of other fields of biology beside of cell biology and usually we will provide information about different area of biology which related to cell biology.

3. Course Teaching and Learning Activities (Pedagogical Approaches)

Various teaching style (Pedagogical methods) will be used during the course in order to reach the learning objectives of course to students: -

a. Presentation - use data show and power point
b. Lecturing method - oral presentation intended to present information to teach students about the topics
c. Class discussion - exchange information between and among teachers and students with the purpose of developing students' ability to expanding students' understanding.
d. Flipped classroom - sharing students a video or ppt 3 or 4 days before session
e. Lab base model blending method - is a form of learning through practical experimentation.

4. Course Learning Outcomes

After completion of this course, students will be able to: -

1) To gain experience and understanding of microscope (light and electron microscope).
2) Differentiate between prokaryotic and eukaryotic cells
3) Distinguish various sub-cellular structures and organelles inside eukaryotic cells.
4) Calculate cell dimensions and cell counting by different methods.
5) Explain both aerobic and anaerobic cellular respiration.
6) Learn about different process, which happen with the cell like cell death includes apoptosis and necrosis, causes of death and damage of the cell.

5. Course Content

Theory Topics

An introduction to Cell Biology/ Domains of life	Week 1
Cell Diversity	Week2
Plant and Animal cells/ membrane structure	Week3
Membrane Transport of Small Molecules	Week4
Intracellular Compartments	Week5
Mitochondria	Week6
Examination 1	Weeks7
Other organelles	Week8
The cytoskeleton structure	Week9
Cell signalling	Week10
The cell cycle	Week11
Cancer Biology	Week12
Stem Cell Biology	Week13
Examination 2	Weeks 14

Practical Topics

Date	Weeks No.	Topics	Hrs.
	1	Introduction	2
	2	Microscopes	2
	3	Cell shapes	2
	4	Cell dimensions 1	2
	5	Cell dimensions 2	2
	6	Cell counting	2
	7	Effect of various temperature on plasma membranes	2
	8	Maceration and squashing	2
	9	Exam	1
	10	Cellular respiration	2
	11	Blood smear	2
	12	Cellular adaptation to injury	2
	13	Cell death	2
	14	Exam	1
	15	Final-term Examination	

6. Course Assessment Tools

Student assessment will be based on scores obtained in the written exams. There will be at least two written exams. The scores will be announced as one annual quest grade on 50 (15 theoretical+ 35 practical).

Assessment Tools	Descriptions	Weight
Quiz	Test during lecture	7
Activity	Extracurricular activities provide a channel for reinforcing the lessons learned in the classroom, offering students the opportunity to apply academic skills in a real-world context.	3

Seminar	Students discuss a topic and they will be encouraged to work as a group and will be participated to deliver the materials in the class.	6
Report	Students will choose a topic related to cell biology and make a academic report	7
Mid-term examination	Students will have a written exam related to the previous lectures	12
Total 35		

9. Textbooks and References

- ✓ Color atlas of cytology, histology and microscopic anatomy. 2003. Wolfgang Kuehnel. 4th edition.
- ✓ Cell imaging techniques, methods and protocols. 2006 Humana Press Inc. Edited by Douglas J. Taatjes and Brooke T.Mossman.
- ✓ Essential cell biology.2009. Bruce Alberts , Dennis Bray, Karen Hopkin , Alexander Johnson , Julian Lewis , Martin Raff , Keith Roberts and Peter Walter. 3rd edition.
- ✓ Cell and Molecular Biology, Concepts and Experiments. 2007. Gerald Karp. 5th edition.

Peer reviewed by:
Mr. Mohammed Ali Salim
Head of Biology Department