



The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

1	Course title	Advanced Cell Biology
2	Course number	0354781
3	Credit hours (theory, practical)	3 theory
	Contact hours (theory, practical)	3 h lectures /week
4	Prerequisites/corequisites	Genera Biology 2(0304102)
5	Program title	Biological Sciences
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Science
9	Department	Biological Sciences
10	Level of course	700
11	Year of study and semester (s)	Spring 2018/2019
12	Final Qualification	MSc
13	Other department (s) involved in teaching the course	
14	Language of Instruction	English
15	Date of production/revision	11.4.2019

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.

Office numbers :Biology Building 311

office hours:

phone numbers: 0776831802

email: zshraideh@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.

18. Course Description:

As stated in the approved study plan.

Course Description

0354781 Advanced CELL BIOLOGY

Cellular structure and function. New methodology in studying cells. Molecular structure and function of biological membranes, internal cellular organization and the synthesis of macromolecules. Extracellular matrix, cell-cell interaction and chemical signaling between

cells, hormones and receptors. Cytoskeleton, intracellular transport, cellular motility and contractility. Cellular and molecular aspects of cancer, cell aging and death.

19. Course aims and outcomes:

A- Aims:

Course objectives (Advanced Cell Biology 0354781)

Knowledge and Understanding:

Students will have an understanding of the molecular bases biology of cells, especially eukaryotic cells .

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to ...

1. Cognitive / Intellectual Analysis:

Students will be able to critically assess primary and applied research relating to The biology of cells.

2. Subject-specific and practical skills:

Students will be able to discuss topics relating to cell biology with others in a meaningful way.

3. General transferable skills:

Students will understand the principles underlying the application of several Laboratory techniques in cell biology research.

20. Topic Outline and Schedule:

<u>Lecture Number</u>	<u>Topic</u>	<u>pages</u>
1:	Chapter 1: A Preview of the Cell Cell Theory Emergence of Modern Cell Biology	1-9
2-3:	Appendix : Principles & Techniques of Microscopy The light Microscopes, Transmission Electron Microscopy Scanning Electron Microscopy	A1-A26
4:	Chapter 4: Cells and Organelles: Overview. Eukaryotes vs prokaryotes.	75-82
5-6:	Chapter 7: Membranes :Their Structure , Function & Chemistry Models of Membrane Structure Membrane Lipids : The Fluid Part of the Model Membrane Proteins: The Mosaic Part of the Model	156-189
7-9:	Chapter 8: Transport Across Membranes: Overcoming the Permeability Barrier Cells& Transport Processes Simple Diffusion: Unassisted Movement Down the Gradient Facilitated Diffusion: Protein-Mediated Movement Down the Gradient Active Transport: Protein-Mediated Movement Up the Gradient Examples of Active Transport	194-214
10:	First Hour Exam At week # 6	
11-16:	Chapter 12: The Endomembrane System. The Endoplasmic Reticulum. The Golgi Complex. Roles of ER& Golgi Complex in Protein Glycosylation& Trafficking. Exocytosis and Endocytosis: Transporting Material Across the Plasma Membrane. Coated vesicles in Cellular Transport Processes. Lysosomes and Cellular Digestion. The Plant Vacuole: A Multifunctional Organelle. Peroxisomes.	324-360
17-18:	Chapter 14: Signal Transduction Mechanisms II: Messengers and Receptors. Chemical Signals and Cellular Receptors. G Protein-Linked Receptors. Protein Kinase-Associated Receptors. Growth Factors as Messengers	392-412
19-21:	Chapter 15 : Cytoskeletal System The Major Structural Elements of the Cytoskeleton Techniques for Studying the Cytoskeleton. Microtubules. Microfilaments	422-447

Intermediate filaments.

22-24:	Chapter 16: Cellular Movement: Motility and Contractility Motile Systems. Microtubule-Based Motility Actin-Based Movement: The Myosins. Filament- Based Movement In Muscle. Actin-Based Motility in Nonmuscle Cells	448-477
25:	Midterm Exam At week # 12	
26-28:	Chapter 17: Beyond the Cell: Cell Adhesion, Cell Junctions, and Extracellular Structures. The Extracellular Matrix of Animal Cells. Cell-Cell Recognition Cell Junctions. The Plant Cell Surface	477-501
29-30:	Chapter 18: The Structural Basis of Cellular Information: DNA, Chromosomes, and the Nucleus DNA Packaging. The Nucleus	527-544

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

1. 2 / 1h lectures/ week
 - Classroom with whiteboard and projection facilities
 - College library
 - Internet resources

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

1. 3/ 1h exams
2. Reports and discussions

23. Course Policies:

A- Attendance policies:

Attendance of lectures is obligatory

B- Absences from exams and handing in assignments on time:

Not accepted

C- Health and safety procedures:

Strict and are followed up

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Very strong.

E- Grading policy:

50 %(2 one h exams) , 50% final exam

F- Available university services that support achievement in the course:

Accepted, but not adequate.

24. Required equipment:

Data shows and laptops for lectures

25. References:

A- Required book (s), assigned reading and audio-visuals:

1. Cell & Molecular Biology : Concepts & Experiments 5th Ed(2008).
By:Gerald Karp, John Wily & Sons,.

B- Recommended books, materials, and media:

- 1.Lodish *et al* (2005)Molecular Cell Biology. 5th ed. Scientific American Books.
- 2.Alberts *et al* (1991). Molecular Biology of the Cell. 2nd ed. Garland Publishing, New York.

26. Additional information:

Name of Course Coordinator: Prof Dr. Ziad Shraideh ---Signature: Ziad Shraideh ----- Date: 10.9.2018-

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File