

# 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

Course Syllabus

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:				
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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>B- Intended Learning Outcomes (ILOs):</b> Upon successful completion of this course students will be able to				
1 Cognetive / Intellectual Analysis				
1. Cognetive / 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.				
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20. Topic Outline and Schedule:			
Lecture Number Topic	pages		
1: Chapter 1: A Preview of the Cell	1-9		
Cell Theory			
Emergence of Modern Cell Biology			
2-3: Appendix : Principles & Techniques of Microscopy	A1-A26		
The light Microscopes, Transmission Electron Microscopy			
Scanning Electron Microscopy			
4: Chapter 4: Cells and Organelles: Overview.	75-82		
Eukaryotes vs prokayotes.			
5-6: Chapter 7: Membranes :Their Structure , Function & Chemistry	156-189		
Models of Membrane Structure			
Membrane Lipids: The Fluid Part of the Model			
Membrane Proteins: The Mosaic Part of the Model			
7-9: Chapter 8: Transport Across Membranes: Overcoming the Permeability	•		
Cells& Transport Processes	214		
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			
10: First Hour Exam At week # 6	004.000		
11-16: Chapter 12: The Endomembrane System.	324-360		
The Endoplasmic Reticulum. The Golgi Complex. Roles of ER& Go	ıgı		
Complex in Protein Glycosylation& Trafficking.			
Exocytosis and Endocytosis: Transporting Material Across the Plasi	Па		
Membrane. Coated vesicles in Cellular Transport Processes.	ional		
Lysosomes and Cellular Digestion. The Plant Vacuole: A Multifuncti	onai		
Organelle. Peroxisomes.  17-18: Chapter 14: Signal Transduction Mechanisms II: Messengers and	392-412		
Receptors.			
Chemical Signals and Cellular Receptors. G Protein-Linked Receptors			
Protein Kinase-Associated Receptors. Growth Factors as Messeng			
19-21: Chapter 15: Cytoskeletal System 422			
The Major Structural Elements of the Cytoskeleton			
Techniques for Studying the Cytoskeleton. Microtubules. Microfilan	nents		

Intermediate filaments.

22-24: Chapter 16: Cellular Movement: Motility and Contractility

448-477

Motile Systems. Microtubule-Based Motility

Actin-Based Movement: The Myosins. Filament- Based Movement

In Muscle. Actin-Based Motility in Nonmuscle Cells

25: Midterm Exam At week # 12

26-28: Chapter 17:Beyond the Cell: Cell Adhesion,

477-501

Cell Junctions, and Extacellular Structures.

The Extracellular Matrix of Animal Cells. Cell-Cell Recognition

Cell Junctions. The Plant Cell Surface

29-30: Chapter 18: The Structural Basis of Cellular Information: DNA,

527-544

Chromosomes, and the Nucleus DNA Packaging. The Nucleus

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 resourses

# 22. Evaluation Methods and Course Requirements:

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

- 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:
- 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.

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26. Additional information:		
Name of Course Coordinator: Pro	f Dr. Ziad ShraidehSign	ature: Ziad Shraideh Date: 10.9.2018-
Head of curriculum committee/De	epartment:	Signature:
Head of Department:	Signature:	
Head of curriculum committee/Fa	culty:	Signature:
Dean:	Signature:	

Copy to: Head of Department Assistant Dean for Quality Assurance Course File