



Course Specification

— (Bachelor)

Course Title: Cell Biology

Course Code: 2052102-3

Program: Bachelor in Biotechnology

Department: Biotechnology Department

College: College of Science

Institution: Taif University

Version: V4

Last Revision Date: 3/1445 – 9/2023



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A. General information about the course:

1. Course Identification

1. Credit hours:					
3 (2 Lecture, 1 Lab)					
2. Course type					
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department	<input type="checkbox"/> Track	<input type="checkbox"/> Others
B.	<input checked="" type="checkbox"/> Required		<input type="checkbox"/> Elective		
3. Level/year at which this course is offered: (4th level/2nd year)					
4. Course general Description:					
This course will focus on eukaryotic cell biology including membrane structure, transport, trafficking, structure and function of cell organelles, production of energy and photosynthesis, the breakdown of macromolecules and generation of energy, the cytoskeleton and cell movement, cell adhesion and the integration of cells into tissues, the basics of protein synthesis, protein transport, cell cycle regulation, signal transduction, and apoptosis.					
5. Pre-requirements for this course (if any):					
Introduction to Biotechnology, 2051204-3					
6. Co-requirements for this course (if any):					
None					
7. Course Main Objective(s):					
The objective of this course is to study structure and function of cell organelles, cellular macromolecules, energy transaction, transport and trafficking, cell communication and adhesion, cell cycle, signal transduction, cellular movement, and apoptosis					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> ● Traditional classroom ● E-learning 		
4	Distance learning		



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	15
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	State the basics of structure, function, and adhesion of living cells and their components	K1	Lecture	Written Exams
1.2	Describe the stages of cell cycle and the essential terminology used in cell biology	K1	Lecture	Written Exams
1.3	Recognize energy conversion by living cells	K2	Lecture	Written Exams
2.0	Skills			
2.1	Practice various techniques to study cell and cell components	S3	Project	Practical Exam
2.2	Evaluate the benefits and risks of biotechnology	S3	Discussion	Report
3.0	Values, autonomy, and responsibility			
3.1	Not applicable	-	-	-





C. Course Content

No	List of Topics	Contact Hours
1.	Historical brief and introduction to Cell Biology, Protein structure	2
2.	Protein function, Membrane Structure and function	4
3.	Separation of cell components and techniques of Protein structure ,	2
4.	Membrane transport, and mechanical molecules (Targeting and trafficking)	4
5.	How cells harvest and generate energy	3
6.	photosynthesis ,Glycolysis, Citric Acid Cycle, and Electron Transport Chain and structure of cell organelles.	6
7.	Stages of cell cycle and program cell death (apoptosis and necrosis), Cytoskeleton cell movement	6
8.	Cell movement, cell Adhesion and control of cell number	2
9.	Intracellular signaling and cell communication (Signal Transduction)	2
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam	Week 7	20%
2.	Periodical exam	Week 10	10%
3.	Report	Week 11	10%
4.	Practical Exam	Week 15	20%
5.	Final Exam	Week 16	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Pollard, Thomas D. Cell biology. 2nd Ed., Philadelphia : Saunders/Elsevier, 2008
Supportive References	Molecular Biology of the Cell, 4th edition, Bruce Alberts, Alexander Johnson, Julian Lewis, Martin Raff, Keith Roberts, and Peter Walter, New York: Garland Science ; 2002. ISBN-10: 0-8153-3218-1 ISBN-10: 0-8153-4072-9
Electronic Materials	Cell Biology websites that contain various electronic materials, photos, pathways for cell biology , https://www.ncbi.nlm.nih.gov
Other Learning Materials	Online videos of cellular process, divisions, movement, communications

2. Required Facilities and equipment



Items	Resources
<p>facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)</p>	<ol style="list-style-type: none"> 1. One classroom 2 hours per week for each section 2. Laboratory 3 hours per week for each practical section
<p>Technology equipment (projector, smart board, software)</p>	<ol style="list-style-type: none"> 1. Projector for each classroom 2. Projector in each laboratory
<p>Other equipment (depending on the nature of the specialty)</p>	<ol style="list-style-type: none"> 1. Microscopes (15 per each lab section) 2. Permeant slide sets for cellular organelles

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Peer Review, Students	Direct (Independent Reviewer), Indirect (survey)
Effectiveness of Students assessment	Faculty members	Direct (Random Correction)
Quality of learning resources	Students	Indirect (survey)
The extent to which CLOs have been achieved	Faculty members	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	DEPARTMENT COUNCIL
REFERENCE NO.	6
DATE	5/11/2023

