QF04/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Department of Basic Sciences

Study Plan No.	**2021/2022**		**University Specialization**		**Bachelor of Pharmacy**	
Course No.	**0420818**		**Course Name**		**Biology for pharmacy students**	
Credit Hours	**3**		**Prerequisite *Co-requisite**		**-**	
Course Type	☐ Mandatory University Requirement	☐ University Elective Requirement	☑ **Faculty Mandatory Requirement**	☐ Support course family requirements	☐ Mandatory Requirement	☐ Elective Requirement
Teaching Style	☐ Full Online Learning		☐ Blended Learning		☑ **Traditional Learning**	
Teaching Model	☐ 2 Synchronous: 1 Asynchronous		☐ 2 Face to Face: 1 Asynchronous		☑ **2 Traditional**	

Faculty Member and Study Divisions Information *(to be filled in each semester by the subject instructor)*

Name	Academic rank	Office No.	Phone No.	E-mail	
Office Hours (Days/Time)					
Division number	**Time**	**Place**	**Number of Students**	**Teaching Style**	**Approved Model**
				Traditional Learning	**2 Traditional**

Brief Description

This course provides knowledge about the unity and diversity of life covering the unique properties of living organisms, chemistry of the cell, cellular organization, plasma membrane structure and function, cell division, molecular DNA principles, and animal tissues.

Learning Resources

Course Book Information (Title, author, date of issue, publisher ... etc)	Sylvia Mader, Biology, 14th Edition, McGraw-Hill, Jan 1, 2022
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	1. Sylvia S. Mader, Michael Windelspecht, Human Biology, 15th Edition, McGraw-Hill, Jan 27, 2017 2. Sylvia S. Mader, Connect 2 semester access card for biology, MCgRaw-Hill, Mar 24, 2015. 3. Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Jane B. Reece, Campbell Biology, 11th Edition, San Francisco, Calif ; London : Pearson Benjamin Cummings, Oct 29, 2016 4. Jane B. Reece, Martha R. Taylor, Eric J. Simon, Jean L. Dickey, Campbell Biology: Concepts & Connections, 8th Edition, San Francisco, Calif ; London : Pearson Benjamin Cummings, Jan 6,2014.
Supporting Websites	-

The Physical Environment for Teaching	☑ **Classroom**	☐ Labs	☑ **Virtual Educational Platform**	☐ Others
Necessary Equipment and Software	Moodle			
Supporting People with Special Needs	-			
For Technical Support	E-learning &Open Educational Resources Center E-mail: elearning@zuj.edu.jo Phone: +962 6 4291511 ext. 425/362.			

Course learning outcomes *(K= Knowledge, S= Skills, C= Competencies)*

No.	Course Learning Outcomes	The Associated Program Learning Output Code
Knowledge **The student should be able to:**		
K1	Identify the basic unit of life, differences between prokaryotes and eukaryotes, the differences between organelles and structures in animal and plant cells, and the animal organization and homeostasis	**MK1**
K2	Outline the structure, characteristics and functions of carbohydrates, lipids, proteins, and nucleic acids.	**MK1**
K3	Recognize the role of the cell membrane in the processes of osmosis, diffusion, and various transport mechanisms.	**MK1**
K4	Describe the key molecular basis of the cell cycle and the process of cellular reproduction, including mitosis.	**MK1**
K5	Outline the process of meiosis and chromosomal basis of heredity.	**MK1**
K6	Describe the structure and function of nucleic acids (DNA and RNA), the molecular biology of the gene, and the mechanisms regulating gene activity.	**MK1**
Skills **The student should be able to:**		
S1	Interpret cell division as it relates to reproduction, heredity, gene expression, and mutation impacts	**MS2**
Competencies **The student should be able to:**		

Mechanisms for Direct Evaluation of Learning Outcomes

Type of Assessment / Learning Style	Fully Electronic Learning	Blended Learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm Exam	30%	30%	**30%**	0%
Participation / Practical Applications	0	0	**30%**	60%

Asynchronous Interactive Activities	30%	30%	**0**	0
Final Exam	40%	40%	**40%**	40%

Note: *Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.*

Schedule of Simultaneous / Face-to-Face Encounters and their Topics

Week	Subject	Learning Style*	Reference **
1	**Introduction** **The Characteristics of Life** • How to define life • How the biosphere is organized • How living things are classified • The process of science	**Lecture**	**Chapter 1 pages: 2-15**
2	**Basic Chemistry** Carbon: The backbone of Life • Chemical Elements • Compound and Molecules • Hydrogen Bonding	**Lecture**	**Chapter 2 pages: 19-27**
3	**The Chemistry of Organic Molecules** • Macromolecules are polymers, built from monomers • Carbohydrates serve as fuel and building material • Lipids are a diverse group of hydrophobic molecules • Proteins include a diversity of structures, resulting in a wide range of functions • Nucleic acids store, transmit, and help express hereditary information	**Lecture**	**Chapter 3 pages: 35-54**
4	**Cell Structure and Function** • Cellular Level of Organization • Prokaryotic cell • Eukaryotic cell	**Lecture**	**Chapter 4 pages: 55-78**
5	**Cell Structure and Function**	**Lecture**	**Chapter 4 pages: 59-81**
6	**Cell Structure and Function**	**Lecture**	**Chapter 4 pages: 59-81**
7	**Membrane Structure and Function** • Membrane Models • Plasma membrane structure and function • Permeability of the plasma membrane • Modification of cell surface	**Lecture**	**Chapter 5 pages: 79-95**

8	**Membrane Structure and Function**	**Lecture**	**Chapter 5 pages: 85-99**
9	**Animal Organization and Homeostasis** • Types of tissues • Organs and organ systems	**Lecture**	**Chapter 31 pages: 567-578**
10	**The Cell Cycle and Cellular Reproduction** • The Cell Cycle • Mitosis and Cytokinesis • The Cell Cycle and Cancer • Prokaryotic Cell Division	**Lecture**	**Chapter 9 pages: 141-159**
11	**The Cell Cycle and Cellular Reproduction**	**Lecture**	**Chapter 9 pages: 151-165**
12	**Meiosis and Sexual Reproduction** • Halving the Chromosome Number • Genetic Variation • The Phases of Meiosis • Meiosis Compared to Mitosis • The Human Life Cycle • Changes in chromosome Number	**Lecture**	**Chapter 10 pages: 160-174**
13	**Molecular Biology of The Gene** • The Structure of DNA • Replication of DNA • The Genetic Code of Life • First step: Transcription • Second Step: Translation	**Lecture**	**Chapter 12 pages: 200-217**
14	**Molecular Biology of The Gene**	**Lecture**	**Chapter 12 pages: 211-229**
15	**Regulation of Gene Activity** • Regulation Through Gene Mutations	**Lecture**	**Chapter 13 pages: 232-234**
16	**Final Exam**		

** Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.*
*** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.*

Schedule of Asynchronous Interactive Activities *(in the case of e-learning and blended learning)*

Week	Task / Activity	Reference	Expected Results
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