

Course Plan for Bachelor Program - Study Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-4.0E
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Study Plan No.	2021/2022		University Specialization		Bachelor of Pharmacy	
Course No.	0201280		Course Name		Anatomy and Physiology (2)	
Credit Hours	3		Prerequisite *Co-requisite		Anatomy and Physiology (1)	
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)

Faculty of Education (to be signed in each semester by the subject instructor)					
Name	Academic rank	Office No.	Phone No.	E-mail	
Office Hours (Days/Time)	Sunday, Tuesday, Thursday ()		Monday, Wednesday ()		
Division number	Time	Place	Number of Students	Teaching Style	Approved Model
				Traditional Learning	2 Traditional

Brief Description

This course covers the structure and function of the circulatory, respiratory, digestive, and renal system as well as the reproductive system. It also focuses on the interaction between these body systems and how these body systems are regulated.

Learning Resources

Course Book Information (Title, author, date of issue, publisher ... etc)	Human Physiology, Stuart Ira Fox, 2022, 16 th edition, Mc Graw Hill.			
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	1. Essentials of Human Anatomy and Physiology, Elaine Marieb, 2015, 11 th edition, Pearson Education, Inc. 2. Principles of Anatomy and Physiology, Gerard J. Tortora and Bryan H. Derrickson, 2012, 13 th edition, Wiley and Sons, Inc.			
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	E-Learning & Open Educational Resources Center.			

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Support	Email: learning@zuj.edu.jo ; Phone: +962 6 429 1511 ext. 425/362.
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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 structure and the main components of the circulatory, respiratory, digestive, renal, and reproductive systems.	MK1
K2	Explain the functions of each body system covered in this course.	MK1
Skills		
The student should be able to:		
S1	Discuss the interaction between and the regulation of the body systems covered in this course.	MS2
Competencies		
The student should be able to:		
C1	-	-

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 1: Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, and 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.

Note 2: According to the Regulations of granting Master's degree at Al-Zaytoonah University of Jordan, 40% of final evaluation goes for the final exam, and 60% for the semester work (examinations, reports, research or any scientific activity assigned to the student).

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

Week	Subject	Learning Style*	Reference **
1	Functions and components of the circulatory system; Composition of the blood; Plasma; Formed elements of blood; Erythrocytes; Leukocytes; Platelets; Hematopoiesis; Regulation of Erythropoiesis; Blood clotting; Platelets and blood vessel walls; Clotting factors: formation of fibrin; Dissolution of clots; Anticoagulants.	Lecture	Chapter 13 pages 404-416

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2	Structure of the heart: Pulmonary & systemic circulation; Atrioventricular & semilunar valves; Heart sounds; Cardiac cycle;	Lecture	Chapter 13 pages 417-422
3	Pressure changes during cardiac cycle; Electrical activity of the heart & the ECG; Electrical activity of the heart; Pacemaker potential; Myocardial action potential;	Lecture	Chapter 13 pages 422-426
4	Conduction tissues of the heart; Conduction of the Impulse; Excitation-contraction coupling in heart muscle; the Electrocardiogram; Blood vessels; Arteries; Capillaries; Veins.	Lecture	Chapter 13 pages 426-435
5	Cardiac Output, Blood flow, & Blood Pressure: Cardiac output; Regulation of cardiac rate; Regulation of stroke volume; Frank-Starling Law of the heart; Intrinsic control of contraction; Extrinsic control of contractility;	Lecture	Chapter 14 pages 450-454
6	Venous return; Blood volume; Exchange of fluid between capillaries and tissues; Vascular Resistance to blood flow; Extrinsic regulation of blood flow; Regulation by sympathetic nerves; Parasympathetic control of blood flow;	Lecture	Chapter 14 pages 454-457, 462-466
7	Paracrine regulation of blood flow; Intrinsic regulation of blood flow; Myogenic control mechanisms; Metabolic control mechanisms; Blood Pressure; Baroreceptor reflex; Atrial stretch reflexes.	Lecture	Chapter 14 pages 466-467, 474-478
8	Respiratory System: Structure of respiratory system; Physical aspects of ventilation; Intrapulmonary & Intrapleural pressures; Boyle's law; Physical properties of the lungs; Compliance; Elasticity; Surface tension; Surfactant & the respiratory distress syndrome; Mechanics of breathing.	Lecture	Chapter 16 pages 532-541
9	Physiology of the kidneys: Structure & function of the Kidneys: Gross; Structure of the urinary system; Control of Micturition; Microscopic Structure of the Kidney (Nephron tubules); Glomerular Filtration: Glomerular Ultrafiltrate; Regulation of Glomerular Filtration rate. Midterm Exam	Lecture	Chapter 17 pages 581-589
10	Reabsorption of Salt & Water: Reabsorption in the proximal tubule; The Countercurrent multiplier system (Ascending & Descending limbs of Henle loop; Vasa recta); Collecting duct: Effect of ADH.; Renal Plasma Clearance: Transport process affecting renal clearance (Tubular secretion of drugs);	Lecture	Chapter 17 pages 589- 699, 603-605

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	Reabsorption of Glucose (Glycosuria). Renal control of Electrolyte & Acid-base balance: Role of Aldosterone in Na^+/K^+ balance (Sodium reabsorption, Potassium secretion).		
11	Control of Aldosterone Secretion; Juxtaglomerular Apparatus (Control of Renin secretion; Role of the macula densa); Natriuretic Peptides; Relationship between Na^+ , K^+ , and H^+ Renal Acid-Base Regulation (Reabsorption of bicarbonate and secretion of H^+ ; Urinary buffers).	Lecture	Chapter 17 pages 605-610
12	Digestive system: Introduction to the digestive system; Layers of the gastrointestinal tract (GIT); Regulation of the GIT. From mouth to stomach: Esophagus: Stomach; Pepsin and HCl secretion.	Lecture	Chapter 18 pages 619-627
13	Small intestine: Villi and Microvilli; Intestinal Enzymes; Intestinal contractions and Motility; Large intestine: Intestinal Microbiota; Fluid and Electrolyte Absorption in the Intestine; Defecation.	Lecture	Chapter 18 pages 628-636
14	Liver: Structure of the Liver; Functions of the Liver; parts and functions; Pancreas; Regulation of the digestive System: Regulation of the Gastric Function; Regulation of Intestinal Function, Regulation of Pancreatic Juice and Bile Secretion; Trophic effects of Gastrointestinal Hormones.	Lecture	Chapter 18 pages 636-650
15	Reproduction: Male reproductive system: Control of gonadotropin secretion (Testosterone derivatives; Testosterone secretion & age); Endocrine functions of the Testes; Male Accessory Sex Organs; Erection, Emission & ejaculation; Male fertility. Female Reproductive System: Ovarian cycle; Ovulation; Pituitary-ovarian axis; Menstrual cycle: Phases of the Menstrual Cycle: Cyclic changes in the Ovaries (Follicular phase; Ovulation; Luteal phase); Cyclic changes in the Endometrium; Menopause.	Lecture	Chapter 20 pages 713-735
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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