Course Plan for Bachelor Program - Study Plan Development and Updating Procedures/ Pharmacy Department	QF02/0408-4.0E

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)*

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	**3 Traditional**

Brief Description

This course covers the structure and function of the circulatory, respiratory, digestive, 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, 2019, 15th edition, Mc Graw Hill.			
Supportive Learning Resources (Books, databases, periodicals, software, applications, others)	1. Essentials of Human Anatomy and Physiology, Elaine Marieb, 2015, 11th edition, Pearson Education, Inc. 2. Principles of Anatomy and Physiology, Gerard J. Tortora and Bryan H. Derrickson, 2012, 13th 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.			

Support	Email: elearning@zuj.edu.jo; Phone: +962 6 429 1511 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 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	Develop his/her professional and personal performance by continuously following-up lectures and submitting tasks on time.	**MC3**

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%**	25%
Participation / Practical Applications	0%	0%	**20%**	25%
Asynchronous Interactive Activities	20%	20%	**0%**	0%
Final Exam	50%	50%	**50%**	50%

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 404-418**
2	**Structure of the heart:** Pulmonary & systemic circulation**;** Atrioventricular & semilunar valves**;** Heart sounds; Cardiac cycle;	**Lecture**	**Chapter 13 pages 418-423**
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 423-427**
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 427-436**
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 450-455**
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 455-457, 463-466**
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 466-468, 475-479**

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 532-544**
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 581-590**
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); Reabsorption of Glucose (Glycosuria). Renal control of Electrolyte & Acid-base balance: Role of Aldosterone in Na^+/K^+ balance (Sodium reabsorption, Potassium secretion).	**Lecture**	**Chapter 17 pages 590- 600, 603-606**
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 606-611**
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 619-628**
13	Small intestine: Villi and Microvilli;	**Lecture**	**Chapter 18**

	Intestinal Enzymes; Intestinal contractions and Motility; Large intestine: Intestinal Microbiota; Fluid and Electrolyte Absorption in the Intestine; Defecation.		**pages 629-636**
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 712-734**
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
-	-	-	-