Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	
	Deans Council Approval Decision Number	265/2024/24/3/2
	The Date of the Deans Council Approval Decision	2024/1/23
	Number of Pages	06

1.	Course Title	Introduction to physiology
2.	Course Number	0501110
3.	Credit Hours (Theory, Practical)	2 Theory
	Contact Hours (Theory, Practical)	28 Lectures
4.	Prerequisites/ Corequisites	--
5.	Program Title	Doctor of Medicine
6.	Program Code	05
7.	School/ Center	School of Medicine
8.	Department	Physiology and Biochemistry Department
9.	Course Level	Bachelor
10.	Year of Study and Semester (s)	First year/ Second Semester
11.	Program Degree	Bachelor
12.	Other Department(s) Involved in Teaching the Course	Physiology and Biochemistry Department
13.	Learning Language	English
14.	Learning Types	☒Face to face learning ☐Blended ☐Fully online
15.	Online Platforms(s)	☒Moodle ☒Microsoft Teams
16	Issuing Date	25/12/2023
17.	Revision Date	2025/5/11

18. Course Coordinator:

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19. Other Instructors:

Name: **Dr. Prof Faisal Mohammad**	Contact hours: **Mondays and Thursdays (11:00-12:00)**
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20. Course Description:

A- Course Description:

This course covers the definition of physiology and the systems involved. It includes the study of basic principles of physiology that involve subjects like, physiological units, biological membranes, transport, homeostasis, body fluids, membrane potentials, hemodynamics and laws of blood flow.

B- Aims:

The aim of this course is to provide students with a thorough understanding of physiological terminology such as homeostasis and membrane potential. This course covers feedback loops, membrane potential, action potential, fluid compartments and the forces that contribute to such distribution.

21. Program Intended Learning Outcomes: (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

PLO's	*National Qualifications Framework Descriptors*		
	Competency (C)	Skills (B)	Knowledge (A)
1.	☐	☐	☒
2.	☐	☒	☐
3.	☒	☐	☐
4.	☐	☐	☒
5.	☐	☒	☐
6	☒	☐	☐
7	☐	☐	☒
8	☒	☐	☐

* Choose only one descriptor for each learning outcome of the program, whether knowledge, skill, or competency.

Program Intended Learning Outcomes:

1. **Demonstrate basic knowledge of normal human structure and function at molecular, genetic, cellular, tissue, organ, system and whole-body levels in terms of growth, development, and health maintenance. Analyze the basic molecular and cellular mechanisms involved in the causation and treatment of human disease and their influence on clinical presentation and therapy.**

2. **Collect, interpret, document, and communicate accurately a comprehensive medical history, including the psychological and behavioral factors, and a thorough organ-system-specific physical examination inclusive of the mental status of the patient.**

3. **Integrate and communicate collected clinical information in the construction of appropriate diagnostic and therapeutic management strategies to identify life-threatening conditions ensuring prompt therapy, referral, and consultation with relevant disciplines and skillfully perform basic medical procedures for general practice on patients with common illness, acute and chronic, taking into account environmental, social, cultural and psychological factors.**

4. **Demonstrate in-depth knowledge of the epidemiology and biostatistics of common diseases, and analyze the impact of ethnicity, culture, socioeconomic factors and other social factors on health, disease and individual patient's health care.**

5. **Communicate effectively and professionally, both orally and in writing, with patients, their families, and with other healthcare providers utilizing information technology resources in**

his/her scholarly activities and professional development with the ability to teach others, and to understand and respect other healthcare professionals 'roles, and apply the principles of multidisciplinary teamwork dynamics and collaboration.

6. **Apply scientific methods including evidence –based approach to the medical practice including problem identification, data collection, hypothesis formulation, etc., and apply inductive reasoning to problem solving and ensure that clinical reasoning and decision making are guided by sound ethical principles.**

7. **Demonstrate knowledge of scientific research methods and ethical principles of clinical research and be able to write research proposals or research papers.**

8. **Demonstrate professionally the skills needed for Quality improvement, lifelong learning, and continuous medical education including the ability to identify and address personal strength and weakness, self-assess knowledge and performance, and develop a self-improvement plan.**

22. **Course Intended Learning Outcomes:** (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

Course ILOs #	The learning levels to be achieved						Competencies
	Remember	Understand	Apply	Analyse	Evaluate	Create	
1.	✓	✓					**Define homeostasis and the roles of negative and positive feedback in its control.**
2	✓	✓	✓				**Define membrane structures and functions**
3		✓	✓	✓	✓		**Identify the factors that influence membrane potential, development of action potential and basic neuronal circuits.**
4.	✓	✓	✓	✓			**Identify structure and**

							functions of the Autonomic Nervous System.
5.		✓	✓	✓	✓		Recognize fluid compartments, microcirculation physiology and the pathological changes that lead to edema formation.
6.	✓	✓	✓	✓			Define signal transduction mechanisms involved in control system.
7.		✓	✓	✓	✓		Use mathematical equations to explain physiological concepts
8.			✓	✓	✓	✓	Use critical thinking skills to forecast potential pathology.
9.			✓	✓	✓	✓	Apply basic physiological principles in more complex scenarios in the upcoming years of medical education.

23. The matrix linking the intended learning outcomes of the course -CLO's with the intended learning outcomes of the program -PLOs:

PLO's * / CLO's	1	2	3	4	5	6	7	8	9	Descriptors**		
										A	B	C
1	✓	✓	✓	✓	✓	✓	✓			✓		
2											✓	

3												✓
4										✓		
5											✓	
6								✓	✓			✓
7										✓		
8												✓

***Linking each course learning outcome (CLO) to only one program outcome (PLO) as specified in the course matrix.**

****Descriptors are determined according to the program learning outcome (PLO) that was chosen and according to what was specified in the program learning outcomes matrix in clause (21).**

24. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome (SLO)	Descriptors **	Learning Types (Face to Face/Blended/ Fully Online)	Platform Used	Synchronous / Asynchronous Lecturing	Evaluation Methods	Learning Resources
1	1.1 and 1.2	**Introduction to homeostasis and cell membrane physiology**	Differentiate between negative & positive feedback in maintaining homeostasis, use appropriate examples in each case (blood pressure regulation, hemostasis etc). Distinguish between the different components of the cell membrane, how such differences affect membrane permeability. Apply these basic principles in more complicated physiological concepts.	K K C	Face to face		Synchronous Lecturing	Written exam	28. A and B

2	2.1 and 2.2	**Transport-I (Passive), Transport-II (Active)**	Recognize the different types of transport systems (Passive vs. active); their features, significance, sites etc.	K	Face to face		Synchronous Lecturing	Written exam	28. A and B
3	3.1 and 3.2	**Physiological units, Body fluid compartments**	Distinguish between different types of units and terms used in physiology such as moles, osmoles, equivalent, osmosis & osmotic pressure. Identify body fluid compartments in term of fluid distribution & measurements. Know the constituents of EC & IC fluids in term of solutes, electrolytes, osmolarity etc. Predict the logic behind using different units in expressing concentrations.	K K S	Face to face		Synchronous Lecturing	Written exam	28. A and B
4	4.1 and 4.2	**Abnormalities of body fluid**	Distinguish between different types of body fluid abnormalities: hypo-osmotic dehydration & overhydration, hyper-osmotic dehydration & overhydration. Differentiate between different types of edema (intracellular vs. extracellular; pitting vs. nonpitting; generalized vs. localized etc)	K K	Face to face		Synchronous Lecturing	Written exam	28. A and B
5	5.1 and 5.2	**Excitable Membranes:** **Resting Membrane Potential, Electrochemical Equilibrium (Nernst Equation), (Goldman Hodgkin Katz equation)**	Predicts the basis of membrane excitability. Resting membrane potential: origin and determinants, distribution of different ions across cell membranes. Calculate electrochemical equilibrium for Na+, K+, Ca++, and Cl- using Nernst equation as a predictor for RMP plus other more complicated equations (e.g. Goldman-Hodgkin-Katz equation).	K S	Face to face		Synchronous Lecturing	Written exam	28. A and B
6	6.1 and 6.2	**Action potential:** **Phases, Conduction, Cardiac Action Potential.**	Describe the phases of action potential and the ion channels involved in each phase. Compare and contrast between different types of action Potential AP: Fast	K K	Face to face		Synchronous Lecturing	Written exam	28. A and B

			response AP vs slow response AP.						
7	7.1 and 7.2	**Synapse, Excitatory Post Synaptic and Inhibitory Post Synaptic Potential.**	Identify synaptic function, basis of action potential generation and conduction and differentiate between excitatory post synaptic potential and inhibitory post synaptic potential.	K	Face to face		Synchronous Lecturing	Written exam	28. A and B
8	**Midterm exam**								
9	9.1 and 9.2	**Microcirculation capillary structure; fluid filtration & reabsorption (Starling Forces)**	Calculate the net filtration pressure across capillary membranes. Distinguish between physiology of microcirculation and its related pathological changes and thus the formation of edema	S K	Face to face		Synchronous Lecturing	Written exam	28. A and B
10	10.1 and 10.2	**Basic neuronal circuits**	Differentiate between all factors affecting basic neuronal circuits: synapses: types, transmission of AP, neurotransmitters, facilitation, inhibition, summation, electrical events, processing, fatigue…etc.	K	Face to face		Synchronous Lecturing	Written exam	28. A and B
11	11.1 and 11.2	**Neurons,** **Neurotransmitters**	Differentiate the different types of neurons and the basis of their classifications Predict the different effects of neurotransmitters on their specific receptors	K K	Face to face		Synchronous Lecturing	Written exam	28. A and B
12	12.1 and 12.2	**ANS (Autonomic Nervous System)**	Compare and contrast the two divisions of the autonomic nervous system; sympathetic and parasympathetic.	K	Face to face		Synchronous Lecturing	Written exam	28. A and B
13	13.1 and 13.2	**Receptors and signal transduction**	Compare the basis of different types of signal transduction, mechanism of actions, and mediators.	K	Face to face		Synchronous Lecturing	Written exam	28. A and B
14	14.1 and 14.2	**Steroids signal transduction**	Describe mechanism of steroid hormones actions.	K	Face to face		Synchronous Lecturing	Written exam	28. A and B

** **K: Knowledge, S: Skills, C: Competency**

25. Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	CLOs	Descriptors**	Period (Week)	Platform
Midterm exam	40	Introduction to homeostasis and cell membrane physiology/Transport-I (Passive), Transport-II (Active)/ Excitable Membranes/ Action potential/Synapse, Excitatory Post Synaptic and Inhibitory Post Synaptic Potential. ANS (Autonomic Nervous System)/ Steroids, Units, Body fluid compartments, Body Water/ Abnormalities of body fluid,	1, 2, 3, 4, 5, 7, 8, 9	K S	8th week	Computer - based exam
Final exam	60	Microcirculation capillary structure; fluid filtration & reabsorption (Starling Forces)/Basic neuronal circuits/ Neurons,Neurotransmitters Receptors/Signal transduction,	3,4, 6, 7, 8, 9	K S C	15th -16th week	Computer - based exam
** K: Knowledge, S: Skills, C: Competency						

*** According to the instructions for granting a Bachelor's degree.**

****According to the principles of organizing semester work, tests, examinations, and grades for the bachelor's degree.**

Mid-term exam specifications table*

(Tables are completed on a separate form by course coordinators prior to conduction of each exam according to Accreditation and Quality Assurance Centre procedures and forms)

No. of questions/ cognitive level						No. of questions per CLO	Total exam mark	Total no. of questions	CLO/ Weight	CLO no.
Create %10	Evaluate %10	analyse %10	Apply %20	Understand %20	Remember %30					
0	5	5	8	8	14	5	40	40	12%	1, 2, 3, 4, 5, 7, 8, 9

Final exam specifications table

No. of questions/ cognitive level						No. of questions per CLO	Total exam mark	Total no. of questions	CLO Weight	CLO no.
Create %10	Evaluate %10	analyse %10	Apply %20	Understand %20	Remember %30					
	7	7	13	13	20	10	60	60	20%	3, 4, 6, 7, 8, 9

26. Course Requirements:

- ✓ **Class room Lectures**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- ✓ **Class room Lectures**
- ✓ **Discussion sessions**
- ✓ **Assigned chapters from the text book.**

27. Course Policies:

A- Attendance policies:

Attendance will be monitored by the course coordinator. Attendance policies will be announced at the beginning of the course.

B- Absences from exams and handing in assignments on time:

Will be managed according to the University of Jordan regulations. Refer to http://registration.ju.edu.jo/Documents/daleel.pdf

C- Health and safety procedures:

Faculty Members and students must at all times, conform to Health and Safety rules and procedures.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this course and also integrity in your behavior in and out of the classroom. Students violate this policy would be subjected to disciplinary action according to University of Jordan disciplinary policies

E- Grading policy:

Grade-point average, Rules are preset by the Faculty and Department Councils

F- **Available university services that support achievement in the course:**

Availability of comfortable lecture halls, data show, internet service and E learning website https://elearning.ju.edu.jo/ .

28. References:

A- Required book (s), assigned reading and audio-visuals:
Textbook of medical physiology by: Guyton and Hall Textbook of Medical Physiology, Jordan Edition By John E. Hall, PhD

B- Recommended books, materials, and media:

1. Physiology, by: Robert Berne & Matthew Levy, last edition.
2. Best and Taylors Physiological Basis of Medical Practice by: John B. West, last edition.
3. Human physiology, by: Lauralee Sherwood, last edition

Name of the Instructor or the Course Coordinator:	Signature:	Date:
Dr. Mohamed Khatatbeh	.....	2025/6/16
Name of the Head of Quality Assurance Committee/ Department	Signature:	Date:
Enas Al-Zayadneh	.....	2025/6/20
Name of the Head of Department	Signature:	Date:
Dr. Mohamed Khatatbeh	.....	2025/6/16
Name of the Head of Quality Assurance Committee/ School or Center	Signature:	Date:
Professor Ayman Wahbeh	.....	23/6/2025
Name of the Dean or the Director	Signature:	Date:
Professor Ayman Wahbeh	.....	23/6/2025