Course Specification
(Bachelor)

Course Title:	**Animal Physiology**
Course Code:	**BIO-1314**
Program:	**Biology**
Department:	**Biology**
College:	**Science**
Institution:	**IMAM MOHAMMAD IBN SAUD ISLAMIC UNIVERSITY**
Version:	02
Last Revision Date:	28-09-2024

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A. General information about the course:

1. Course Identification

1. Credit hours: (4)					
4 (3Lectures + 2 Laboratory + 0 Tutorials)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (6)					
4. Course General Description:					
This course provides the students with the fundamentals of the body systems functions. The course focuses on the physiological concept of body organization starting from the level of atoms and molecules reaching to the full organization of an organism. The various physiological processes of the body are presented along with the coordination between the different organ systems. The processes of homeostasis and the relevant control mechanisms are also introduced.					
5. Pre-requirements for this course (if any):					
6. Co-requisites for this course (if any):					
7. Course Main Objective(s):					
By the end of this course, the student must be able: - ● To recognize the parts of the body which are linked into a whole functioning unit. ● To know gastrointestinal physiology and regulation of metabolism and energy balance.					

- To define the homeostasis and feedback control.
- To outline cardiovascular physiology and respiratory system.
- To recall osmoregulation and excretion.
- To define the importance of endocrine glands and hormones which related to reproductive physiology.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	√	75%
2	E-learning	√	25%
3	Hybrid ● Traditional classroom ● E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	36
2.	**Laboratory/Studio**	20
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total		56

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**			

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.1	Identify the organization levels of the organism (from atoms to full organism), and the structure/ function relationships of the various cells and tissues.	1.1-1.2	Three hours weekly containing lectures.	Students will be evaluated on their ability to present complete solutions to problems.
1.2	Outline the functions and regulatory mechanisms of the major physiological systems including metabolism, circulatory, respiratory, digestive, urinary, reproductive, muscular, nervous, and endocrine systems.	1.1-1.2	Two hours weekly of laboratory devoted to experiments.	Students will be evaluated on their ability to present complete solutions to problems.
...	Explain how two or more organ systems are integrated to accomplish certain physiological functions.			
	Discuss the significance of homeostasis to maintain the equilibrium of the internal environment of the body.			
2.0	**Skills**			
2.1	Relate the principles of chemistry and physics with physiology concepts to understand the underlying	2.1	Self-study is an important method for students' learning.	Questions in Lectures, short Quizzes and Exams.

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	physiological mechanisms.			
2.2	Design a minor experiment and consequently conduct a laboratory experimental work through employing the acquired practical skills and the convenient tools.	2.1-2.2	Introduce some concepts by examples from real-life problems (i.e. laboratory).	Work portfolio.
2.3	Analyze and interpret the experimental results by using critical thinking skills, quantitative reasoning, and the analytical statistical methods.	2.1-2.2		
3.0	**Values, autonomy, and responsibility**			
3.1	Perform the assigned work independently, and cooperate effectively with a work team.	3.1	Motivate students to ask questions and to give response to the teacher's questions	Homeworks, quizzes, exams and participations.
3.2	Communicate scientific data clearly through writing formats and oral presentations.	3.3	Virtual labs and Demonstrations	Group work and oral presentations.
3.3	Adhere to the ethical rules related the activities in the field of physiology.	2.2-3.1-3.2	Writing laboratory reports.	Team work learning.

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to course, Basic Body Organization. Homeostasis and Feedback Control.	3

2.	Cellular Reactions and Metabolism. Cellular Metabolism.	3
3	Gastrointestinal Physiology.	6
4	Regulation of Metabolism and Energy Balance.	3
5	Cardiovascular Physiology.	6
6	Respiratory System. Control of Respiration.	6
7	Urinary System Kidneys and Fluid/Electrolyte Balance.	3
8	Muscle. Muscular Control.	3
9	Cells of the Nervous System, NS organization.	3
10	Endocrine Glands and Hormones.	6
11	Reproductive Physiology.	3
12		
Total		**45**

Topics to be covered (Laboratories)

Lab No.	Topics	Contact hours
Lab 01	Introduction, administrative issues, lab safety, hypothesis testing, data presentation.	2
Lab 02	Detection of Digestive enzymes.	2
Lab 03	Osmoregulation (RBCs fragility).	2
Lab 04	Determination of Blood components.	2
Lab 05	Determination of hemoglobin and hematocrit.	2
Lab 06	Blood pressure, heart rate, & rat guts.	2
Lab 07	Urine analysis.	2
Lab 08	Frog skeletal muscle.	2
Lab 09	Cardiac dynamics.	2
Lab 10	Special senses & reflexes.	2
Lab 11	Vertebrate thermoregulation.	2
Lab 12	Some physiological estimation.	4
Lab 13,14	Metabolic rate and body size.	4
Lab 15	General revision.	2

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm 1	Around 6th -7th week	15 %
2.	Midterm 2	Around 11th - 12th week	15 %
3.	Quizzes, Attendance, Participation, Home works and Lab reports.	All the semester	10 %
4.	Lab Exam.	Around 15th week	20 %
5.	Final Exam.	Around 15th - 16th week	40 %
6.	Total		100%

*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	Moyes and P.M. Schulte. Principles of Animal Physiology 2nd Edit (2013). ISBN: 0-8053-5351-8.
Supportive References	Richard W. Hill , Gordon A. Wyse , Margaret Anderson, Animal Physiology, 3rd Edit, (2012), ISBN-10: 0878938982.
Electronic Materials	SCHMIDT-NIELSON, K. 1997. Animal Physiology. 5th Edition. Cambridge UP, Cambridge
Other Learning Materials	http://bio.classes.ucsc.edu/bio131/.

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Each classroom is equipped with PC and retro projector with a maximum of 30 students
Technology equipment (projector, smart board, software)	The computers are equipped with different software's.

Items	Resources
Other equipment (depending on the nature of the specialty)	Specific laboratory equipment for this course including posters, models of different experimental animals, dissection instruments, light microscopes, dissection microscopes, microtome instrument, slide preparations, mixer, fluorescent microscopes, counter and coulter for hematological parameters, spectrophotometer physiological chemistry, centrifuges, incubators, ovens and other glass wares.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	STUDENT	DIRECT
Effectiveness of Students assessment	FACULTY	INDIRECT
Quality of learning resources	Program Leaders	DIRECT
The extent to which CLOs have been achieved	OTHER	DIRECT
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Head of the biology department
REFERENCE NO.	
DATE	September 25, 2024