Republic of Yemen

Ministry of Education & Higher Research

Council of Academic Accreditation & Quality Assurance of

Higher Education (CAQA)

21 septamber University of Medical and Applied Science

Faculty of Applied Medical Science

Department of Medical Radiology and Imaging Technology

Program of Radiologic Technology and Medical Imaging

Course Specification of

Physiology 1

Course Code. (____)

2024

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean:
	Dr. -----	Dr. Awadh Al-Kubati	Dr. Mohammed Al-shamahi	Dr. Abdulsalam Dalaq

I. General Information:

1.	Course Title:	Physiology				
2.	Course Code:					
3.	Credit Hours:	Credit Hours	Theory Contact Hours		Practical Contact Hours	
			Lecture	Tutorial/ Seminar	Lab	Clinical
		3	2	--	2	--
4.	Level/ Semester at which this Course is offered:	2nd Level / 1st Semester				
5.	Pre –Requisite (if any):	Anatomy and Histology 1				
6.	Co –Requisite (if any):	None				
7.	Program (s) in which the Course is Offered:	Bachelor of Radiologic Technology and Medical Imaging				
8.	Language of Teaching the Course:	English				
9.	Location of Teaching the Course:	Faculty of Applied Medical Science				
10.	Prepared by:					
11.	Date and Number of Approval by Council:					

II. Course Description:

Physiology is an introductory course designed for students specializing in Radiologic Technology and Medical Diagnosis. The course provides a comprehensive understanding of human physiological processes, focusing on the functions and mechanisms of major body systems. Emphasis is placed on integrating physiological concepts with clinical applications relevant to radiologic technology and medical diagnostics.

III. Course Intended Learning Outcomes (CILOs) : Upon successful completion of the course, students will be able to:		Referenced PILOs		
A. Knowledge and Understanding:		**I, P or M/A**		
a1	Explain the basic physiological mechanisms of major body systems	**I**	**A1**	Demonstrate an understanding of fundamental knowledge of Biomedical sciences (Biology, Biophysics, Anatomy, Physiology, Sectional anatomy, and medical imaging techniques).
a2	Describe the interrelationships between different physiological systems	**I**		
B. Intellectual Skills:				
b1	Analyze physiological data critically	**I**	**B3**	Analyze and evaluate evidence-based information needed in medical imaging practice.
b2	Interpret clinical scenarios based on physiological principles	**I**		
C. Professional and Practical kills:				
c1	Perform basic physiological measurements accurately	**P**	**C2**	Apply technical skills in using medical imaging devices, tools, and materials in radiological technology practice.
c2	Apply physiological knowledge in radiologic technology contexts	**P**	**C3**	Prepare, process, interpret and present medical images using appropriate qualitative techniques.
D. Transferable Skills:				
d1	Communicate physiological concepts effectively	**P**	**D1**	Communicate effectively with clinicians, patients, and support staff.
d2	Work collaboratively in a healthcare team	**P**	**D4**	Function effectively as an individual, as a member, or leader of a team engaged in appropriate activities to the radiologic

				technology disciplines to accomplish a common goal.

I= Introduced, P=Practiced or M/A= Mastered/Advanced

(A) Alignment of Course Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
a1	Explain the basic physiological mechanisms of major body systems	▪ Lectures, Interactive discussions	▪ Written exams, Lab quizzes
a2	Describe the interrelationships between different physiological systems	▪ Case studies, Group projects	▪ Research papers, Oral presentations

(B) Alignment of Course Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods:

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
b1	Analyze physiological data critically	▪ Problem-based learning, Seminars	▪ Critical essays, Case reports
b2	Interpret clinical scenarios based on physiological principles	▪ Clinical scenarios, Group discussions	▪ Case studies, Practical exams

(C) Alignment of Course Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods:

	Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies
c1	Perform basic physiological measurements accurately	▪ Practical labs, Simulations	▪ Practical exams, Lab reports
c2	Apply physiological knowledge in radiologic technology contexts	▪ Case-based learning, Clinical practice	▪ Competency assessments, Case presentations

(D) Alignment of Course Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods:

Course Intended Learning Outcomes	Teaching Strategies	Assessment Strategies

d1	Communicate physiological concepts effectively	▪ Group discussions, Assignments	▪ Oral presentations, Written reports
d2	Work collaboratively in a healthcare team	▪ Team projects, Role-plays	▪ Team evaluations

IV. Course Contents:

A. Theoretical Aspect:

No.	Units/Topics List	Sub Topics List	1	3	A1, A2
1	**Nervous System**	– Neurons, Synapses, CNS and PNS	1	2	a1, b2
2	**Muscle Physiology**	– Muscle Contraction, Types of Muscle	1	2	a1, a2
3	**Cardiovascular System**	– Heart Function, Blood Vessels, Blood Flow	1	2	a1, b1
4	**Respiratory System**	– Mechanics of Breathing, Gas Exchange	1	2	a1, b1
5	**Digestive System**	– Digestive Processes, Absorption	1	2	a1, a2
6	**Renal System**	– Kidney Function, Urine Formation	1	2	a1, b2
7	**Introduction to Physiology**	– Homeostasis, Cell Physiology	1	2	a1, a2
8	**Mid-Term Exam**	– In all previous Topics	1	2	a1, a2, b1
9	**Endocrine System**	– Hormone Action, Major Glands	1	2	a1, a2
10	**Reproductive System**	– Male and Female Reproductive Physiology	1	2	a1, b1
11	**Immune System**	– Immune Responses, Lymphatic System	1	2	a1, b2
12	**Sensory Systems**	– Vision, Hearing, Taste, Smell	1	2	a1, b1
13	**Integrative Physiology**	– Exercise Physiology, Stress Responses	1	2	a2, b2
14	**Pathophysiology**	– Disease Mechanisms	1	2	a2, b1
15	**Clinical Correlations**	– Case Studies in Physiology	1	2	a2, b2, c1

No.	Units/Topics List	Sub Topics List	1	3	A1, A2
16	Final Theoretical Exam	– All theoretical topics	1	2	a1, a2, b1, c1
Number of Weeks /and Units Per Semester			16	32	

B. Practical Aspect (Lab/Clinical) (if any):

No.	Tasks/ Experiments	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	ECG Measurement and Analysis: Heart Function, Electrocardiography	1	2	c1, c2, b1
2	Blood Pressure Measurement: Sphygmomanometry, Hypertension	1	2	c1, b2
3	Spirometry: Lung Volumes, Breathing Patterns	1	2	c1, c2, b2
4	Reflex Testing: Nervous System, Reflex Arcs	1	2	c1, b1
5	Hormone Analysis: Endocrine Function, Hormone Levels	1	2	c1, b2
6	Urinalysis: Kidney Function, Urine Composition	1	2	c1, c2, b2
7	Muscle Contraction Experiments: Types of Muscle, Contraction Mechanisms	1	2	c1, b1
8	Blood Glucose Measurement: Diabetes, Glucose Tolerance Test	1	2	c1, b2
9	Sensory Perception Tests: Vision Tests, Hearing Tests	1	2	c1, b1
10	Clinical Case Analysis: Physiological Data Interpretation	1	2	c1, b2, d1
15	Final Practical Exam	1	2	a2, b1, c1, c2
Number of Weeks /and Units Per Semester		14	28	

C. Tutorial Aspect (if any):

No.	Tutorial	Number of Weeks	Contact Hours	Learning Outcomes (CILOs)
1	None			
2				
Number of Weeks /and Units Per Semester				

VII. Teaching Strategies:

- Lectures
- Interactive Discussions:
- Practical Labs
- Case-Based Learning
- Problem-Solving Exercises
- Collaborative Projects

VII. Assessment Methods:

- Written Exams
- Practical Exams
- Assignments
- Oral Presentations
- Lab Reports

VII. Assignments:

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
1	Case Study Presentation	10	2	a1, d2
2	Clinical Scenario Analysis	12	2	a1, b1
3	Blood Glucose Analysis Report	4	2	a2, c1, c2
4	Reflex Testing Report & Endocrine System Poster	11	2	a1, c1, c2
5	Group Research Project & Oral Presentation	13	2	a2, b2, c2, d1, d2

No.	Assignments	Week Due	Mark	Aligned CILOs (symbols)
Total			10	

VIII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	**Midterm Written Exam**	7	10	10%	a1, a2
2	**Final Practical Exam**	15	30	30%	c1, c2
3	**Assignments**	During semester	10	10%	a1, a2, b1, b2, c1, c2, d1, d2
4	**Final Written Exam**	15	50	50%	a1, a2, b1, b2
Total			**100**	**100 %**	

IX. Learning Resources:

1- Required Textbook(s) (maximum two):

1. Guyton, A.C., & Hall, J.E. (2020). *Textbook of Medical Physiology* (14th ed.). Elsevier.
2. Boron, W.F., & Boulpaep, E.L. (2016). *Medical Physiology* (3rd ed.). Saunders.

2- Essential References:

1. Silverthorn, D.U. (2020). *Human Physiology: An Integrated Approach* (8th ed.). Pearson.
2. Costanzo, L.S. (2017). *Physiology* (6th ed.). Saunders.

3- Electronic Materials and Web Sites etc.:

Electronic Materials and Websites

- Access to online physiology databases (e.g., Physiology.org)
- Online journal subscriptions (e.g., American Journal of Physiology, Journal of Physiology)
- Physiology Web
- Khan Academy

X. Course Policies: (Based on the Uniform Students' By law (2007)

1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.

4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply**.**
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.
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وزارة التربية والتعليم والبحث العلمي
جامعة 21 سبتمبر للعلوم الطبية والتطبيقية
كلية التكنولوجيا الطبية

Faculty of Applied Medical Science

Department of Medical Radiology and Imaging Technology

Program of Radiologic Technology and Medical Imaging

Course Plan (Syllabus) of

Physiology 1

Course Code. .....

I. Information about Faculty Member Responsible for the Course:								
Name of Faculty Member:		Office Hours						
Location& Telephone No.:	-----							
E-mail:	--@--.--	SAT	SUN	MON	TUE	WED	THU	

2024/2025

Prepared by:	Reviewed by:	Head of the Department:	Quality Unit:	Dean:
	Dr. -----	Dr. Awadh Al-Kubati	Dr. Mohammed Al-shamahi	Dr. Abdulsalam Dalaq

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		3	2	--	2	--
15.	**Level/ Semester at which this Course is offered:**	2nd Level / 1st Semester				
16.	**Pre –Requisite (if any):**	Anatomy and Histology 1				
17.	**Co –Requisite (if any):**	None				
18.	**Program (s) in which the Course is Offered:**	Bachelor of Radiologic Technology and Medical Imaging				
19.	**Language of Teaching the Course:**	English				
20.	**Location of Teaching the Course:**	Faculty of Applied Medical Science				
21.	**Prepared by:**					
22.	**Date and Number of Approval by Council:**					

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Upon successful completion of the course, students will be able to:

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	C. Professional and Practical kills:
c1	Perform basic physiological measurements accurately
c2	Apply physiological knowledge in radiologic technology contexts
	D. Transferable Skills:
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d2	Work collaboratively in a healthcare team

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3	**Cardiovascular System**	– Heart Function, Blood Vessels, Blood Flow	1	2
4	**Respiratory System**	– Mechanics of Breathing, Gas Exchange	1	2

No.	Units/Topics List	Sub Topics List	Number of Weeks	Contact Hours
5	**Digestive System**	– Digestive Processes, Absorption	1	2
6	**Renal System**	– Kidney Function, Urine Formation	1	2
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8	**Mid-Term Exam**	– In all previous Topics	1	2
9	**Endocrine System**	– Hormone Action, Major Glands	1	2
10	**Reproductive System**	– Male and Female Reproductive Physiology	1	2
11	**Immune System**	– Immune Responses, Lymphatic System	1	2
12	**Sensory Systems**	– Vision, Hearing, Taste, Smell	1	2
13	**Integrative Physiology**	– Exercise Physiology, Stress Responses	1	2
14	**Pathophysiology**	– Disease Mechanisms	1	2
15	**Clinical Correlations**	– Case Studies in Physiology	1	2
16	**Final Theoretical Exam**	– All theoretical topics	1	2
Number of Weeks /and Units Per Semester			**16**	**32**

B. Practical Aspect (Lab/Clinical) (if any):

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
1	ECG Measurement and Analysis: Heart Function, Electrocardiography	1	2
2	Blood Pressure Measurement: Sphygmomanometry, Hypertension	1	2
3	Spirometry: Lung Volumes, Breathing Patterns	1	2
4	Reflex Testing: Nervous System, Reflex Arcs	1	2
5	Hormone Analysis: Endocrine Function, Hormone Levels	1	2
6	Urinalysis: Kidney Function, Urine Composition	1	2

No.	Tasks/ Experiments	Number of Weeks	Contact Hours
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9	Sensory Perception Tests: Vision Tests, Hearing Tests	1	2
10	Clinical Case Analysis: Physiological Data Interpretation	1	2
15	Final Practical Exam	1	2
Number of Weeks /and Units Per Semester		**14**	**28**

C. Tutorial Aspect (if any):

No.	Tutorial	Number of Weeks	Contact Hours
1	**None**		
2			
Number of Weeks /and Units Per Semester			

VII. Teaching Strategies:

- **Lectures**
- **Interactive Discussions**:
- **Practical Labs**
- **Case-Based Learning**
- **Problem-Solving Exercises**
- **Collaborative Projects**

VII. Assessment Methods:

- **Written Exams**
- **Practical Exams**
- **Assignments**
- **Oral Presentations**
- **Lab Reports**

VII. Assignments:

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