



Course Specifications

Course Title:	Renal Physiology
Course Code:	ZOO 434
Program:	Bachelor Degree in Zoology Program (elective course)
Department:	Zoology
College:	Science
Institution:	King Saud University

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	3
1. Course Description	3
2. Course Main Objective.....	3
3. Course Learning Outcomes	4
C. Course Content	4
D. Teaching and Assessment	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support	5
F. Learning Resources and Facilities	6
1.Learning Resources	6
2. Facilities Required.....	6
G. Course Quality Evaluation	6
H. Specification Approval Data	6

A. Course Identification

1. Credit hours: 3 (2+0+2)
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input type="checkbox"/> Elective <input checked="" type="checkbox"/>
3. Level/year at which this course is offered: Elective course
4. Pre-requisites for this course (if any): ZOO 332
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	√	50
2	Blended	√	50
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	28
2	Laboratory/Studio	14
3	Tutorial	
4	Others (specify)	
	Total	42

B. Course Objectives and Learning Outcomes

<p>1. Course Description</p> <p>Understand and use a vocabulary of scientific terminology used in Renal physiology;</p> <p>Demonstrate an understanding of compatibility between Renal structure and its functions in mammals.</p> <p>Demonstrate an understanding of: Renal blood flow and body fluid regulation, filtration, secretion and reabsorption.</p> <p>Demonstrate an understanding of: renal response to changes in food and fluid intake, in addition to be able to explain renal dysfunctions.</p>
<p>2. Course Main Objective</p> <p>Annual review of course by departmental course planning committee.</p> <p>Updating the course with the latest developments in the field and using internet materials.</p> <p>Updating practical sessions with new experiments and slides.</p>

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	To name different parts of the kidney and the role of the kidney in maintaining salt and water balance.	K1
1.2	To describe ion transport processes in different segments of the renal tubule, and describe the fine structure of the nephron.	K2
1.3		
2	Skills :	
2.1	To compare renal function in normal and abnormal daily conditions.	S1
2.2	Use analytic thinking to explain renal pathogenic	S1
2.3	To calculate glomerular filtration rate and sodium excretion.	S2
2.4		
3	Values:	
3.1	To demonstrate sufficient ability to work alone and among a team.	V1
3.2	To design and conduct an experiment and be able to defend his conclusion.	V2
3..		

C. Course Content

No	List of Topics	Contact Hours
1	Urinary system – An overview of various organs The structure, organization and function of the urinary system.	1
2	Kidney – An overview : structure and function: Renal histology. Renal blood system. Nephron structure.	1
3	Glomerulus and glomerular filtration rate (GFR) Glomerular filtration and its measurement. Renal blood flow. Hormonal regulation of GFR. Juxta-glomerular apparatus	2
4	Renal tubule: Renal tubule segments. Transport sites in the kidney, basic principles, absorption and secretion. Mechanism of Na ⁺ , K ⁺ and HCO ₃ ⁻ transport, Water movement. Glucose transport. Disorders of tubular transport.	3
5	Concentrating and Diluting Mechanisms The loop of Henle and the counter-current multiplier. Diluting and concentrating – the role of ADH. Factors affecting the concentrating ability of the kidney e.g. ADH, long and short loops.	3
6	Electrolyte and Water balance The control of extracellular fluid volume e.g. thirst. The hormonal regulation e.g. the aldosterone, renin-angiotensin pathways. Osmotic diuretics and clinically used diuretics.	2
7	Renal diseases Abnormal structure. Abnormal gene expression. Kidney failure. Renal transplantation.	2
		14
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	To name different parts of the kidney	Lectures are given using PowerPoint and handouts	Written exams Practical exam.
1.2	To outline the role of the kidney in maintaining salt and water balance.	Group-based discussion. Course work	Assignments Discussion
1.3		Group reports and individual assignments	
1.4			
2.0	Skills		
2.1	To compare renal function in normal and abnormal daily conditions.	Using illustrations materials Laboratory training.	Midterm and final exams Evaluation of lab reports and assignments
2.2	Use analytic thinking to explain renal pathogenic	Activities and assignments. Discussion	
2.3	To calculate glomerular filtration rate and sodium excretion.	Close monitoring while performing practical work Using power point presentation and illustration.	
3.0	Values		
3.1	To demonstrate sufficient ability to work alone and among a team.	Promoting students to submit activities and written report	Evaluation of the student's ability to discuss and to draw conclusions
3.2	To design and conduct an experiment and be able to defend his conclusion.	Discussion	Evaluating the activities
...			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments	2,4,6,8	10%
2	Written exam (1)	5	10%
3	Written exam (2)	9	10%
4	Lab. Exam	11	30%
5	Final Exam	40	40%
6			
7			
8			

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- The supervision done by the staff member over lab. Sessions.
- Office hours 8 hr/ week

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Guyton C. & Hall J. (2011) Textbook of medical physiology, 12 th edition. SUANDERS, Elsevier, Philadelphia. Guyton, A. C., & Hall, J. E. (2002). Human physiology and mechanisms of disease (6th ed.). Philadelphia: Saunders.
Essential References Materials	(Journals, Reports, etc.)
Electronic Materials	Web Sites, Facebook, Twitter, etc.
Other Learning Materials	Microsoft office package

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Modern lecture rooms equipped with all materials. Modern laboratories.
Technology Resources (AV, data show, Smart Board, software, etc.)	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Metabolism cages. Renal function kits. Renal sections for Light microscope. Safety facilities

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	