



# Course Specifications

<b>Course Title:</b>	<b>Endocrinology</b>
<b>Course Code:</b>	<b>4014362-3</b>
<b>Program:</b>	<b>General Biology</b>
<b>Department:</b>	<b>Department of biology</b>
<b>College:</b>	<b>Faculty of Applied Science</b>
<b>Institution:</b>	<b>Um Al-Qura University</b>

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## A. Course Identification

<b>1. Credit hours:</b> <b>3 hours.</b>
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> <b>4<sup>th</sup> Year / Level 8.</b>
<b>4. Pre-requisites for this course (if any):</b> <b>Animal physiology (2) (4013342-3).</b>
<b>5. Co-requisites for this course (if any):</b> <b>NA.</b>

### 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50
2	Blended	-	-
3	E-learning	-	-
4	Correspondence	-	-
5	Other	30	50

### 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	30
2	Laboratory/Studio	42
3	Tutorial	-
4	Others (specify)	30
	<b>Total</b>	<b>102</b>
<b>Other Learning Hours*</b>		
1	Study	30
2	Assignments	8
3	Library	15
4	Projects/Research Essays/Theses	10
5	Others (specify)	-
	<b>Total</b>	<b>63</b>

\* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The course is designed to provide an understanding to structures and function of endocrine glands. It also provides an understanding of the common endocrine disorders, metabolic regulations, and metabolic abnormalities, and their management. Vast amounts of information and knowledge are accumulating rapidly concerning metabolism and endocrinology. Their tremendous importance is being increasingly recognized, especially in the light of new advances in medicine, because all diseases, including psychiatric and genetic abnormalities, are associated with metabolic changes. Furthermore, in all body cells, hormones influence the metabolism of nucleotides, proteins, lipids, carbohydrates, vitamins, water, and electrolytes. Therefore, knowledge of endocrinology and metabolism is important in every branch of medicine.

### 2. Course Main Objective

By the end of this course the students are expected to be able to:

- Acquire sound knowledge of the structure and function of Endocrine System.
- Describe the major metabolic pathways and their inter-relationships.
- Describe the symptoms and signs of some common diseases, injuries and disturbances of this system and their prevention.
- Develop a problem-solving approach to endocrine and metabolic disorders.
- Explain the pathogenesis of various Endocrine and or metabolic diseases categories and their presentation, investigations (laboratory, radiological, etc), and management.
- Discuss the regulatory mechanism that regulates the different pathways of carbohydrates, lipids, protein and nucleic acid and their management.

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge:</b>	
1.1	<b>Identify and describe</b> the localities, the anatomical and the specific functions of the endocrine organs including pituitary, thyroid, parathyroid, thymus, adrenal, gonads and pancreatic islets of Langerhans.	
1.2	<b>Know</b> the cytoarchitecture, at histological levels and the related functions of different cells of anterior and posterior pituitary, thyroid and parathyroid cells, cell types of adrenal cortex and medulla of adrenal gland, cells of the pancreatic Islets of Langerhans, germinal and hormonal cells of the testes and ovaries.	
1.3	<b>Learn</b> physiological concepts and principles of hormonal action and hormonal control on the body organs.	
1.4	<b>Understand</b> mechanisms of hormonal secretion and inhibition by pituitary gland.	
1.5	<b>Assimilate</b> the basis of hormonal diseases, and genetic syndrome.	
1.6	<b>Recognize</b> the specific functions of each endocrine gland.	
1.7	<b>Realize</b> mechanisms of neurosecretion between the hypothalamus and the anterior lobe of pituitary gland.	
1.8	<b>Acquire</b> the role of hormones of the anterior lobe of pituitary gland to control gestation and timing of birth in pregnant women; control the balance of water and electrolytes in the body fluid.	

CLOs		Aligned PLOs
1.9	<b>Apply</b> the microscopic examination to differentiate the cytoarchitecture and other microscopic structures of each endocrine organ.	
2	<b>Skills:</b>	
2.1	<b>Summarize</b> the anatomical and physiological basis of: endocrine organs. And apply the concerned practical activities,	
2.2	<b>Categorize</b> the physiological concepts and principles of hormonal secretion and their effects on bone growth, sugar levels, gonadotropic hormones and control of metabolic rates of our bodies.	
2.3	<b>Apply</b> lab applications. <b>Submit</b> individual or team reports	
2.4	<b>Develop</b> critical thinking skills to summarize the structural and principle physiological concepts of hormonal control, increase and inhibit the integrated hormonal secretion such as stimulation of insulin can inhibit the formation of glucagon in order to regulate sugar level in the blood.	
2.5	<b>Relate and realize</b> the neural projection between the hormonal secretion of hypothalamus storage of these hormones in the anterior lobe of pituitary gland.	
2.6	<b>Dealing, safely,</b> with lab animals and modern laboratory equipment to conduct practical applications.	
2.7	<b>Differentiate</b> between physiological functions of different endocrine organs of the male and female reproductive systems.	
2.8	<b>Précis</b> the specific histological and the cytoarchitecture of each endocrine glands.	
3	<b>Competence:</b>	
3.1	<b>Developing</b> oral presentations and leadership activity	
3.2	<b>Communicating</b> personal ideas and thoughts	
3.3	<b>Work independently, Self-learning</b> and as part of a team,	
3...	<b>To examine, describe, draw, dissect</b> or contribute reports.	

### C. Course Content

No	List of Topics (16 weeks)	Contact Hours
1	Introduction to endocrinology, location and structure of endocrine glands	2
2	Types of hormones secreted by endocrine glands	2
3	Physiological effects of hormones	2
4	Abnormal levels of hormones	2
5	Pituitary gland: structure, embryonic origin and functions	2
6	Hypothalamus and pituitary gland.	2
7	Role of hypothalamus in regulation of endocrine glands, Anterior pituitary hormones, Intermediate and Posterior pituitary hormones, Assessment of function and disorders of anterior and posterior pituitary	2
8	Thyroid hormones, Assessment of function and disorders of thyroid gland,	2

9	Parathyroid hormones, Assessment of function and disorders of parathyroid gland, Calcium homeostasis	2
10	Adrenal gland hormones, Assessment of function and disorders of adrenal gland, Pancreatic hormones, Glucose homeostasis	2
11	The reproductive male system; structure, and function of male gonads; interstitial and Sertoli cells	2
12	Male hormones and regulation of spermatogenesis	2
13	The reproductive female system; structure of ovary; ovulation, menstrual cycle for women.	2
14	Female hormones and regulation of ovarian and uterine cycles	2
15	Revision	2
16	Final exam.	
<b>Total</b>		<b>30</b>

## 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	<b>Knowledge</b>		
1.1	<b>Identify and describe</b> the localities, the anatomical and the specific functions of the endocrine organs including pituitary, thyroid, parathyroid, thymus, adrenal, gonads and pancreatic islets of Langerhans.		
1.2	<b>Know</b> the cytoarchitecture, at histological levels and the related functions of different cells of anterior and posterior pituitary, thyroid and parathyroid cells, cell types of adrenal cortex and medulla of adrenal gland, cells of the pancreatic Islets of Langerhans, germinal and hormonal cells of the testes and ovaries.	Study the structure and function of the thalamus, pituitary, thyroid parathyroid, adrenal gonads and pancreatic Islets. Lectures and student research papers; visual display "PowerPoint";	Homework; Quizzes; oral, presentation evaluation, sheet, discussion, midterm and final exams.
1.3	<b>Learn</b> physiological concepts and principles of hormonal action and hormonal control on the body organs.	Homework assignments; Discussions;	
1.4	<b>Understand</b> mechanisms of hormonal secretion and inhibition by pituitary gland.	Handout of lecture notes	
1.5	<b>Assimilate</b> the basis of hormonal diseases, and genetic syndrome.		
1.6	<b>Recognize</b> the specific functions of each endocrine gland.		
1.7	<b>Realize</b> mechanisms of neurosecretion between the		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	hypothalamus and the anterior lobe of pituitary gland.		
1.8	<b>Acquire</b> the role of hormones of the anterior lobe of pituitary gland to control gestation and timing of birth in pregnant women; control the balance of water and electrolytes in the body fluid.		
1.9	<b>Apply</b> the microscopic examination to differentiate the cytoarchitecture and other microscopic structures of each endocrine organ.		
2.0	<b>Skills</b>		
2.1	<b>Summarize</b> the embryonic origin, anatomical and physiological basis of: endocrine organs. And apply the concerned practical activities,		
2.2	<b>Categorize</b> the physiological concepts and principles of anatomical and physiological functions of hormones on bone formation, spermatogenesis, ovulation and regulation of women menstrual cycle.		
2.3	<b>Apply</b> lab applications. <b>Submit</b> individual or team reports		
2.4	Develop critical thinking skills to summarize the structural and principle physiological concepts of hormonal secretion, and hormonal control on the physiological activities of vital body organs.		
2.5	<b>Relate and realize</b> the neural projection and mechanisms of neurosecretion of hypothalamic hormones and anterior lobe of pituitary gland.		
2.6	<b>Dealing, safely,</b> with lab animals and modern laboratory equipment to conduct practical endocrine applications.		
2.7	<b>Differentiate</b> between physiological functions of different endocrine organs.		
2.8	<b>Précis</b> the localities, anatomical, histological and cytoarchitecture of all endocrine organs.		
3.0	<b>Competence</b>		

1. Interactive lectures.
  2. Seminars.
  3. Participation of students in discussions during the lecture.
  4. Trying to explain the issues in regular and motivated manner.
- Follow up the students in lab and during carryout all analytical techniques.

- Exam must contain questions that can measure these skills.
  - Quiz and exams.
  - Discussions after the lecture.
- Practical exam.

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Personal leadership activity	Follow up, correction, reorientation of their work. Discussion	Evaluation, oral exam, Written exam
3.2	Teamwork activity		
...	Reports and presentations		

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodical Exam(s)	4	10 %
2	Mid Term Exam (Theoretic)	8	20 %
3	Mid Term Exam (practical)	9	10 %
4	Reports and essay	11	5 %
5	Final Practical Exam	15	15 %
6	Final Exam	16	40 %
	<b>Total</b>		<b>100 %</b>

\*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 :

2 Office hours/week

## F. Learning Resources and Facilities

### 1. Learning Resources

Required Textbooks	<p>Course materials will be based on a combination of lecture notes, handouts, journal articles and various references. Following is a list of suggested (yet not required) references that you would further read as class topic(s) evolves.</p> <p><b>Animal Physiology, Second Edition, Richard W. Hill, Gordon A. Wyse, and Margaret Anderson, 2008</b></p> <p><b>Recommended Books:</b></p> <p><b>Endocrinology (6th edition) by Mac E. Hadley, Prentice-Hall, New Jersey (2007).</b></p>
Essential References Materials	<p>Stuart I Fox (2010) <b>Human Physiology, Kindle Edition, McGraw-Hill, USA.</b></p> <p><b>Comparative Vertebrate Endocrinology, by Bentley, Cambridge Univ. Press. Cambridge. (2000).</b></p> <p><b>Textbook of Endocrine Physiology, by Griffin, Oxford University Press (2004).</b></p>
Electronic Materials	<p><a href="http://www.vivo.colostate.edu/hbooks/pathphys/endocrine/basics/index.html">http://www.vivo.colostate.edu/hbooks/pathphys/endocrine/basics/index.html</a></p> <p><a href="http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookENDOCR.html">http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookENDOCR.html</a></p> <p><a href="http://www.hormone.org/endo101/">http://www.hormone.org/endo101/</a></p>



<b>Other Learning Materials</b>	<p>CD prepared by the staff members containing U-tube videos.</p> <p>Multi- media associated with the text book and the relevant websites.</p> <p>Biological charts.</p> <p>Microsoft office package.</p>
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## 2. Facilities Required

Item	Resources
<p style="text-align: center;"><b>Accommodation</b></p> <p>(Classrooms, laboratories, demonstration rooms/labs, etc.)</p>	<p>The areas of class rooms are suitable, concerning the number of enrolled students; and air conditioned.</p> <p>Lecture room equipped with a black board and Data show. Instructors use their own laptop.</p> <p>Physiology lab well equipped.</p>
<p style="text-align: center;"><b>Technology Resources</b></p> <p>(AV, data show, Smart Board, software, etc.)</p>	<p>Class rooms are already provided with data show, audio-visual equipment.</p>
<p style="text-align: center;"><b>Other Resources</b></p> <p>(Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)</p>	<p>Laboratory instruments &amp; equipment: Cooling centrifuge, pH meters, flasks, beakers, screw capped tubes, slides and tips and chemicals kits.</p>

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
<p>Student Feedback on Effectiveness of Teaching</p>	<p>Students.</p>	<p>Class room discussions.</p> <p>Questionnaires.</p>
<p>Evaluation of Teaching</p>	<p>Instructor or by the Department</p>	<p>Revision of student answer paper by another staff member.</p> <p>Analysis the grades of students.</p>

**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	<p>Prof. Dr. Abdel-Majeed Toniya Saleh;</p> <p>Prof. Osama Mohamed Sarhan</p>	
Reference No.		
Date	21/11/2019	