



## Course Specifications

<b>Course Title:</b>	Cell Physiology
<b>Course Code:</b>	4810111-3
<b>Program:</b>	Medical Path
<b>Department:</b>	Common First Year Deanship
<b>College:</b>	Applied of Medical Sciences
<b>Institution:</b>	Umm Al-Qura University

## Table of Contents

<b>A. Course Identification</b> .....	<b>3</b>
6. Mode of Instruction (mark all that apply) .....	3
<b>B. Course Objectives and Learning Outcomes</b> .....	<b>4</b>
1. Course Description .....	4
2. Course Main Objective.....	4
3. Course Learning Outcomes .....	4
<b>C. Course Content</b> .....	<b>5</b>
<b>D. Teaching and Assessment</b> .....	<b>6</b>
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods .....	6
2. Assessment Tasks for Students .....	6
<b>E. Student Academic Counseling and Support</b> .....	<b>6</b>
<b>F. Learning Resources and Facilities</b> .....	<b>6</b>
1. Learning Resources .....	7
2. Facilities Required.....	7
<b>G. Course Quality Evaluation</b> .....	<b>8</b>
<b>H. Specification Approval Data</b> .....	<b>8</b>

## A. Course Identification

<b>1. Credit hours:</b> 2+1(3)
<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> Preparatory Year
<b>4. Pre-requisites for this course (if any):</b> High School degree
<b>5. Co-requisites for this course (if any):</b> Not applicable

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2 Hours /Week	70%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other	2 Hours /Week	40%

### 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	2 Hours /Week
2	Laboratory/Studio	2 Hours /Week
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	4 Hours /Week

## B. Course Objectives and Learning Outcomes

### 1. Course Description

Introduction to Human Physiology with special emphasis to structure and function of human Cell including nucleus, cytoplasm and cell membrane. Organelles covered by membrane including endoplasmic reticulum, Golgi apparatus, lysosomes, secretory vesicles, peroxisome and mitochondria. Organelles not covered by membrane including ribosome, centriole, centrosome and microtubules. Cytoskeleton and their physiological role in human cell. Relationship between cilia and flagella in the cell. Membrane junctions, their location and specific functions. Types of cell receptors and intracellular second messenger system. Biological membranes, integral and peripheral proteins, glycolipids and glycoproteins of biological membranes. Ionic basis of action potential and concept of threshold of membrane excitation. Types of movements across the cell membrane including diffusion, osmosis, active transport and vesicular transport. Homeostasis, positive and negative feedback mechanisms, types of cell immunity and cell death. Normal and abnormal composition of human body. Types of edema. Basal metabolic rate and regulation of human body temperature. Physiology of skin.

### 2. Course Main Objective

By the completion of the cell physiology course, students are expected to be able to:

- Recognize the role and basic underlying principles and processes that take place in the individual cells usually applied to each organ system as a whole.
- Identify the structure, function of the Nucleus & Nucleolus
- Identify types and functions of mRNA, tRNA, and rRNA, define gene pair
- Discuss the structure and function of different organelles present in cytoplasm.
- Clearly distinguish between different types of cytoskeletons and structure/function relationship between cilia and flagella.
- Identify different types of cell membrane junctions, cell receptors and their up and down regulation, intracellular second messenger system.
- Describe the molecular components that make up the cell membrane
- Describe how action potential occurs, its key components, and its characteristic features.
- Describe types of movements across cell membrane.
- Explain homeostasis, and negative & positive feedback mechanisms
- Identify the immune system, cell signaling events, cell cycle, programmed cell death
- Identify the main factors affecting the amount of normal total body water including hormones, pathophysiology of edema and skin physiology

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<b>Knowledge and Understanding</b>	
1.1	Strategic teaching by making decisions about a course, an individual class, or even an entire curriculum	Knowledge and Understanding K1 and K2
1.2	Recognize biological and physiological changes which developed as a normal consequence of aging process and those resulting from a pathological origin.	

CLOs		Aligned PLOs
1.3	Comprehend human growth and development across the life span	
<b>2</b>	<b>Skills :</b>	
2.1	Mechanisms of how to learn, remember, problem-solve.	Knowledge and Understanding K1 and K2
2...		
<b>3</b>	<b>Values:</b>	
3.1	Ability to take the accountability for continued personal and professional learning and development.	
3.2	Ability to be able to work independently and as in groups including leadership responsibilities	
3.3	Stresses the role of unified communications and the integration of telecommunications	Knowledge and Understanding K1 and K2
3...		

### C. Course Content

No	List of Topics	Contact Hours
1	Cell Structure and Function	2
2	Specialized organelles and their Physiology.	2
3	Physiology of Cytoskeleton.	2
4	Cell Junctions and cell receptors.	2
5	Biological Membranes.	2
6	Ionic basis of action potential	2
7	Movement across the Biological membranes.	2
8	Homeostasis, Control system and Immunity	2
9	Composition of human body and edema	2
10	Skin, Regulation of body temperature and BMR	2
11	Nervous System I	2
12	Nervous System II	2
13	Digestive system	2
14	PH and its regulation, & Acid Base Balance.	2
15	Elective	2
<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 and Understanding</b>		
1.1	Strategic teaching by making decisions about a course, an individual class, or even an entire curriculum	Positive behavior, Establish a Code of Conduct, Self-Motivation, Reinforce Positive Actions	Mid Term / Final theory examinations Practical examination. Assignments Presentations.
1.2		Class room sessions. Regular one lecture (3 hours)	
...			
2.0	<b>Skills</b>		
2.1	Mechanisms of how to learn, remember, problem-solve.		
2.2			
...			
3.0	<b>Values</b>		
3.1	Ability to take the accountability for continued personal and professional learning and development.		
3.2	Ability to be able to work independently and as in groups including leadership responsibilities		
...			

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Continuous assessment	15	10%
2	Practical / laboratory skill Assessment	13	20%
3	Mid-term exam	7	30%
4	Final exam	16	40%
5			

\*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 Hours Per Week (Student / Teacher Office Hours)

## F. Learning Resources and Facilities

## 1. Learning Resources

<p><b>Required Textbooks</b></p>	<p><b>Essentials of Human Anatomy &amp; Physiology (12<sup>th</sup> Edition, 2017)</b> by Elaine N. Marieb and Suzanne M. Keller ISBN: 978-01343 395326 Publisher: Pearson Education.</p> <p><b>Principles of Anatomy &amp; Physiology (15<sup>th</sup> Edition, 2016)</b> by Gerad J. Tortora &amp; Bryan H. Derrickson ISBN: 978-1119329398 Publisher: John Wiley.</p> <p><b>Hole’s Human Anatomy and Physiology (15<sup>th</sup> Edition, 2018)</b> by David Shier, Jackie Butler, Ricki Lewis ISBN: 978-1259864568 Publisher: Mc Graw- Hill.</p>
<p><b>Essential References Materials</b></p>	<p><b>Ross and Wilson Anatomy and Physiology, in health and illness (13<sup>th</sup> Edition, 2018)</b> by Anne Waugh &amp; Allison Grant ISBN: 978-0702072772 • Publisher: Churchill Livingstone.</p> <p><b>Principles of Anatomy and Physiology by Tortora GJ &amp; Anagnostakos NP., Text Book of Medical Physiology by Guyton AC.</b></p>
<p><b>Electronic Materials</b></p>	<p><a href="https://www.cellsalive.com/toc_cellbio.htm">https://www.cellsalive.com/toc_cellbio.htm</a> <a href="https://www.nature.com/ncb/">https://www.nature.com/ncb/</a> PubMed, Google-scholar</p>
<p><b>Other Learning Materials</b></p>	<p><b>Interactive CD series on physiology of different body systems. Computer simulation of general physiology.</b> <b>Human Physiology: From Cells to Systems (with CD-ROM and InfoTrac)</b></p>

## 2. Facilities Required

Item	Resources
<p><b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)</p>	<ul style="list-style-type: none"> <li>• Classroom having 150 students and laboratory having 25 students approximately.</li> <li>• There is a need of big lecture rooms to accommodate large number of students as well as enough furniture (chairs, tables etc.) &amp; projector control system, especially in view of COVID-19 to keep sufficient distance.</li> </ul>
<p><b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)</p>	<p>Most students have their own laptops; but a good number of desktops connected to the internet should be available in the library. There is an efficient network system for online teaching.</p>
<p><b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)</p>	<p>Interactive CD series on physiology of different body systems. For at- campus teaching in the present pandemic situation there is a need of essential materials to follow the COP (e.g. hand sanitizers, masks gloves etc.).</p>

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of Teaching	Faculty	Feedback from students
Learning outcomes	Head of department	- Regular course instructor's meetings - Comprehensive annual review and planning - Feedback from members of various stakeholders of interest
Quality of learning resources & Extent of achievement of course learning outcomes	Peer Reviewer	- Peer-reviewing for examinations by checking random samples of student work and exam - Analyzing the exam questions

**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

<b>Council / Committee</b>	Vice Dean of Common First Year for Academic Affairs, Dr Ahmad Fawzi Arbaeen
<b>Reference No.</b>	-
<b>Date</b>	27/3/2022

