



## Course Specifications

<b>Course Title:</b>	<b>Medical Biology (1)</b>
<b>Course Code:</b>	<b>370111-4</b>
<b>Program:</b>	<b>Bachelor in Radiological Sciences</b>
<b>Department:</b>	<b>Department of Radiological Sciences</b>
<b>College:</b>	<b>College of Applied Medical Sciences</b>
<b>Institution:</b>	<b>Taif University</b>

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## A. Course Identification

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

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	50	62.5%
2	Blended	None	0%
3	E-learning	None	0%
4	Distance learning	None	0%
5	Other (Laboratory)	30	37.5%

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

No	Activity	Contact Hours
1	Lecture	50
2	Laboratory/Studio	30
3	Tutorial	N/A
4	Others (specify)	NA
	<b>Total</b>	<b>80 Hours</b>

## B. Course Objectives and Learning Outcomes

### 1. Course Description

The Medical Biology (1) course provides an overview of terms, subjects and skills related to cell and tissue biology that prepares students to understand the fundamental principles of living organisms. Students will explore biological science as a process, cell and tissue types, cell and tissue characters, ultrastructure and function.

## 2. Course Main Objective

At the end of this course, student should have perception of the inseparability of structure and function in living organisms, understand how do Eukaryotic cells accomplish all their functions. In addition, they should know the membranous and non-membranous organelles and the specific function of each specific subtype and the basic tissue types, recognize the tissue type on micrograph and able to predict their related function.

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
<b>1</b>	<b>Knowledge and Understanding:</b>	
1.1	Define the structures and functions of nuclear and cytoplasmic components.	K1
1.2	Identify the cellular organelles.	K1
1.3	Recognize the four basic tissue types (epithelia, muscles, connective and nervous tissue)	K1
1.4	Recall the structure of the different types of tissues.	K1
<b>2</b>	<b>Skills:</b>	
2.1	Analyse a cell's cytoplasmic components on a micrographic picture.	S1
2.2	Interpret the different types of tissue structure on a micrographic picture.	S1
<b>3</b>	<b>Values:</b>	
None		

## C. Course Content

### 1. Theory

No	List of Topics	Contact Hours
1	Introduction to cell biology (Goals and Methods) (Presentation)	5
2	Essential characteristics of the cell (Presentation) <ul style="list-style-type: none"><li>Eukaryotic and prokaryotic cells</li><li>Cellular organization and functions</li></ul>	5
3	Cell membrane structure and function (Presentation)	5
4	Membrane organelles (Types and Functions) (Presentation)	5
5	Non-membranous organelles (Types and Functions) (Presentation)	5
6	Nuclear structure and dynamics (Presentation)	5
7	Cell Division (Types and significance) and Cell Cycle (Presentation) <ul style="list-style-type: none"><li>Phases of cell cycle</li><li>Checkpoints of cell cycle</li></ul>	5
8	Basic body tissues (Presentation) <ul style="list-style-type: none"><li>Epithelial Tissue (General features and Classification)</li></ul>	5
9	Connective tissue (CT) (General features and Classification) (Presentation) <ul style="list-style-type: none"><li>Embryonic CT</li><li>Adult CT</li><li>The Special connective tissue</li></ul>	5
10	The muscular and nervous tissue (General features and Classification) (Presentation)	5
<b>Total</b>		<b>50</b>

### 2. Practical

No	List of Topics	Contact Hours
1	Introduction to cell biology (Practical applications) (Presentation)	3
2	Microscopes: (Presentation) Basic principles of light Microscope <ul style="list-style-type: none"><li>Fluorescence microscope</li><li>Electron microscope</li></ul>	3
3	Ultra-structure of Cell membrane (Presentation)	3
4	Structure and ultra-structure of Membrane organelles (Presentation)	3
5	Structure and ultra-structure Non-membranous organelles (Presentation)	3
6	Nucleus structure (General features) ((Presentation)	3

7	Cell Division (Presentation)	3
8	Basic body tissue (Presentation) <ul style="list-style-type: none"> <li>Structural Types of Epithelial Tissue (General features and Classification)</li> </ul>	3
9	Structural Types of Connective tissue (General features and Components) (Presentation) <ul style="list-style-type: none"> <li>Embryonic CT</li> <li>Adult CT</li> <li>The special connective tissue</li> </ul>	3
10	Structural Types of Muscular and Nervous tissue (Presentation)	3
<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
<b>1.0</b>	<b>Knowledge and Understanding:</b>		
1.1	Define the structures and functions of nuclear and cytoplasmic components.	<ul style="list-style-type: none"> <li>Lectures</li> </ul>	<ul style="list-style-type: none"> <li>Written Exam</li> </ul>
1.2	Identify the cellular organelles.	<ul style="list-style-type: none"> <li>Lectures</li> </ul>	<ul style="list-style-type: none"> <li>Written Exam</li> </ul>
1.3	Recognize the four basic tissue types (epithelia, muscles, connective and nervous tissue)	<ul style="list-style-type: none"> <li>Lectures</li> </ul>	<ul style="list-style-type: none"> <li>Written Exam</li> </ul>
1.4	Recall the structure of the different types of tissues.	<ul style="list-style-type: none"> <li>Lectures</li> </ul>	<ul style="list-style-type: none"> <li>Written Exam</li> </ul>
<b>2.0</b>	<b>Skills:</b>		
2.1	Analyse a cell's cytoplasmic components on a micrographic picture.	<ul style="list-style-type: none"> <li>Practical Sessions</li> </ul>	<ul style="list-style-type: none"> <li>Practical Exam</li> </ul>
2.2	Interpret the different types of tissue structure on a micrographic picture.	<ul style="list-style-type: none"> <li>Practical Sessions</li> </ul>	<ul style="list-style-type: none"> <li>Practical Exam</li> </ul>
<b>3.0</b>	<b>Values:</b>		
None			

## 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-Term Exam	5 <sup>th</sup>	20%
2	Activity (Online quiz 1 & 2)	Throughout	10%
3	Final Practical Exam	11 <sup>th</sup>	20%
4	Final Exam	12 <sup>th</sup> /13 <sup>th</sup>	50%
<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:**

Faculty members are available for individual consultation. They usually dedicate 12 hours weekly for office hours and students are encouraged to visit them for help. Appointments can also be made in person with the faculty through email or phone. Faculty provide a range of academic and course management advice. Each student has an academic adviser who offers personal, academic, psychological, and professional counseling, as well as group counseling to support the academic, behavioral, emotional, psychological, and social growth of students.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ul style="list-style-type: none"> <li>Cell Biology (2017), Thomas Pollard; William Earnshaw and Jennifer Lippincott-Schwartz, International edition (3<sup>rd</sup> edition), Elsevier Publishers, ISBN Number:978-0323417402</li> <li>Campbell biology (2020), Kelly Reece, Jane B.; Taylor, Martha R.; Simon, Eric J.; Dickey, Jean L.; Hogan, 12<sup>th</sup> edition, Pearson Publishers, ISBN Number:978-0135188743.</li> </ul>
<b>Essential References Materials</b>	<ul style="list-style-type: none"> <li>None</li> </ul>
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>Essentials of Cell Biology, Nature Education (online). <a href="https://www.nature.com/scitable/ebooks/essentials-of-cell-biology-14749010/contents">https://www.nature.com/scitable/ebooks/essentials-of-cell-biology-14749010/contents</a></li> </ul>
<b>Other Learning Materials</b>	<ul style="list-style-type: none"> <li>None</li> </ul>

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms and Laboratories
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Data show, Blackboard and A/V
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Microscopes

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Program Leaders	Direct
Extent of achievement of course learning outcomes	Faculty	Direct
Quality of learning resources	Student, Faculty	Indirect
Course management and planning	Students	Indirect
Teaching and interaction with students	Students	Indirect
Effectiveness of Evaluation and exams	Students, peer review	Direct, Indirect

**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	DEPARTMENT COUNCIL
Reference No.	11 <sup>TH</sup>
Date	24 <sup>TH</sup> MAY 2022





## Course Specifications

<b>Course Title:</b>	<b>Medical Chemistry (1)</b>
<b>Course Code:</b>	<b>370112-3</b>
<b>Program:</b>	<b>Bachelor in Radiological Sciences</b>
<b>Department:</b>	<b>Department of Radiological Sciences</b>
<b>College:</b>	<b>College of Applied Medical Sciences</b>
<b>Institution:</b>	<b>Taif University</b>

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## A. Course Identification

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

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

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50%
2	Blended	None	0%
3	E-learning	None	0%
4	Distance learning	None	0%
5	Other (Laboratory)	30	50%

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

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	N/A
4	Others (specify)	NA
	<b>Total</b>	<b>60 Hours</b>

## B. Course Objectives and Learning Outcomes

### 1. Course Description

This course includes two main parts as detailed below:

- Inorganic part** which illustrates atoms, molecules, and different chemical reactions. Types of solutions and their concentrations including molar, molecular weight, and normal solution, chemical equilibrium and different types of buffer solutions will be covered.
- Organic part** covers different types of chemical bonds and nomenclature, isomerism reactions of organic compounds such as saturated and unsaturated hydrocarbons, alcohols, thiols, ethers, aldehydes, ketones in addition to carboxylic acids and their derivatives. Moreover, aromatic compounds e.g. nomenclature, aromaticity, benzene, phenol and amines and heterocyclic compounds are covered as well.

## 2. Course Main Objective

The main objective of this course is to provide students with fundamentals of inorganic and organic chemistry. This includes symbols, molecular atoms, different types of chemical reactions, units of concentrations, chemical bonds, chemical equilibrium and different types of buffer solutions. Students will be able to know general rules for IUPAC/common nomenclature and classification of organic compounds, predict different methods used for preparation and reaction of alkanes, alkenes, alkynes and different types of organic reactions such as addition, elimination and substitution reactions.

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
<b>1</b>	<b>Knowledge and Understanding:</b>	
<b>1.1</b>	Describe atoms, molecules and different types of chemical bonds, chemical reactions, solutions and buffers	<b>K1</b>
<b>1.2</b>	Identify organic compounds, their derivatives, functional groups and isomerism.	<b>K1</b>
<b>1.3</b>	Recognize basic principles and instruments used in chemistry laboratory tests.	<b>K2</b>
<b>2</b>	<b>Skills:</b>	
<b>2.1</b>	Analyze chemical reactions; and identify organic and inorganic compounds.	<b>S1</b>
<b>3</b>	<b>Values:</b>	
<b>None</b>		

## C. Course Content

### 1. Theory

No	List of Topics	Contact Hours
<b>General chemistry</b>		
1	Atoms, molecules and modern periodic table, orbital and electronic configuration (Presentation)	3
2	Chemical bonds (Presentation)	3
3	Types of chemical reactions (Presentation)	3
4	Solution (molarity, molality, normality) and chemical equilibrium (Presentation)	3
<b>Organic chemistry</b>		
5	Functional groups and nomenclature of organic compound (Presentation)	3
6	Alcohols and ethers (Presentation)	3
7	Aldehydes and ketones (Presentation)	3
8	Carboxylic acids, esters and amides (Presentation)	3
9	Aromatic compounds (Presentation)	3
10	Isomerism in organic chemistry (Presentation)	3
<b>Total</b>		<b>30</b>

### 2. Practical

No	List of Topics	Contact Hours
<b>General chemistry</b>		
1	Introduction, safety and glassware (Lab Manual)	1
2	Identification of acidic radicals (Lab Manual)	2
3	Identification of basic radicals (Lab Manual)	3
4	Neutralization reactions -standardization of HCl against $\text{Na}_2\text{CO}_3$ <sup>-</sup> Titration of HCl against NaOH (Lab Manual)	3
<b>Organic chemistry</b>		
5	Identification of alcohols (Lab Manual)	3
6	Identification of aldehydes and ketones (Lab Manual)	3
7	Identification of carboxylic acids (Lab Manual)	3
8	Identification of salts of aromatic acids (Lab Manual)	3
9	General scheme for identification of inorganic compounds (Lab Manual)	3
10	General scheme for identification of organic compounds (Lab Manual)	3
11	General scheme for identification of inorganic and organic compounds (Lab Manual)	3
<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
<b>1.0</b>	<b>Knowledge and Understanding:</b>		
<b>1.1</b>	Describe atoms, molecules and different types of chemical bonds, chemical reactions, solutions and buffers	<ul style="list-style-type: none"><li>Lectures</li></ul>	<ul style="list-style-type: none"><li>Written Exams</li></ul>
<b>1.2</b>	Identify organic compounds, their derivatives, functional groups and isomerism.	<ul style="list-style-type: none"><li>Lectures</li></ul>	<ul style="list-style-type: none"><li>Written Exams</li></ul>
<b>1.3</b>	Recognize basic principles and instruments used in chemistry laboratory tests.	<ul style="list-style-type: none"><li>Lectures</li><li>Practical Sessions</li></ul>	<ul style="list-style-type: none"><li>Written Exams</li><li>Practical Exams</li></ul>
<b>2.0</b>	<b>Skills:</b>		
<b>2.1</b>	Analyze chemical reactions, and identify organic and inorganic compounds.	Practical Sessions	Practical Exams
<b>3.0</b>	<b>Values:</b>		
<b>None</b>			

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Periodic exam 1	3 <sup>rd</sup>	10%
2	Mid-Term Exam	5 <sup>th</sup>	30%
3	Periodic exam 2	8 <sup>th</sup>	10%
4	Final Exam	12 <sup>th</sup> /13 <sup>th</sup>	50%
<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:

Faculty members are available for individual consultation. They usually dedicate 12 hours weekly for office hours and students are encouraged to visit them for help. Appointments can also be made in person with the faculty through email or phone. Faculty provide a range of academic and course management advice. Each student has an academic adviser who offers personal, academic, psychological, and professional counseling, as well as group counseling to support the academic, behavioral, emotional, psychological, and social growth of students.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<ul style="list-style-type: none"><li>• William H.; Foote, Christopher S.; Iverson, Brent L.; Anslyn, Eric V. Brown, Organic Chemistry, 2008, 4th Edition, CENGAGR Learning, ISBN: 978-1-305-58035-0.</li><li>• Kenneth W. Whitten and Kenneth D. Gailey, General Chemistry with Qualitative Analysis, 2000, 6<sup>th</sup> edition, SAUNDERS COLLEGE PUBLISHING, ISBN: 0030212170.</li></ul>
<b>Essential References Materials</b>	<ul style="list-style-type: none"><li>• None</li></ul>
<b>Electronic Materials</b>	<ul style="list-style-type: none"><li>• SDL: <a href="https://sdl.edu.sa/SDLPortal/en/Publishers.aspx">https://sdl.edu.sa/SDLPortal/en/Publishers.aspx</a> Chemistry Online: <a href="http://askthenerd.com/chemistryonline/index.html">http://askthenerd.com/chemistryonline/index.html</a></li></ul>
<b>Other Learning Materials</b>	<ul style="list-style-type: none"><li>• None</li></ul>



## 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> <li>Classrooms and Laboratories</li> </ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> <li>Data Show, Blackboard and A/V</li> </ul>
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> <li>Laboratory should be stocked with all necessary consumable materials (chemicals, reagents, kits, gloves. etc).</li> <li>All safety materials, tools, and regulations must be available and applied appropriately.</li> <li>Necessary laboratory equipment should be available such as fridge, spectrophotometry, pipettes, pH meter, glassware etc.</li> </ul>

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching	Program Leaders	Direct
Extent of achievement of course learning outcomes	Faculty	Direct
Quality of learning resources	Student, Faculty	Indirect
Course management and planning	Students	Indirect
Teaching and interaction with students	Students	Indirect
Effectiveness of Evaluation and exams	Students, peer review	Direct, Indirect

**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	DEPARTMENT COUNCIL
Reference No.	11 <sup>TH</sup>
Date	24 <sup>TH</sup> MAY 2022

