

## Course Specification

University: Al-azhar

Faculty: Medicine

Department: Medical Biochemistry

### 1- Data of the course:

<b>Code of the course:</b> 101-Bio	<b>Title of the course:</b> Medical Biochemistry for MBChB program	<b>Year:</b> first academic year of MBChB program
Specialty: medical biochemistry	Number of teaching units: 11 units	Lectures: 80 hours Total:150 hrs Practical/ Clinical:70 hours

<b>2- Objectives of the course:</b>	<p>The aim of this course is to enable the students to:</p> <ol style="list-style-type: none"> <li>1-Understand at molecular level the complex chemical structures and accompanying reactions that determine the biological processes.</li> <li>2-Integrate biochemical data with the ongoing basic medical sciences.</li> <li>3-Follow the rapidly changing and inflating details about molecular biology and genetics.</li> <li>4-Develop the basic scientific research skills as well as effective communication and team work attitudes.</li> </ol>
-------------------------------------	---

### 3- ILOs

A-Knowledge and understanding:	<p>At the end of the course the students should know:</p> <ol style="list-style-type: none"> <li><b>1-Describe structure and properties of the major classes of biochemical compounds</b> including carbohydrates, lipids, proteins and nucleic acids.</li> <li>2-Identify structure, functions and metabolism of nucleic acids (molecular biology).</li> <li><b>3-Recognize principles of basic physical and organic chemistry</b> which have relation to medical biochemistry.</li> <li><b>4-Describe enzymes</b>, action, different classes and their application in the metabolism.</li> <li><b>5-Vitamins</b>, structure, functions and their deficiency manifestations.</li> <li><b>6-Biological membranes</b>, and relate their operation to their structure components.</li> </ol>
--------------------------------	--

<b>B-Intellectual Skills:</b>	<p>At the end of the course the students should able to:</p> <ol style="list-style-type: none"> <li>1-Assess the acid base state of an individual from his blood gases report.</li> <li>2-Interpret the results of chemical tests to identify an unknown solution.</li> <li>3-Identify and interpret bands of chromatography and electrophoresis and comment on them.</li> <li>4-Isolation of DNA from biological samples.</li> <li>5-Recognize the application of biochemistry in biotechnology and cell biology.</li> <li>6-Recognize the application of different classes of enzymes in metabolism</li> </ol>
<b>C-Practical (Professional) Skills:</b>	<p>At the end of the course the students should able to:</p> <ol style="list-style-type: none"> <li>1-Measure pH of a solution and recognize the function of blood buffers and read a blind gases report (level 5 competence).</li> <li>2-Perform some chemical tests to identify different carbohydrates, lipids and proteins (level 5 competence)..</li> <li>3-Observe a demonstration for chromatography and electrophoresis techniques and use them to separate different chemical compounds (level 1 competence).</li> <li>4-Identify DNA extraction bands and aware of further techniques using DNA extracts (level 2 competence).</li> </ol>
<b>D-General Skills:</b>	<p>At the end of the course the students should able to:</p> <ol style="list-style-type: none"> <li>1-Follow the rules of the lab.</li> <li>2-Appreciate the danger of handling chemical reagents on people and environment.</li> <li>3-Co-operate with others and help them.</li> <li>4-Present clearly and effectively a scientific topic (using computer facilities) in tutorial or a staff meeting or at the yearly scientific day.</li> <li>5-Deal with all staff and co-staff respectively, regardless of degree or occupation.</li> <li>6-Work effectively in groups.</li> <li>7-Maintain the professional image concerning behavior, dress, speech and communications.</li> <li>8-Maintain responsibility towards work.</li> </ol>

**4- Course Content:**

**Theoretical Course Contents:**

Ser.	Subjects	Lectures hours	Practical & small group hours	Total hours	% total hours
1	Physical and organic chemistry	12	4	16	8%
2	Physical and organic chemistry	15	8	23	11.5%
3	Lipid Chemistry	15	4	19	9.5%
4	Protein Chemistry, and chemistry of hemoglobin and myoglobin	20	5	25	12.5%
5	Enzymes	15	5	20	10%
6	Vitamins	20	2	22	11%
7	Biological membranes	5	2	7	3.5%
8	Xenobiotics	5	2	7	3.5%
9	Digestion, absorption, fermentation and putrefaction	5	2	7	3.5%
10	Nucleotides and nucleic acids chemistry	5	2	7	3.5%
11	Nucleic acid metabolism: (Molecular biology): (a-e) 22.5%				
a	DNA organization.	5	1	6	3 %

	b	DNA replication, mutation and repair	5	2	7	3.5%
	c	RNA synthesis, processing and modification	5	2	7	3.5%
	d	Protein synthesis and genetic code	5	2	7	3.5%
	e	Regulation of gene expression	5	2	7	3.5%
	f	Recombinant DNA technology	6	5	11	5.5 %
	12	Nucleotide metabolism				
	Total		150	50	200	100%

5- Methods of teaching:	<p>A. <i>Lectures</i></p> <p>B. <i>Practical classes.</i></p> <p>C. <i>Small group teaching (tutorials)</i></p> <p>D. <i>A yearly scientific day for students in the form of student's presentations. The titles of the subjects are determined during several meeting with staff.</i></p>
6- Methods of teaching of handicaps	Not present

## 7- Students evaluation and assessment:

<p>A- Method of assessment:</p>	<p><u>1.Attendance criteria:</u> The minimum acceptable attendance in the practical and tutorial classes is 75%. Students fail to attend the required percentage will not be allowed to attend the final practical exam.</p> <p><u>2.Assessment tool:</u></p> <table border="1" data-bbox="485 528 1513 1155"> <thead> <tr> <th data-bbox="485 528 743 607">Tool</th> <th data-bbox="743 528 1513 607">Purpose</th> </tr> </thead> <tbody> <tr> <td data-bbox="485 607 743 730">Written examination</td> <td data-bbox="743 607 1513 730">Assessment of knowledge and understanding</td> </tr> <tr> <td data-bbox="485 730 743 853">Practical examination</td> <td data-bbox="743 730 1513 853">Assessment of practical, intellectual and general skills</td> </tr> <tr> <td data-bbox="485 853 743 976">Oral examination</td> <td data-bbox="743 853 1513 976">Assessment of knowledge and understanding</td> </tr> <tr> <td data-bbox="485 976 743 1155">Log book</td> <td data-bbox="743 976 1513 1155">Assessment of sharing in the scientific day (once a year) and the overall activities during the academic year (General Skills).</td> </tr> </tbody> </table>	Tool	Purpose	Written examination	Assessment of knowledge and understanding	Practical examination	Assessment of practical, intellectual and general skills	Oral examination	Assessment of knowledge and understanding	Log book	Assessment of sharing in the scientific day (once a year) and the overall activities during the academic year (General Skills).						
Tool	Purpose																
Written examination	Assessment of knowledge and understanding																
Practical examination	Assessment of practical, intellectual and general skills																
Oral examination	Assessment of knowledge and understanding																
Log book	Assessment of sharing in the scientific day (once a year) and the overall activities during the academic year (General Skills).																
<p>B- Time of assessment</p>	<p>A. Continuous assessments throughout the whole year</p> <p>B. Formative examination: Midyear exam: February. (Student knows his marks after the formative exam).</p> <p>C. Final examination: In June. Those who fail to pass the final exam or postpone it can enter the final exam re-held in September.</p>																
<p>C- Allocated marks/Distribution</p>	<p><u>Grading system:</u></p> <table border="1" data-bbox="485 1462 1406 1872"> <thead> <tr> <th colspan="2" data-bbox="485 1462 1086 1529"><i>Examination</i></th> <th data-bbox="1086 1462 1406 1529"><i>Marks allocated</i></th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="485 1529 1086 1597"><i>Continous assessment</i></td> <td data-bbox="1086 1529 1406 1597"><b>30</b></td> </tr> <tr> <td data-bbox="485 1597 794 1805" rowspan="3"><i>Final examination</i></td> <td data-bbox="794 1597 1086 1664"><i>Written</i></td> <td data-bbox="1086 1597 1406 1664"><b>90</b></td> </tr> <tr> <td data-bbox="794 1664 1086 1731"><i>Oral</i></td> <td data-bbox="1086 1664 1406 1731"><b>15</b></td> </tr> <tr> <td data-bbox="794 1731 1086 1805"><i>Practical</i></td> <td data-bbox="1086 1731 1406 1805"><b>15</b></td> </tr> <tr> <td colspan="2" data-bbox="485 1805 1086 1872"><i>Total</i></td> <td data-bbox="1086 1805 1406 1872"><b>150</b></td> </tr> </tbody> </table>	<i>Examination</i>		<i>Marks allocated</i>	<i>Continous assessment</i>		<b>30</b>	<i>Final examination</i>	<i>Written</i>	<b>90</b>	<i>Oral</i>	<b>15</b>	<i>Practical</i>	<b>15</b>	<i>Total</i>		<b>150</b>
<i>Examination</i>		<i>Marks allocated</i>															
<i>Continous assessment</i>		<b>30</b>															
<i>Final examination</i>	<i>Written</i>	<b>90</b>															
	<i>Oral</i>	<b>15</b>															
	<i>Practical</i>	<b>15</b>															
<i>Total</i>		<b>150</b>															

	<p>A. The minimum passing score is 90 marks, provided at least 30 marks are obtained in the written exam.</p> <p>B. Passing grades are: Excellent <math>\geq 85\%</math>, very good <math>75\% \leq 85\%</math>, good <math>65\% \leq 75\%</math> and fair <math>60\% \leq 65\%</math>.</p>
--	---

#### 8- Teaching books, notebooks, and references:

Books/Notebooks:	<p>I. <b><u>Basic materials:</u></b></p> <p>A. Overhead projections and computer presentations used during teaching in tutorial classes.</p> <p>B. Notes on the laboratory practical work.</p>
References:	
	<p>II. <b><u>Suggested materials:</u></b></p> <p>A. Harper's illustrated biochemistry.</p> <p>B. Lippincott illustrated reviews of biochemistry.</p> <p>C. Oraby's illustrated review of biochemistry.</p> <p>D. Textbook of biochemistry with clinical correlations, 5<sup>th</sup> Ed, Devlin TM Ed. Wiley-Liss, New York, 2002.</p>

**Head of the department**

**Course Coordinator:**