

## Course Overview

### Biochemistry II

<b>Course code :</b>	NMT402
<b>Course title:</b>	Biochemistry II
<b>Level/semester:</b>	(Forth Semester)
<b>Preceding Courses &amp; Main Subjects</b>	-Biology -Chemistry -Human Anatomy & Physiology
<b>Credit hours: 4</b>	<b>Theoretical: 3</b>
	<b>Practical: 2</b>

<b>Course objectives</b>	<p><i>By the end of this course, the students will be able to:</i></p> <ol style="list-style-type: none"> <li>1. Understand the normal metabolic pathways of large molecules and metabolism of small molecules,</li> <li>2. Know generation and storage of energy.</li> <li>3. Recognize with the basis of metabolic diseases.</li> <li>4. Understand metabolic pathways of protein and metabolic diseases disorders.</li> <li>5. Understand the hormonal and non-hormonal controls of the metabolic diseases.</li> <li>6. Be aware of the membrane biochemistry and its role in biochemical regulation</li> <li>7. Be familiar with biochemical methodology and clinical biochemistry techniques as diagnostic tools</li> </ol>			
<b>Main Teaching Strategies</b>	<p><u>Main teaching method</u></p> <p>Modified lecture, group discussion, written assignment, internet application , Demonstration and Practical Training</p> <p><u>Main teaching aids</u></p> <p>Data show, overhead projector, slides, video &amp; TV Flip chart, Models</p>			
<b>Methods of Assessments</b>	<p style="text-align: center;"><i>Participation, Attendance, Quizzes, Mid term exam, Final exam ,Practical Exam</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;"><b>Student's' assessment methods:</b></td> <td style="width: 60%;"> <ul style="list-style-type: none"> <li>● Students assignment 40%</li> <li>● Final practical exam 12%</li> <li>● Final written exam 48%</li> </ul> </td> <td style="width: 20%;"></td> </tr> </table>	<b>Student's' assessment methods:</b>	<ul style="list-style-type: none"> <li>● Students assignment 40%</li> <li>● Final practical exam 12%</li> <li>● Final written exam 48%</li> </ul>	
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<p><b>References</b></p>	<ul style="list-style-type: none"> <li>• - Lippincott's Biochemistry by Pamela C.Chempe: Lippincott-Rave, USA</li> <li>• .Biochemistry for Clinical Medicine by Ira Thabrew: Greenwich Medical Media Ltd. Harpers Illustrated Biochemistry 29th Edition (LANGE Basic Science. Amazon.com, 2012</li> </ul> <p>Marks' Basic Medical Biochemistry: A Clinical Approach (Point (Lippincott Williams &amp; Wilkins) by Alisa Peet MD, Michael A. Lieberman PhD and Allan Marks MD ( 2012)</p> <p>Biochemistry (Lippincott's Illustrated Reviews Series) by Richard A. Harvey PhD and Denise R. Ferrier ( 2010)</p> <p>Textbook of Biochemistry with Clinical Correlations , Thomas M. Devlin, Amazon.com. (2010)</p>
<p><b>Course contents</b></p>	<p><b><i>CHEPTER 1</i></b></p> <p><i>Lecture-1:</i> Introduction and course overview  <i>Lecture-2: Structural representation of sugars</i>  <i>Lecture-3:</i> Carbohydrates Metabolism-Digestion and Absorption  <i>Lecture-4:</i> Glucose Oxidation (Glycolysis)  <i>Lecture-5-6:</i> Oxidative decarboxylation of Pyruvate and Tricarboxylic acid cycle (Krebs´ cycle)  <i>Lecture-7:</i> Pentose phosphate pathway and Fructose Metabolism  <i>Lecture-:</i> 8 Gluconeogenesis, Cori and Alanine cycle  <i>Lecture-9:</i> Glycogen metabolism  <i>Lecture-10:</i> Electron transport chain(respiratory chain) and oxidative</p> <p><b><i>CHEPTER 2</i></b></p> <p><i>Lecture-11-12:</i>Introduction and Lipids Metabolism- Digestion and absorption  <i>Lecture-13:</i> Cholesterol metabolism  <i>Lecture-14:</i> Lipolysis - Oxidation of fatty acids  <i>Lecture- 15:</i> Ketone body metabolism and ketoacidosis  <i>Lecture-1-2: Fatty Acids Biosynthesis</i>  <i>Lecture-3-4:</i> Lipids Transport - Lipoprotein metabolism</p> <p><b><i>CHEPTER 3</i></b></p> <p>Introduction of Protein metabolism <i>Lecture-5:</i>  <i>Lecture-5-6:</i> Introduction of Protein metabolism</p>

	<p>Digestion and Absorption</p> <p><i>Lecture-7: Amino Acids Metabolism</i></p> <p><i>Lecture-8: Urea cycle and hyperammonaemia</i></p> <p><i>Lecture-9: Inborn Error of Glycine Amino Acid</i></p> <p><i>Lecture-10: Inborn Error of Some Individual Amino Acids</i></p> <p><i>Lecture-11: Inborn Error of Some Individual Amino Acids</i></p> <p><i>Lecture-12: Metabolism of organ integration</i></p> <p><i>Lecture-13: Fasting cycle,</i></p> <p><i>Lecture-14: Feeding cycle,</i></p> <p><i>Lecture-15: Plasma membrane structure and transport</i></p> <p><u>Lab: Serum Protein Electrophoresis Procedure</u></p>
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Course Title:-Practical

EXERCISE	CONTENTS	HOURS
1	- Introduction to clinical biochemistry laboratory & safety measures	4
2	- Spectrophotometry	4
3	- Methods of Urine collection & storage	4
4	- Fasting & Postprandial blood sugar	4
5	- Glucose tolerance test (GTT)	4
6	- Estimation of Glucose in Urine	4
7	- Estimation of serum total lipids	4
8	- Estimation of serum triglycerides	4
9	- Estimation of serum Cholesterol (Total & HDL)	8
10	- Estimation of Ketone bodies in Urine	4
11	- Estimation of serum albumin and total proteins	8
12	- Estimation of serum uric acid	4
13	- Using strip test in Urine analysis	4
TOTAL		60

