

# BIOCHEMISTRY WITH A MEDICAL PERSPECTIVE

Online Biochemistry Course, Faculty of Medicine, University of Toronto, Canada

## Course Schedule (SCS-2472-042)

Summer Semester 29 April 2024 to 09 August 2024

Week	Section / Online Quiz	Dates (Week Start)	Lectures	Lecturer	Medical Vignettes By Dr. Murray	Text Chapter
1	<b>Proteins and Enzymes</b>	29 Apr 2024	Lecture 1 - <b>Biochemistry and the Unity of Life</b> Lecture 2 - <b>Water, Weak bonds, pH</b> Lecture 3 - <b>Amino Acids</b> Lecture 4 - <b>Protein 3D Structure: Part 1</b>	Dr. Reithmeier Dr. Reithmeier Dr. Reithmeier Dr. Reithmeier	<b>Pathological Conditions Result if Protein Intake Is Inadequate</b>	1 2 3 4,5
2		06 May 2024	Lecture 5 - <b>Protein 3D Structure: Part 2</b> Lecture 6 - <b>Enzymes: Basic Concepts</b> Lecture 7 - <b>Enzyme Kinetics</b> Lecture 8 - <b>Enzyme Regulation, Allostery</b>	Dr. Reithmeier Dr. Baker Dr. Baker Dr. Baker	<b>Medical Uses of Enzymes: Diagnostic Enzymology</b>	4, 5 6 7 7
<b>Quiz 1</b>		<b>13 May 2024</b>				
3		13 May 2024	Lecture 9 - <b>Enzyme Inhibition</b> Lecture 10 - <b>Enzyme Mechanisms</b> Lecture 11 - <b>Hemoglobin</b> Lecture 12 - <b>Carbohydrates One</b>	Dr. Baker Dr. Baker Dr. Baker Dr. Baker	<b>CO- The Silent Killer</b>	8 8 9 10
4		20 May 2024	Lecture 13 - <b>Carbohydrates Two</b> Lecture 14 - <b>Lipids: Fatty Acids, Membrane Lipids</b> Lecture 15 - <b>Membrane Structure and Membrane Proteins</b> Lecture 16 - <b>Membrane Transport Proteins</b>	Dr. Baker Dr. Reithmeier Dr. Reithmeier Dr. Reithmeier	<b>Liposomes</b>	10 11 12 12
<b>Quiz 2</b>		<b>27 May 2024</b>				
5	<b>Metabolism</b>	27 May 2024	Lecture 17 - <b>Membrane Signaling Proteins</b> Lecture 18 - <b>Metabolism : Basic Concepts</b> Lecture 19 - <b>Glycolysis</b> Lecture 20 – <b>Accessing Glycogen Stores</b>	Dr. Reithmeier Dr. Baker Dr. Baker Dr. Baker	<b>Cholera and Whooping Cough Are Due to Altered G-protein Activity</b>	13 15 16 24
6		03 Jun 2024	Lecture 21 – <b>Pyruvate Dehydrogenase Complex and the Citric Acid Cycle</b>	Dr. Baker	<b>Beriberi-A Disease Due to Deficiency Of Thiamine (Vitamin B-1)</b>	18,19 20

Week	Section / Online Quiz	Dates (Week Start)	Lectures	Lecturer	Medical Vignettes By Dr. Murray	Text Chapter
			Lecture 22 - <b>Oxidative Phosphorylation/The Electron Transport Chain</b> Lecture 23 - <b>Oxidative Phosphorylation/Proton Motive Force</b> Lecture 24 – <b>Rebuilding Glycogen</b>	Dr. Baker Dr. Baker Dr. Baker		21  25
<b>Quiz 3 10 Jun 2024</b>						
7		10 Jun 2024	Lecture 25 - <b>Fat Mobilization</b> Lecture 26 - <b>Fatty Acid Degradation, ATP Production and Gluconeogenesis</b> Lecture 27 - <b>Diabetes and Ketone Bodies</b> Lecture 28 - <b>Discovery of Insulin</b>	Dr. Baker Dr. Baker Dr. Baker Dr. Baker	<b>A Biochemical Understanding Of Glycogen Storage Diseases (GSDs) Is Possible</b>	27 17,27  27 13,27
8		17 Jun 2024	Lecture 29 - <b>Fatty Acid and Triacylglycerol Synthesis</b> Lecture 30 - <b>Cholesterol Synthesis</b> Lecture 31 - <b>Lipoproteins</b> Lecture 32 - <b>Biochemistry of Platelets and Eicosanoids</b>	Dr. Baker Dr. Baker Dr. Baker Dr. Baker	<b>Familial Hypercholesterolemia (FH)</b>	28,29  29 29 28
<b>Quiz 4 24 Jun 2024</b>						
9		24 Jun 2024	Lecture 33 - <b>Phospholipid Synthesis</b> Lecture 34 - <b>Phosphoinositides and Signaling</b> Lecture 35 - <b>Amino Acid Synthesis</b> Lecture 36 - <b>Nucleotide Metabolism</b>	Dr. Baker Dr. Baker Dr. Reithmeier Dr. Reithmeier	<b>Inherited Defects Of The Urea Cycle Cause Hyperammonemia</b>	29 13 31 32
10	<b>Nucleic Acids</b>	01 Jul 2024	Lecture 37 - <b>Amino Acid Degradation and The Urea Cycle</b> Lecture 38 - <b>Nucleic Acid Structure One</b> Lecture 39 - <b>Nucleic Acid Structure Two</b> Lecture 40 - <b>DNA Replication</b>	Dr. Reithmeier Dr. Kelley Dr. Kelley Dr. Kelley	<b>Loss of Allosteric Control Can Result in Pathological Conditions</b>	30 33 33 34
<b>Quiz 5 08 Jul 2024</b>						

Week	Section / Online Quiz	Dates (Week Start)	Lectures	Lecturer	Medical Vignettes By Dr. Murray	Text Chapter
11		08 Jul 2024	Lecture 41 - DNA Repair Lecture 42 - Transcription I Lecture 43 - Transcription II Lecture 44 - Prokaryotic Regulation	Dr. Kelley Dr. Kelley Dr. Kelley Dr. Kelley	<b>Some Genetic Diseases Are Caused by The Expansion of Repeats of Three Nucleotides</b>	35 36 36 37
12		15 Jul 2024	Lecture 45 - Eukaryotic Regulation Lecture 46 - RNA Processing Lecture 47 - Genetic Code Lecture 48 - tRNAs and Amino Acids	Dr. Kelley Dr. Kelley Dr. Kelley Dr. Kelley	<b>Genetic Defects Causing Cystic Fibrosis</b>	37 38 39 39
<b>Quiz 6</b> <b>22 Jul 2024</b>						
13		22 Jul 2024	Lecture 49 - Translation I Lecture 50 - Translation II Lecture 51 - Protein Secretion Lecture 52 - Translation Regulation	Dr. Kelley Dr. Kelley Dr. Kelley Dr. Kelley	<b>Some Antibiotics and Some Toxins Act by Inhibiting Protein Synthesis</b>	40 40 40 40
14		29 Jul 2024	Lecture 53 - Recombinant Technology I Lecture 54 - Recombinant Technology II	Dr. Kelley Dr. Kelley	<b>Gene Therapy, Transgenic Animals</b>	5, 41 5, 41
<b>MOCK QUIZ</b> <b>Available</b> <b>29 Jul 2024</b>						

## Final Examination 2024

### Date

09 August 2024

### Duration of Exam

3 hours

### Material Tested

Final exam includes all topics covered throughout the course