Biochemistry 385 – Metabolic Biochemistry

Module	Video	Lecture Title *(Lecture Videos and PPT Slides)*	Video Length	Textbook (3rd Edition)
1	M1T1	*Bioenergetics of Coupled Reactions in Metabolism*	*26:59*	*Sections: 2.1, 2.2*
	M1T2	*Amino Acids, Proteins, and Enzymes*	*20:36*	*Sections: 4.1, 4.2, 7.1*
	M1T3	*Metabolic Flux: Energy Conversion Pathways*	*17:34*	*Sections:12.1, 13.1, 14.2*
	M1T4	*Plants Harvest Energy from Sunlight*	*16:12*	*Chapter 15.1*
	M1T5	*Energy Conversion: Photosystems I and II*	*23:46*	*Chapter 15.2*
D2Q-01 SW-01	M1T6	*Photophosphorylation Generates ATP*	*14:01*	*Chapter 15.3*
2	M2T1	*Carbon Fixation by the Calvin-Benson Cycle*	*24:13*	*Chapter 15.4a*
	M2T2	*Regulation of the Calvin-Benson Cycle by Light*	*11:24*	*Chapter 15.4b*
	M2T3	*Photorespiration: Hatch-Slack and CAM Pathways*	*19:12*	*Chapter 15.4cd*
	M2T4	*Glycobiology: Study of Carbohydrate Structures*	*18:26*	*Chapter 16.1ab*
	M2T5	*Structure and Function of Carbohydrate Polymers*	*16:22*	*Chapter 16.1cd*
D2Q-02 SW-02	M2T6	*Glycoconjugates and ABO Human Blood Types*	*29:43*	*Chapter 16.2ab*
3	M3T1	*β-Lactam Antibiotics Target Peptidoglycan Synthesis*	*18:24*	*Chapter 16.2cd*
	M3T2	*Pentose Phosphate Pathway: Enzymatic Reactions*	*26:27*	*Chapter 17.1ab*
	M3T3	*Glucose-6P Dehydrogenase Deficiency in Humans*	*12:52*	*Chapter 17.1c*
	M3T4	*Gluconeogenesis Uses Non-Carbohydrate Sources*	*14:23*	*Chapter 17.2a*
	M3T5	*Gluconeogenesis Bypasses the Glycolytic Pathway*	*18:41*	*Chapter 17.2b*
D2Q-03 SW-03	M3T6	*Regulation of Gluconeogenesis and the Cori Cycle*	*14:50*	*Chapter 17.2cd*
		EXAM 1 covers Modules 1-3 (18 topics)		
4	M4T1	*Glycogen Metabolism: Degradation*	*25:55*	*Chapter 17.3a*
	M4T2	*Glycogen Metabolism: Synthesis*	*11:17*	*Chapter 17.3b*
	M4T3	*Regulation of Glycogen Metabolism: Storage Diseases*	*20:20*	*Chapter 17.3cd*
	M4T4	*Structure and Chemical Properties of Fatty Acids*	*22:23*	*Chapter 18.1a*
	M4T5	*Structure and Function of Waxes and Triacylglycerols*	*17:32*	*Chapter 18.1b*
D2Q-04 SW-04	M4T6	*Absorption and Metabolism of Dietary Triacylglycerols*	*14:19*	*Chapter 18.2a*

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5	M5T1	*Triacylglycerol Metabolism in Liver and Adipose Tissue*	*11:12*	*Chapter 18.2bc*
	M5T2	*Cell Membranes Contain Three Major Lipids*	*17:15*	*Chapter 18.3*
	M5T3	*Cholesterol Derivatives Regulate Nuclear Receptors*	*20:07*	*Chapter 18.4a*
	M5T4	*Eicosanoid Hormones are Derived from Arachidonate*	*16:15*	*Chapter 18.4b*
	M5T5	*The Fatty Acid β-Oxidation Pathway in Mitochondria*	*25:41*	*Chapter 19.1a*
D2Q-05 SW-05	M5T6	*Ketogenesis is a Salvage Pathway for Acetyl-CoA*	*18:44*	*Chapter 19.1c*
6	M6T1	*Fatty Acid Synthase is a Multifunctional Enzyme*	*25:10*	*Chapter 19.2ab*
	M6T2	*Regulation of Fatty Acid Synthesis*	*14:45*	*Chapter 19.2e*
	M6T3	*Cholesterol is Synthesized from Acetyl-CoA*	*14:16*	*Chapter 19.3a*
	M6T4	*Cholesterol Metabolism and Cardiovascular Disease*	*31:26*	*Chapter 19.3bc*
	M6T5	*Nitrogen Fixation and Assimilation in Plants*	*28:11*	*Chapter 20.1a*
D2Q-06 SW-06	M6T6	*Glutamine Synthetase and Aminotransferase Enzymes*	*19:54*	*Chapter 20.1bcd*
		EXAM 2 covers Modules 4-6 (18 topics)		
7	M7T1	*Degradation of Dietary and Cellular Proteins*	*16:06*	*Chapter 20.2a*
	M7T2	*The Urea Cycle Removes Ammonia from the Body*	*24:38*	*Chapter 20.2b*
	M7T3	*Degradation of Glucogenic and Ketogenic Amino Acids*	*21:27*	*Chapter 20.2c*
	M7T4	*Synthesis of Essential and Nonessential Amino Acids*	*24:04*	*Chapter 20.3abc*
	M7T5	*Heme Metabolism: Biosynthesis and Degradation*	*16:16*	*Chapter 20.4a*
D2Q-07 SW-07	M7T6	*Synthesis of Tyrosine and Arginine Metabolites*	*22:15*	*Chapter 20.4bc*
8	M8T1	*Structure and Function of Nucleotides*	*10:30*	*Chapter 21.1*
	M8T2	*The Purine Biosynthetic Pathway*	*18:48*	*Chapter 21.2ab*
	M8T3	*Defects in Purine Metabolism*	*16:54*	*Chapter 21.2cd*
	M8T4	*Pyrimidine Metabolism and Degradation*	*16:09*	*Chapter 21.3*
	M8T5	*Structure and Function of Ribonucleotide Reductase*	*17:15*	*Chapter 21.4a*
D2Q-08 SW-08	M8T6	*Thymine Deoxyribonucleotides and Anticancer Drugs*	*20:38*	*Chapter 21.4bc*
9	M9T1	*Metabolic Integration at the Physiologic Level*	*25:15*	*Chapter 22.1ab*

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	M9T2	*Insulin and Glucagon Control Glucose Homeostasis*	*19:35*	*Chapter 22.1cd*
	M9T3	*Control of Energy Balance by Hormone Signaling*	*30:26*	*Chapter 22.2ab*
	M9T4	*The Metabolic Link Between Obesity and Diabetes*	*17:55*	*Chapter 22.2c*
	M9T5	*Biochemistry of Macronutrition and Dieting*	*14:17*	*Chapter 22.3a*
D2Q-09 SW-09	M9T6	*Metabolic Effects of Exercise: AMPK Signaling*	*17:56*	*Chapter 22.3bc*
		EXAM 3 covers Modules 7-9 (18 topics)		
10	M10T1	*Structure and Function of DNA Replication Proteins*	*21:57*	*Chapter 23.1bc*
	M10T2	*Initiation and Termination of DNA Replication*	*14:47*	*Chapter 23.1d*
	M10T3	*Causes and Consequences of DNA Damage*	*26:56*	*Chapter 23.2ab*
	M10T4	*Biochemistry of DNA Repair Mechanisms*	*18:34*	*Chapter 23.2c*
	M10T5	*Mechanisms of DNA Recombination*	*16:46*	*Chapter 23.3*
D2Q-10 SW-10	M10T6	*Structure and Function of RNA*	*13:49*	*Chapter 24.1*
11	M11T1	*Biochemistry of RNA Synthesis*	*22:36*	*Chapter 24.2*
	M11T2	*Mechanisms of Eukaryotic RNA Processing*	*32:42*	*Chapter 24.3*
	M11T3	*RNA-Mediated Gene Silencing*	*13:12*	*Chapter 24.4*
	M11T4	*Deciphering the Genetic Code: Biochemical Approaches*	*17:49*	*Chapter 25.1*
	M11T5	*Transfer RNA Synthetases: The Second Genetic Code*	*10:43*	*Chapter 25.2a*
D2Q-11 SW-11	M11T6	*Biochemistry of Protein Synthesis and Termination*	*27:56*	*Chapter 25.2bcd*
12	M12T1	*Post-translational Modification of Proteins*	*14:09*	*Chapter 25.3*
	M12T2	*Molecular Mechanisms of Gene Regulation*	*15:52*	*Chapter 26.1*
	M12T3	*Prokaryotic Gene Regulation: lac operon*	*9:06*	*Chapter 26.2a*
	M12T4	*Prokaryotic Gene Regulation: SOS and trp operons*	*14:44*	*Chapter 26.2bd*
	M12T5	*Eukaryotic Gene Regulation: Chromatin Modifications*	*16:04*	*Chapter 26.3a*
D2Q-12 SW-12	M12T6	*Reprogramming Gene Expression: Induced Pluripotency*	*15:26*	*Chapter 26.3d*
		EXAM 4 covers Modules 10-12 (18 topics)		
		ONLINE - FINAL EXAM: Based on a Set of 250 Questions *(Final Exam Question Set is available in the D2L Quiz tab)*		