

Course	Unit	Chapter	Lesson
Biochemistry	Carbohydrates	Carbohydrates Overview	Candy Kingdom Mind Map
			ATP and Energy Storage Molecules
		Carbohydrate Structure and Function	Carbohydrates Classification
			Carbohydrate Stereochemistry
		Carbohydrate Metabolism, Part 1	Glycolysis: Investment Phase
			Glycolysis: Payoff Phase
			Fates of Pyruvate
		Aerobic Respiration	Pyruvate Oxidation (Acetyl CoA)
			TCA Cycle
			Electron Transport Chain and Oxidative Phosphorylation
			Malate-Aspartate and Glycerol-Phosphate Shuttles
			MCAT Walkthrough: Aerobic Metabolism Part 1 - The Passage
			MCAT Walkthrough: Aerobic Metabolism Part 2 - The Questions
		Carbohydrate Metabolism, Part 2	Gluconeogenesis
			Glycogen Synthesis and Glycogenolysis
			Pentose Phosphate Pathway
			Fermentation
		Carbohydrates (Supplemental)	Malate-Aspartate and Glycerol-Phosphate Shuttles
			Cori and Cahill Cycles
			Galactose Metabolism
			Fructose and Sorbitol Metabolism
	Lipids	Lipids Overview	"SketchyLand Food Court" Mind Map
		Lipid Structure and Function	Structural Lipids
			Signaling Lipids
			Storage Lipids
			MCAT Walkthrough: Lipid Structure and Function - Passage
			MCAT Walkthrough: Lipid Structure and Function - Questions
		Lipid Metabolism	Lipid Digestion and Absorption
			Lipid Transport
			Cholesterol Biosynthesis (Sources, Specific Enzymes)
			Fatty Acid Synthesis
			Triglyceride Catabolism, Beta Oxidation of Even Chain Fatty Acids
			Beta Oxidation of Odd Chain Fatty Acids
			Ketone Bodies
	Nucleic Acids	Nucleic Acids Overview	"SketchyLand EPNOT Center" Mind Map

	Nucleic Acids Structure and Function	DNA Structure and Function
		RNA Structure and Function
	Eukaryotic and Prokaryotic DNA	Eukaryotic Chromosomal Organization and Regulation
		DNA Replication
		Prokaryotic DNA, Regulation, and Operons
		DNA Mutations
		DNA Repair Mechanisms
	Transcription and Translation	Transcription and RNA Processing
		Translation (Protein Synthesis)
	Recombinant DNA and Biotechnology	Recombinant DNA
		Compass Blotting
		Genomic and cDNA Libraries
		Biotechnology
Proteins	Proteins Overview	"SketchyLand Amino Island" Mind Map
	Amino Acids and Protein Structure	Amino Acids
		Acid-Base Chemistry of Amino Acids
		Peptide Bond Formation and Hydrolysis
		Protein Structure and Function
	Enzymatic Protein Function	Introduction to Enzymes
		Enzyme Parameters and Michaelis-Menten Plots
		Reversible Inhibition and Lineweaver-Burk Plots
		Cooperativity (Kinetics)
		Classification of Enzymes and Required Molecules
	Non-Enzymatic Protein Function	Non-Enzymatic Proteins
		Biosignaling
	Protein Isolation and Analysis	Protein Isolation
		Protein Analysis Techniques
	Proteins (Supplemental)	Protein Catabolism
Metabolic Regulation	Metabolic States	Introduction to Metabolic States and Regulation
	Specific Regulatory Pathways	Body Mass Regulation
		Glycolysis Regulation
		Glycogen Regulation
Eukaryotic Cells	Cell Structure and Function	The Nucleus, Ribosomes, and Mitochondria
		The Endoplasmic Reticulum, Vesicles, and the Golgi Apparatus
		Lysosomes and Peroxisomes
		The Cytoskeleton
		Cell Membrane Structure
		Transport Across Cell Membranes
	Cell Cycle and Division	The Cell Cycle
		Mitosis
		Meiosis
		Nondisjunction

Reproduction and Development

Cell Biology

Genetics & Evolution

Viruses

Nervous &

Musculoskeletal Systems

Systems Biology

Fundamentals of Genetics

Natural Selection

Speciation and Diversity

Population Genetics

Viral Structure and Function

Organization of the Nervous System

Neuroanatomy

Cell Structure and Function

Sensory Systems

The Musculoskeletal System

Spermatogenesis Oogenesis Cell Specialization Differentiation and Germ Cell Lineages Genetic Lingo Patterns of Dominance Recombination and Linkage Punnet Squares and Monohybrid Crosses Dihybrid Crosses X-Linked Traits Introduction to Evolution Evolution by Natural Selection Types of Selection Patterns of Evolution Reproductive Isolation Rates of Speciation Sources of Genetic Variation Loss of Genetic Variation Hardy-Weinberg Principle Retrovirus Life Cycles Divisions of the Nervous System The Parasympathetic Nervous System The Sympathetic Nervous System

The Cerebrum

Areas of the Cerebral Cortex

The Cerebrum

Subcortical Structures and the Limbic System

Cells of the Nervous System

Action Potentials

Blood-Brain Barrier and Cerebrospinal Fluid

Neurotransmitters

Anatomy of the Eye

The Retina and Phototransduction

Visual Fields and Processing

Anatomy of the Ear

Audition

Olfaction and Gustation

Bone Structure and Composition

Bone Formation and Repair

Types of Muscle

Anatomy of a Skeletal Muscle Fiber

Excitation-Contraction Coupling

Cross-Bridge Cycle

		Muscle Contraction
		Oxygen Debt and Fatigue
		Reflexes
Endocrine System	Hormone Synthesis and Mechanisms of Action	Hormone Synthesis, Secretion, and Regulation
		Steroid Hormones: Synthesis and Mechanisms
		Peptide Hormones: Synthesis and Mechanisms
		Amino-Acid-Derived Hormones: Synthesis and Mechanisms
	Hypothalamic-Pituitary Axis	Hypothalamic-Pituitary Anatomy and Feedback Loops
		Anterior Lobe of the Pituitary Gland
		Posterior Lobe of the Pituitary Gland
	Thyroid Hormones	Regulation and Actions of Thyroid Hormones
		Parathyroid Glands and Calcium Homeostasis
	Adrenal Gland	Adrenal Cortex: Hormone Regulation and Action
		Adrenal Medulla: Hormone Regulation and Action
	Endocrine Pancreas	Insulin
		Glucagon and Somatostatin
	Pineal Gland and Nonglandular Endocrine Organs	Other Glandular and Nonglandular Hormones (Pineal Gland)
Lymphatic & Immune Systems	The Immune System Structures and Cell Types	Immune Cell Lineages
	The Adaptive Immune System	Humoral Immunity
		Cell-Mediated Immunity
		Major Histocompatibility Complex I (MHC class I), Major Histocompatibility Complex II (MHC class II), and Antigen- Presenting Cells (APCs)
		Antibody Structure and Function
Cardiac & Pulmonary	The Cardiovascular System	Clot Formation and Breakdown
Systems		Cardiac Cycle
		Autonomic Regulation of Blood Pressure (Baroreceptor Reflex)
	The Respiratory System	Breathing Cycle
		Lung Volumes and Capacities
Digestive System	Anatomy and Regulation	Walk Through Digestive-System Anatomy
		Autonomic Regulation of Digestion (Enteric Plexuses)
	Digestion and Absorption of Biomolecules	Mechanical and Chemical Digestion
		Absorption: Locations and Processes
	Accessory Organs and Secretions	Liver, Bile, and Gallbladder
		Liver: Metabolism, Detoxification, Blood-Protein Synthesis
Excretory Systems	The Renal System	Renal Anatomy
		Osmoregulation: Filtration, Secretion, and Reabsorption (Starling Forces)
		Nephron Function
		Blood Pressure Hormones (ADH and Aldosterone)
		Renin-Angiotensin-Aldosterone System
	The Integumentary System	Skin Anatomy
		Thermoregulation at the Skin

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Course

General C	Chemistry
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Unit

Chapter

Lesson

General Chemistry	Atoms & Elements	Atomic Structure	Quantum Mechanical Model Electron Configurations
	Chemical Bonds	Covalent Bonds	Properties: Bond Length, Bond Energy, Polarity
			Lewis Dot Structures and Formal Charge
			Resonance Structures
			Hybridization, Geometry (VSEPR), and Polarity
	Stoichiometry	Reactions	Types of Reactions
			Balancing Chemical Equations
			Theoretical Yields and Limiting Reactants
	Kinetics & Equilibrium	Reaction Rates	Rate Law and Rate Constant
			Rate Orders
			Collision Theory and Transition State Theory
		Equilibrium	Equilibrium in Reversible Chemical Reactions
			Le Châtelier's Principle
	Thermochemistry &	Heat, Entropy, and Free Energy	Heat and Heating Curves
	Gases		Entropy
			Standard Gibbs Free Energy and Equilibrium
		Ideal Gases	Properties of Ideal Gases
	Solutions &	Concentration	Measures of Concentration
	Electrochemistry		
		Solubility	Solutions and Dissolution
			Solubility Product Constant and Common Ion Effect
			Complex Ion Formation
		Electrochemistry	Galvanic Electrochemical Cells
			Electrolytic Electrochemical Cells
	Acids & Bases	Introduction to Acids and Bases	pH and the Ionization of Water
		Acid and Base Strength	Strong and Weak Acids and Bases
			Conjugate Acid-Base Pairs
			Titrations and Equivalence Point
Organic Chemistry	General Principles	Nomenclature	Naming of Functional Groups
			Naming Conventions
		Isomers and Configurations	Introduction to Isomers
			Stereoisomers
		Chemical Reactivity	Physical Properties of Organic Molecules
	Functional Group Reactions	Alcohols	Reactions of Alcohols
			Phenol Reactions
		Oxidation and Reduction	Oxidation and Reduction of Organic Molecules
		Aldehydes and Ketones	Reactions of Aldehydes and Ketones
		Carboxylic Acids and Derivatives	Reactions of Carboxylic Acids
			Reactions of Carboxylic Acid Derivatives
		Enolates	Reactions at the Alpha Carbon of Carbonyls
	Compound Analysis	Spectroscopy	Infrared and Ultraviolet Spectroscopy
		Separations and Purifications	Chromatography
Physics	Motion	Force	Forces and Translational Motion
	Work & Energy	Energy	Kinetic and Potential Energy
		Work and Conservation of Energy	Work
			Conservative and Nonconservative Forces
	Fluids	Properties and Characteristics	Density and Pressure
			Fluid Dynamics
	Periodic Motion	Sound	Properties of Sound

Doppler Effect

	Light & Optics	Light	Electromagnetic Spectrum
			Diffraction
			Reflection (Mirrors)
		Optics	Refraction
			Lenses
	Electricity & Magnetism	Electrostatics	Charges and Coulomb's Law
			Electric Fields
	Atomic & Nuclear Physics	Nuclear Radiation	Nuclear Reactions
Psychology	Developmental Psychology	Social, Motor, and Cognitive Development	Stages of Cognitive Development
	Cognitive Psychology	Consciousness	Stages of Sleep
		Thinking and Intelligence	Problem-Solving
			Decision-Making
		Learning	Types of Learning
			Classical Conditioning
			Operant Conditioning
		Memory	Memory Encoding
			Types of Memory Storage
			Memory Retrieval
			Memory Errors and Loss
	Personality & Social Psychology	Identity	Identity and Self-Evaluation
			The Psychosexual Theory of Development
			The Psychosocial Theory of Development
			The Moral Development Theory
		Personality	Intro to Theories of Personality
			Psychoanalytic Perspective
			Humanistic Perspective
			Type and Trait Perspectives
		Group Dynamics	Social Perception
			Prejudice, Stereotypes, and Discrimination
			Conformity
			Group Psychology
	Mental & Physical Health	Motivation	Biological Theories of Motivation
			Need-Based Theories of Motivation
			Other Theories of Motivation
		Emotion	Elements of Emotion
			Theories of Emotion
		Psychological Disorders	Anxiety Disorders
			Depressive Disorders
			Schizophrenia and Other Psychotic Disorders
			Personality Disorders
MCAT Strategy	Data & Research Design	Data Analysis (High-Yield)	Data Types and Variables
			Hypothesis Testing
			Measures of Central Tendency
			Regression
			Correlation
		Data Analysis (Supplemental)	Relative Risk
		Research Designs (High-Yield)	Populations and Samples
			Errors and Biases
			Confounding
			Randomized Controlled Trials
		Research Designs (Supplemental)	Case Report & Case Series
			Ecological Studies
			Cross-Sectional Studies
			Case-Control Studies
			Cohort Studies
			Meta-Analyses and Systematic Reviews