

Top 10 Key Topics in Biomedical Courses

Biochemistry	Pharmacology	Microbiology
1. Basic Genetics 2. Biochemistry of RNA, DNA, and proteins 3. Protein Binding and Enzyme Kinetics 4. Bioenergetics 5. Cellular Metabolism 6. Lipids, Lipogenesis, and Lipoproteins 7. Biosignaling/signal transduction 8. Biological Membranes and Transport 9. Biochemistry of the senses 10. Biochemistry of pain relievers	1. Antibiotic Therapy 2. Antibiotic Prophylaxis 3. Pain Management 4. Cardiovascular pharmacotherapy 5. CNS pharmacotherapy 6. Endocrine pharmacotherapy 7. Respiratory pharmacotherapy 8. Immunosuppressive therapy 9. Substance Use Disorders 10. Dental Drug Interactions	1. Immunology 2. Contact hypersensitivity 3. Viral pathogenesis 4. Viral detection 5. Bacterial pathogenesis 6. Periodontal disease in overall health 7. Antibiotic targets 8. Antibiotic resistance 9. Eukaryotic pathogens
Human Physiology	Histology	
1. Membrane excitability and membrane transport 2. Mechanisms of sensory input and processing 3. Skeletal and smooth muscle structure and function; excitation-contraction coupling 4. Central control of movement and coordination; Parkinson's Disease/Huntington's Disease 5. Cardiac excitability and EKG; cardiac pump and systemic vascular function 6. Respiratory function: oxygen/CO₂ transport and systemic acid-base balance 7. Renal control of fluid homeostasis and acid-base balance; renal failure 8. Gastrointestinal function in digestion, absorption and nutrition 9. Endocrine function and pathology; diabetes, adrenocortical control of fluid and energy homeostasis 10. Male and female reproduction; pregnancy and lactation	1. Development, structure, function and classification of all basic tissues: connective tissues, epithelial tissues, muscle and nerve 2. How do bones and joints work? Cartilage and bone structure, biomechanical properties, growth, development, remodeling (inc. endocrine regulation) and repair 3. Tooth development and eruption (inc. relevant embryology) 4. Structure and functional properties of tooth tissues: dentin-pulp complex, periodontium, enamel (inc. amelogenesis) 5. Modeling a differential diagnosis using histology: pattern recognition in histological tissues and the use of this information to form an 'identification differential' (this tissue has features x,y,z so based on this information (symptoms) it cannot be a, b, or c but it could be d and e). 6. Structure and function of the skin, oral mucosae and associated glands (inc. salivary glands) 7. Cells and tissues of the immune system: development and maturation of immune cells in primary lymphoid organs and their differentiation within secondary lymphoid organs (inc. MALT e.g. tonsils) 8. Vasculature and circulation: the structure and function of the heart and blood vessels (inc. angiogenesis) 9. Maintaining homeostasis: the structure and function of major endocrine organs, the kidneys and the liver 10. The airway and respiration: the structure and function of the airway from nasal cavity to alveolus	
Pathology	Anatomy	
1. Cellular necrosis 2. Inflammation 3. Cellular adaptation and repair 4. Metaplasia, dysplasia and neoplasia 5. Immune system diseases 6. G.I. tract diseases 7. Cardiovascular diseases 8. Respiratory system diseases 9. Female and male genital tract diseases 10. Endocrine disorders 11. Hematopoietic diseases 12. Musculoskeletal diseases - Nervous system diseases	1. Organization of the nervous system 2. Blood flow through the head and neck 3. Cranial nerve pathways through the skull 4. Cranial nerve functions and testing 5. Detailed anatomy of the orofacial regions 6. Structural relationships of the head and neck 7. Mastication, Swallowing, Phonation 8. Central and Peripheral nervous system lesions 9. Musculoskeletal concepts of back, neck and upper limb 10. Lymphatic drainage of head/neck	