

WEEK	Human Anatomy: Cells and Tissues	Human Physiology: Cells and Tissues	Biochemistry: Cells and Tissues	Integrated Biomedical Sciences Seminars, Other Assigned Activities, Course Review and Testing
1	Introduction to Integrated Biomedical Sciences Courses Oral/Systemic Health Discussion		Biomolecules, interactions, polarity H ₂ O: Structure and properties; acids, bases, pH, buffers Amino acids: Structure and properties Proteins: Primary and secondary structure Proteins: Tertiary and quaternary structure	<p>This time might be used for several different types of activities, including: 1) Case-based/problem-based learning modules meant to allow students to integrate and synthesize their knowledge of anatomy, physiology and biochemistry. The class might be divided into eight groups (~ 18 per group), and the same or similar cases would be presented to each group over a period of 3 weeks. Thus, each group would work on 3 cases over the quarter. Ideally, each faculty member would be assigned to direct the session for only 1 group per case. 2) During weeks when a group was not meeting, they could be pursuing independent study (histology using the virtual microscope). 3) Traditional anatomy seminars, physiology labs etc. 4) Course review and testing.</p>
2	Basic cellular organization and organelles Epithelium	Homeostasis, cell membranes and fluid compartments Diffusion and transport Equilibrium potential Resting potential	Membrane lipids DNA: structure, role and replication RNA: structures, roles and transcription	
3	Nervous system: Cells and organization	Action Potential Excitability Neurons and synapses	Protein synthesis (translation) Enzymes: general features Enzyme structure and mechanisms of action	
4	Muscle and muscles: Cells and organization Connective tissue	Neuromuscular junctions and excitation-contraction coupling Contractility Skeletal muscle	Enzymes: mechanisms, kinetic and inhibition Enzymes: allosteric control, diagnostics etc. Bioenergetics and metabolism	
5	Circulatory system: Blood vessels Skin	Smooth muscle Sensory receptors	Oxidative-reduction reactions, electron transport Oxidative phosphorylation Carbohydrate chemistry	
6	Skeletal tissues: Cartilage, bone and joints	Bone cell biology and physiology	Calcium and phosphate metabolism Glycosamino glycans; proteoglycans; mucins Glycoproteins: synthesis and targeting Fibrous proteins: keratin, collagen and elastin	
7	Back Vertebral column		Polysaccharides: glycogen metabolism Anaerobic and aerobic glycolysis Gluconeogenesis etc. The Krebs cycle etc.	
8	Nervous system: Spinal cord and spinal nerves Nervous system: Autonomic Nerves	Muscle spindles and reflexes Autonomic nervous system 1 Autonomic nervous system 2 Autonomic nervous system 3		
9	Anterior thorax and abdominal wall		Fats: structure and oxidation Fatty acid biosynthesis Nitrogen fixation, amino acids etc	
10	Posterior triangle of neck Upper limb and brachial plexus			
	35 hours (lecture and lab)	17 hours (lecture)	28 hours (lecture)	28 hours

SUMMER QUARTER

108 Total Hours

Week	Human Anatomy: Systems Anatomy	Human Physiology: Systems Physiology	Biochemistry: Respiration, Nutrition, Metabolism and Defense	Integrated Biomedical Sciences Seminars, Other Assigned Activities, Course Review and Testing
1	Respiratory system Pleura and lungs	Respiration 1 Respiration 2 Respiration 3	Structure of Myoglobin and hemoglobin Gas binding equilibria: Cooperative O ₂ binding Hemoglobin: Control of O ₂ affinity	<p>This time might be used for several different types of activities, including: 1) Case-based/problem-based learning modules meant to allow students to integrate and synthesize their knowledge of anatomy, physiology and biochemistry. The class might be divided into eight groups (~ 18 per group), and the same or similar cases would be presented to each group over a period of 3 weeks. Thus, each group would work on 3 cases over the quarter. Ideally, each faculty member would be assigned to direct the session for only 1 group per case. 2) During weeks when a group was not meeting, they could be pursuing independent study (histology using the virtual microscope). 3) Traditional anatomy seminars, physiology labs etc. 4) Course review and testing.</p>
2	Circulatory System: Heart Mediastinum and Great vessels	Cardiac physiology 1 Cardiac physiology 2	Anomalies of hemoglobin: Molecular diseases CO ₂ chemistry and transport: acid-base balance	
3	Circulatory system: Blood and hematopoiesis	Cardiac physiology 3 Cardiac physiology 4 Blood vessels and blood pressure 1 Blood vessels and blood pressure 2 Hematology 1 Hematology 2	Vitamin K and blood clotting	
4	Digestive system 1: Stomach, intestine and pancreas	Digestive system 1 Digestive system 2	Major nutrients: Proteins, carbohydrates and fats Nutritional requirements, inorganic nutrients Iron, iodide and mercury Acquiring nutrients: Digestion and absorption of carbohydrates and proteins	
5	Peritoneum and GI tract	Digestive system 3 Digestive system 4	Digestion and absorption of lipids Distribution of absorbed nutrients B vitamins, oral manifestations of deficiencies Vitamin A	
6	Digestive system 2: Liver and gall bladder	Hepatology	Porphyryns, heme and bile pigments One-carbon metabolism etc. Metabolism of pyrimidines etc.	
7	Posterior abdomen Urinary system	Urinary system 1 Urinary system 2 Urinary system 3 Urinary system 4 Acid-base balance		
8	Endocrine system	Endocrinology 1: general principles, hypothalamus and Endocrinology 2: Thyroid and adrenal Endocrinology 3: Insulin and glucagon Endocrinology 4: Parathyroids	Control of Metabolism: allosterism Control of Metabolism: hormones Integration of metabolism	
9	Reproductive system	Endocrinology 5: Sex hormones Energy Balance and Temperature regulation	Steroids	
10	Immune system		Molecular immunology: innate immunity and inflammation Molecular immunology: Adaptive (acquired) immunity Reactive oxygen species and defenses	
25 hours (lecture and lab)		27 hours (lecture)	24 hours (lecture)	30 hours

AUTUMN QUARTER

106 Total Hours

Week	Human Anatomy: Craniofacial Complex	Physiology: Neuroanatomy and Physiology	Topics in Oral Biology	Integrated Biomedical Sciences Seminars, Other Assigned Activities, Course Review and Testing	
1	Skull		Early facial embryology Palatogenesis and branchial arches Cranioskeletal development Regulation of gene sexpression Mutations, genetic engineering, prions and viruses		
2	Root of the neck Anterior triangle of the neck				
3	Face and Scalp Spinal cord: Pathways	Central nervous system 1 Central nervous system 2			
4	Neurocranium 1: Meniges and venous sinuses Neurocranium 2: Brain and crainial nerves	Central nervous system 3 Central nervous system 4 Pain 1 Pain 1			
5	Orbit	Vision: Optics Vision: Retina Ear: Hearing Ear: Balance		This time might be used for several different types of activities, including: 1) Case-based/problem-based learning modules meant to allow students to integrate and synthesize their knowledge of anatomy, physiology and biochemistry. The class might be divided into eight groups (~ 18 per group), and the same or similar cases would be presented to each group over a period of 3 weeks. Thus, each group would work on 3 cases over the quarter. Ideally, each faculty member would be assigned to direct the session for only 1 group per case. 2) During weeks when a group was not meeting, they could be pursuing independent study (histology using the virtual microscope). 3) Traditional anatomy seminars, physiology labs etc. 4) Course review	
6	Parotid region and temporal fossa Infratemporal fossa Temperomandibular joint	Mastication			
7	Pharynx Nasal cavity	Swallowing Olfaction			
8	Oral cavity	Taste	Odontogenesis Amelogenesis, dentinogenesis and root formation Enamel and dentin		
9			Ionic solids: Hydroxyapatite Mineralization and fluoride Tooth eruption Dentin-pulp complex and dentin sensitivity Oral mucosa Periodontium Salivary glands: Structure and function Salivary biochemistry Biofilms: Pellicle, plaque and calculus		
10	Larynx Spread of infection				
	44hours (lecture and lab)	14 hours (lecture)	20 hours (lecture)		22 hours

WINTER QUARTER

100 Total Hours