

Biology 2401 – A&P I – Spring 2012

The Whole Semester at a Glance (Tue/Thur Class)

Study Guides with more detail will be provided by your instructor prior to each unit of material. When preparing for each exam concentrate your study time on the topics listed in the study guide and discussed in lecture. These are the most important topics.

Chapter 1 – The Human Body: An Orientation

Chapter 2 – Chemistry Comes Alive

Chapter 3 – Cells: The Living Units

Exam 1 – Tuesday, January 31

Chapter 3 – Membranes and Membrane Potentials

Chapter 4 – Tissues – Especially Inflammation & Tissue Repair

Exam 2 – Tuesday, February 14

Membrane Types from Chapter 4

Chapter 5 – The Integumentary System

Chapter 6 – Bones and Skeletal Tissues

(Chapter 7, 8 and 10 covered primarily in lab)

Chapter 9 – Muscles and Muscle Tissue

Exam 3 – Tuesday, March 6

Chapter 11 – Fundamentals of the Nervous System

Chapter 12 – The Central Nervous System

Chapter 13 – The Peripheral Nervous System

Chapter 14 – The Autonomic Nervous System

Exam 4 – Thursday, April 5

(Chapter 15 covered in lab)

Chapter 16 – The Endocrine System

Exam 5 – Thursday, April 26

Review for Final – Thursday, December 8

Final Exam – 10:30 AM Tuesday, May 8, (or with AP 2 class 5PM Monday May 7th).

**Lecture Study Guide for
Homeostasis, Control Mechanisms,
Cell Membranes, and Membrane Transport**

Page #s indicate where the topic starts.

Day/Week	Lecture Topic
Class 1 -Lecture 1 Tuesday, January 17 (1)	<p>Course Overview</p> <p>Anatomy vs. Physiology p. 2</p> <p>Levels of Structural Organization p.3</p> <p>Organ Systems and functions p. 6</p> <p>Homeostasis p. 8-</p> <ul style="list-style-type: none"> Variables, Set Points, Normal Ranges Homeostatic Control Mechanisms <ol style="list-style-type: none"> 1. Negative Feedback mechanisms 2. Positive Feedback mechanisms
Class 2 -Lecture 2 Thursday, January 19 (2)	<p>Plasma Membranes p. 66</p> <ol style="list-style-type: none"> 1. Lipid Bilayer <ul style="list-style-type: none"> • Phospholipids, Cholesterol and Glycolipids 2. Proteins <ul style="list-style-type: none"> • Integral <ul style="list-style-type: none"> ○ Chanel Proteins <ul style="list-style-type: none"> ▪ Ligand-gated ▪ Voltage-gated ○ Carrier Proteins ○ Receptors for signal transduction • Peripheral proteins <ul style="list-style-type: none"> ○ Biological markers for cell recognition <p>Membrane Transport p. 70</p> <ol style="list-style-type: none"> 3. Concentration, Concentration Gradients, Equilibrium 4. Passive Processes <ul style="list-style-type: none"> • Diffusion <ul style="list-style-type: none"> ○ Simple diffusion ○ Facilitated diffusion • Osmosis <ul style="list-style-type: none"> ○ Osmotic Pressure ○ Tonicity hypertonic, isotonic, hypotonic • Filtration <p style="text-align: center;">(Don't forget your assignments on www.masteringaandp.com)</p>

<p>Class 3 - Lecture 3 Tuesday, January 24 (3)</p>	<p>Membrane Transport (cont.) 5. Active Processes</p> <ul style="list-style-type: none"> • Primary Active Transport • Vesicular Active Transport <ul style="list-style-type: none"> ○ Exocytosis ○ Endocytosis <ul style="list-style-type: none"> ○ Phagocytosis ○ Pinocytosis <p>Specificity Competition Saturation Transport Maximum</p>
<p>Class 4 - Lecture 4 Thursday, January 26 (4)</p>	<p>Organic Compounds p. 43 OYO from handout: Carbohydrates, Lipids, and Proteins Overview of Biochemistry p 40-46 (OYO) Tissue types</p> <ol style="list-style-type: none"> 6. Epithelial p. 118 7. Muscular p. 139 8. Nervous p. 139 9. Connective p. 126 <p>Chemical Reactions p. 36-</p> <ol style="list-style-type: none"> 10. Synthesis, 11. Decomposition 12. Exchange 13. Oxidation-Reduction <p>Oxidation-Reduction p. 38 End of material for Exam 1</p>
<p>Class 5 – Exam Tuesday, January 31</p>	<p>Celebration of Learning (Exam) #1 – Tuesday, January 31</p>

**Lecture Study Guide for
Membrane Potentials,
Inflammation and Tissue Repair**

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Day/Week	Lecture Topic
Class 6 - Lecture 5 Thursday, February 2 (1)	Review Exam #1 Membrane Potentials (text info in 3 chapters: p. 77 - 79, p. 285-289, p. 395-406, and p. 408-413) and 9SS Disk What you Must Know first... ECF vs. ICF The normal distribution of electrolytes The permeability of the cell membrane to Na ⁺ and K ⁺ RMP (Resting Membrane Potential) Is the Result of... The Cardinal Rule... Altering RMP for communication Chemical Synapses Components Events IP:CD – Muscular – The Neuromuscular Junction Nervous I – Ion Channels The Membrane Potential The Action Potential Nervous II – Synaptic Transmission (pages 1 and 3-6)
Class 7 - Lecture 6 Tuesday, February 7 (2)	Polarity, Depolarization, Threshold Repolarization Refractory periods Absolute and Relative Hyperpolarization Types of membrane potentials Resting, Graded, and Action Clinical Applications, “What if... ?”
Class 8 - Lecture 7 Thursday, February 9 (3)	Chapter 4 – pp. 143 -145 Inflammation Signs and Symptoms Inflammatory Chemicals Tissue Repair Regeneration vs. Fibrosis Primary Union vs. Secondary Union Regeneration Capacities of Tissues Don't forget your assignments on www.masteringaandp.com
Class 9 Tuesday, February 14	Celebration of Learning #2 (Exam) – Tuesday, February 14

Lecture Study Guide for Skin, Bone, and Muscle

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Day/Week	Lecture Topic
Class 10 - Lecture 8 Thursday, February 16 (1)	Review Exam #2 Covering and Lining Membranes p. 141 The Skin Epidermal cell types Skin Coloration Unique function of Melanocytes Sweat Glands Sebaceous glands Skin Cancers Basal Cell Carcinoma, Squamous cell carcinoma and malignant melanoma. ABCDE Rule for malignant melanoma Decubitus Ulcers (bed sores) Cold Sores (fever blisters) Don't forget your assignments on www.masteringaandp.com
Class 11 - Lecture 9 Tuesday, February 21 (2)	Types of Muscle Tissue Physiology of Skeletal Muscle Fibers p. 288-297 Practical Applications, "What if...?" Pathology
Class 12 - Lecture 10 Thursday, February 23 (3)	Muscle Metabolism: Energy for Contraction p. 300 ATP & CP Anaerobic Respiration Aerobic Respiration What you use for fuel and when
Class 13 Lecture 11 Tuesday, February 28 (4)	Muscle Fatigue Fate of Lactic Acid Oxygen Debt Skeletal Muscle Cramps Chemical Composition of Bone p. 182 Bone remodeling p. 187 Bone Resorption by Osteoclasts Bone Deposit by Osteoblasts
Class 14 Lecture 12 Thursday, March 1 (5)	Control of Remodeling Calcium... who needs it?? Hormonal Controls Response to Mechanical Stress Types of Fractures p. 192(OYO) Bone Repair p. 190 Homeostatic imbalances p. 193 Osteomalacia, Rickets, Osteoporosis, Paget's Disease
Class 15 Tuesday, March 6	Celebration of Learning # 3 – Tuesday, March 6

Lecture Study Guide for The Nervous System

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Day/Week	Lecture Topic
Class 16 - Lecture 13 Thursday, March 8 (1)	<p>Review Exam #3</p> <p>Organization of the Nervous System p. 388 Basic Components and Functions of the CNS vs. PNS Flow Chart of the Organization of the Nervous System</p> <p>Neuroglia (as a group; not individual types) p. 389</p> <p>Review of RMP, Chemical Synapses, and Action Potentials p. 399-405</p>
March 9 – 18	Spring Break
Class 17 - Lecture 14 Tuesday, March 20 (2)	<p>Postsynaptic Potentials: EPSPs, IPSPs, & Summation p. 411-412</p> <p>Memory – p. 460 (Do you remember anything before Spring Break?) Short-term memory Long-term Potentiation (LTP) View 7 min video on memory, chemical synapse activity, and potentiation.</p> <p>Neurotransmitters (from handout) Practical Applications: Generic Effects of Drugs / Meds. (from handout) NT Hall of Fame (from handout) Video (20 min) on Neurotransmitters: NE, serotonin, dopamine, and endorphins</p> <p>Good Animations of “How Drugs Work” can be seen at: www.pbs.org/wnet/closetohome/science/html/animations.html Skip the “In the Body” section but look at those in the “In the Brain” section.</p>
Class 18 - Lecture 15 Thursday, March 22 (3)	<p>Blood Flow to the Brain</p> <p>Ischemia vs. Hypoxia</p> <p>Syncope</p> <p>TIA – transient ischemic attack</p> <p>CVA - cerebrovascular accident</p> <p>Video (15 min) Cerebral cortex functions, Stroke, Formation of new synapses, Nerve growth factor, “When wires get crossed,” etc.</p> <p>Physiologies of Depression and Addiction</p>
Class 19 Lecture 16 Tuesday, March 27 (4)	<p>Nerve Plexuses p. 509 – 517 What? Why? Pros and Cons.</p> <p>Spinal Reflexes and reflex arcs p. 521 - 527 Generic components of a reflex arc. Clinical use of reflexes</p> <p>Dermatomal Maps - clinical use p. 516 - 518</p> <p>Divisions of the CNS and their Functions (OYO from handout received in lab. Replaces and improves Table 12.1 p. 453)</p>

<p>Class 20 – Lecture 17 Thursday, March 29 (5)</p>	<p>Cerebrospinal Fluid (CSF) Formation, pathway, fate & functions p. 465</p> <p>Blood-Brain Barrier p. 467 What? Where? Why? Pros and cons. (November 7, last day to drop, we hope you won't!)</p>
<p>Class 21 – Lecture 18 Tuesday, April 3 (6)</p>	<p>The Autonomic Nervous System p. 535 Parasympathetic division p. 536 Sympathetic division p. 538</p> <p>Effects of ANS on target tissues Table 14.5 p. 546</p> <p>Neurotransmitters and Receptors of the ANS p. 543 Cholinergic Adrenergic</p> <p>Clinical Applications: Meds. Examples (my notes) Prion Diseases (What makes cows mad) p. 482 Control of Autonomic Function p. 547</p> <p>Don't forget your assignments on www.masteringaandp.com</p>
<p>Class 22 – Exam #4 Thursday, April 5</p>	<p>Celebration of Learning # 4 – Thursday, April 5</p>

**Lecture Study Guide for
The Endocrine System**

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Day/Week	Lecture Topic
Class 23 - Lecture 19 Tuesday, April 10 (1)	Review Exam #4 The Hormone Hall of Fame and associated exercises (from lab) are fair game for lecture exam Overview of the Endocrine System p. 605 Chemistry of Hormones (Hs) p. 606 Mechanisms of Hormone Action p. 606 Target Cell Specificity p. 610 Up Regulation and Down Regulation Hormone breakdown products p. 610 Hormone interactions p. 611
Class 24 - Lecture 20 Thursday, April 12 (2)	Control of Hormone Release Half-Life, Onset, and Duration of Hormone Activity ----- Specific Hormones and what they control Control of ECF Osmolality and volume by ADH – Antidiuretic Hormone Diabetes Insipidus Effect of alcohol
Class 25 - Lecture 21 Tuesday, April 17 (3)	Control of metabolism by TH – Thyroid Hormone Control of ECF Ca ++ by PTH - Parathyroid Hormone Control of ECF Na+, K+ and blood pressure by Aldosterone Control of the “fight or flight” response by Epinephrine and Norepinephrine
Class 26 - Lecture 22 Thursday, April 19 (4)	Control of blood sugar by cortisol, insulin, and glucagon Hypoglycemia vs. Hyperglycemia Diabetes Mellitus Type I – IDDM Type II – NIDDM Gestational Diabetes What If??????
Class 27 - Lecture 23 Tuesday, April 24 (5)	OYO: Polyuria, Polydipsia, Polyphagia Influence of Melatonin on sleep/wake cycles SAD The Stress response
Class 28 Thursday, April 26	Exam # 5– Thursday, April 26
Tuesday, May 1	Review for Final (for those taking final)
Final: Tuesday, May 8 10:30 AM	10:30 AM Tuesday May 8th. (If a conflict, contact instructor, you may take it EARLY in the LAC, or with my AP 2 class at 5 PM Monday May 7, but not later than official time.)