Suffolk County Community College
Eastern Campus – Riverhead, New York

Spring 2010
Course Outline

Course: Anatomy and Physiology I
Catalog #: BIO 130 401
CRN#: 23081
Instructor: AnnMarie Armenti, MS.
Office Hours: By Appointment Only!!!
Anytime via e-mail!
Department: 631-548-2628
Email: armenta@sunysuffolk.edu (*email is the best way to reach me!!!)


Website Resource:
Lecture material: http://www2.sunysuffolk.edu/armenta/
Laboratory material: http://www2.sunysuffolk.edu/czuraa/

Course Description:

This course will introduce students to the basic structure and function of the human body. Students will learn general chemical principles and basic cellular biology in order to better understand the principles of human biology. A variety of anatomical terms and physiological functions pertaining to the human body will be explored. When appropriate, active dissection and observational specimens will be utilized to demonstrate anatomical features.

In the first half of the two-semester Anatomy and Physiology course, students will study the characteristics of various tissue types, the integument system, skeletal system, muscular system and nervous system, focusing both on the anatomical features as well as achieving an understanding of their actions and functions. The remaining systems will be explored in Anatomy and Physiology II.
Learning Objectives:

Upon completion of this course, students should be able to:

A. Apply the scientific method:
   a. By designing experiments to test formulated hypotheses
   b. By solving problems with the correct use of appropriate scientific notation and equipment
   c. By quantifying (observing, describing, measuring, and calculating) various empirical phenomena
   d. And by logically reaching valid conclusions based on these data through critical analysis and interpretation.

B. Describe how the basic structure of inorganic elements is energetically organized through chemical bounding in organic biochemical compounds that constitute the anatomy of the human body and its maintenance of homeostasis.

C. Explain the relationship between structure and function at each level of organization of the body for cells; tissues; and the integumentary, skeletal, muscular, and nervous systems.

D. Identify, locate, and classify various anatomical structures in the skeletal, muscular, and nervous systems at the cellular, histological, organ, and systemic levels of organization.

E. Describe and explain selected physiological processes at the cellular, histological, organ, and systemic levels of organization, as they apply to cells, tissues, and structures in the integumentary, skeletal, muscular, and nervous systems, and the maintenance of homeostasis in these systems.

F. Use correct and appropriate anatomical and directional terminology and descriptions as well as scientific terminology in general, as they apply to cells, tissues, and the integumentary, skeletal, muscular, and nervous systems, and the human body in general.

G. Identify and explain how selected pathologic conditions apply to the normal structure and function of the topic being studied.
Major Topics:
I will cover each of these topics during lecture and/or lab. If time does not allow for the completion of each topic, you are still responsible for those that are listed below.

Lecture:
A. Introduction to Anatomy and Physiology
   1. Levels of Organization
   2. Homeostatic Regulation
   3. Anatomical Language
B. Chemical Level of Organization
   1. Atomic Structure (Prerequisite: review only)
   2. Chemical Bonds (Prerequisite: review only)
   3. Chemical Reactions (Prerequisite: review only)
   4. Inorganic Compounds (Prerequisite: review only)
   5. Organic Compounds
      a. Carbohydrates
      b. Lipids
      c. Proteins
      d. Nucleic Acids
      e. High Energy Compounds
C. Cellular Level of Organization
   1. Cell Membrane
   2. Cell Transport
      a. Passive Processes
      b. Active Processes
   3. Cytoplasm and Organelles
      a. Cytoskeleton and Centrioles
      b. Ribosomes
      c. Endoplasmic Reticulum
      d. Golgi Apparatus
      e. Lysosomes, Peroxisomes, and Proteosomes
      f. Mitochondria
   4. Nucleus
   5. Gene Activation and Protein Synthesis
      a. Transcription
      b. Translation
   6. Cell Cycle and DNA Replication
      a. Mitosis
      b. Cell Differentiation
   7. Cellular Respiration
D. Tissue Level of Organization
   1. Epithelial Tissue
   2. Connective Tissue
   3. Membranes
   4. Muscle Tissue
   5. Nervous Tissue
   6. Tissue Injuries and Repair
E. The Integumentary System
   1. Epithelial Tissue
   2. Dermis
   3. Subcutaneous Layer
   4. Accessory Structures
      a. Glands
      b. Hair
      c. Nails
   5. Cutaneous Membrane Injury and Repair
F. The Skeletal System
   1. Osseous Tissue and Bone Histology
   2. Bone Structure
   3. Bone Formation, Growth, and Repair
   4. The Axial Skeleton
      a. Skull
      b. Vertebral Column
      c. Thoracic Cage
   5. The Appendicular Skeleton
      a. Pectoral Girdle and Upper Limbs
      b. Pelvic Girdle and Lower Limbs
   6. Articulations
      a. Classification of Joints
      b. Synovial Joints
      c. Body Movements
G. Muscle Tissue and the Muscular System
   1. Skeletal Muscle
      a. Anatomy and Histology of Skeletal Muscle Tissue and Cells
      b. Functional Anatomy of a Skeletal Muscle
      c. Contraction of Skeletal Muscle
      d. Tension Production
      e. Energy Use and Muscular Activity
      f. Muscle Performance
   2. Cardiac Muscle Structure and Function
   3. Smooth Muscle Structure and Function
   4. The Muscular System
      a. Muscle Organization and Function
      b. Muscle Terminology
      c. Axial Muscles
H. The Nervous System

1. Neural Tissue
   a. Neurons
   b. Neuroglia
   c. Neurophysiology: Ion Movement and Nervous Impulses
   d. Information Processing

2. Spinal Cord
   a. Spinal Cord Anatomy
   b. Spinal Nerves
   c. Spinal Reflexes

3. Brain
   a. Protection and Support
   b. Medulla Oblongata
   c. Pons
   d. Cerebellum
   e. Mesencephalon
   f. Diencephalon
   g. Limbic System
   h. Cerebrum
   i. Cranial Reflexes

4. Neural Integration
   a. Sensory Receptors
   b. Sensory Pathways
   c. The Somatic Nervous System
   d. The Autonomic Nervous System
      1. Sympathetic Division
      2. Parasympathetic Division
   e. Higher Order Functions
      1. Memory
      2. Consciousness
   f. Brain Chemistry

5. Special Senses
   a. Olfaction
   b. Gustation
   c. Vision
   d. Hearing
   e. Equilibrium
Laboratory:
A. The Microscope
B. Anatomical Language
C. The Cell
   1. Cellular Anatomy
   2. The Cell Cycle and Mitosis
   3. Transport Mechanisms and Cell Permeability
   4. Cell Respiration
D. Classification of Tissues
   1. Epithelial Tissues
   2. Connective Tissues
   3. Muscle Tissues
   4. Nervous Tissue
E. The Integumentary System
F. The Skeletal System
   1. Structure of Bones and Osseous Tissue
   2. The Axial Skeleton: Bones and Markings
   3. The Appendicular Skeleton: Bones and Markings
   4. The Fetal Skeleton
   5. Articulations and Body Movements
G. The Muscular System
   1. Anatomy and Physiology of Skeletal Muscle Tissue
   2. Gross Anatomy of the Major Muscles:
      a. Location, Origins, & Insertions
      b. Actions
H. The Nervous System
   1. Histology of Nervous Tissue
   2. Gross Anatomy of the Brain and Cranial Nerves
   3. Anatomy of the Spinal Cord and Spinal Nerves
   4. Human Reflex Physiology
   5 General Senses
I. Special Senses
   1. The Eye and Vision
   2. The Ear and Hearing and Equilibrium
   3. Taste Buds and Gustation
   4. Olfactory Epithelium and Olfaction
Policies, Attendance, and Student Responsibilities:

Attendance:
Attendance is mandatory, and you are expected to arrive on time. Regardless of excuse you are solely responsible for all material covered in class, both lecture and lab. There will be NO make-up lab exercises, practical exams, lecture exams, or lecture quizzes. If you must miss a lecture quiz/exam for a VALID REASON you must contact me via e-mail no later then midnight on the day of the missed class to be excused from receiving the grade of zero. Further arrangements will be made to make-up the missed grade.

The college defines excessive absence or lateness as more then the equivalent of one week of class meetings during the semester (in our case that would be any more then 2 missed lectures and 1 missed laboratory). Excessive absence or tardiness may lead to failure of the course.

Cell phones and recorders:
TURN OFF YOUR CELL PHONE before class begins. If your phone or other noise producing electronic devices continuously disrupts the lecture your participation grade will reflect those occurrences and you may be asked to leave the class. The college does not permit the use of cell phones for any reason, including as a calculator, during exams.

Use of tape recorders is permitted so long as they do not interfere with the learning process of others. You are welcome to place your recorder on the front table for better sound quality.

Required Reading and Preparation:
You are required to read the chapters in the text and laboratory manual pertaining to the lecture and lab in advance to be familiar with the material. The lecture experience is more useful when the time can be spent learning the concepts rather than attempting to decipher new and unfamiliar vocabulary. The lecture period is inadequate to complete your learning of this dense material and remember that you will be tested on lecture notes along with additional information for the text that we may not go over in class. Furthermore, the majority of your comprehension will depend on your reading and studying outside of the class. Expect to spend a minimum of four hours studying outside of class for every hour in it.

Withdrawal and Failure:
Do not vanish from the course. If you decide that you no longer wish to be enrolled in the class, regardless of reason, you must officially withdraw yourself at the registrar’s office by the mid-semester withdrawal date indicated on the academic calendar. If you fail to attend the assigned meeting times and exams without filing withdrawal paperwork you will be issued a permanent grade of “F” for the course.
How to get the most out of this course:

*The Texts:*

Your textbook is a required tool to aid in your complete understanding of material covered throughout the course. You are responsible for complete comprehension of all of the material outlined in the course and that can only be accomplished by extensive reading on your own. We do not have time to cover it all in adequate detail to insure your complete understanding in class alone.

**Reminder:** Due to the limited number of lecture periods, you are required to read the text. The tests will reflex lecture material, along with material from the text that may not be covered during class time.

*Make Connections:*

Do not make the mistake of treating the lecture and the lab as completely different courses. Although the timing may not perfectly coincide, both aspects of the course deal with the same or at least similar information. Lab provides a tactile and visual learning experience to complement the auditory information in the classroom. If an explanation or diagram is unclear in your textbook look in your lab book and vice versa. The exams may have different emphasis on the details but the facts remain the same.

*Exam Strategy:*

Always write something on exams and quizzes. Partial credit will be given for any information that is accurate, even if the answer is incomplete. Certainly on multiple choice questions you might as well take a guess. Sometimes you know things you do not know you know and sometimes you can just get lucky.

*Utilize All the Time Designated for Laboratory:*

Utilize the entire lab period. You are allowed to work at your own pace, so there is no temptation to get out as early as possible. This is your time to get one-on-one instruction from me if you are in need of clarification. It might be your only chance to really make sure you understand what is going on.

*Make Us of Me!*

Make an appointment or communicate with me via e-mail if you have any questions. Remember, there are not stupid questions. I am more than willing to find a way to explain something to you so it will make sense. I will try my best to respond to your e-mails in a timely manner, however, I may not have the opportunity to respond until the weekends.

*Learning and Tutoring Center*

Tutoring is given by the Skills Center in the Orient Building, room 234, 631-548-2594
Student Assessment:

Lecture Quizzes:
There will be five lecture quizzes throughout the semester, however only the top four will count toward your final grade. They will generally cover two to three Chapters worth of material. You will be given approximately 15 minutes at the start of class to complete the quiz. Do not be late as quizzes will be collected promptly after the appropriate amount of time has passed, regardless of when you arrived. If you wish for more time you may come to class ten minutes early and begin upon arrival. Quizzes are usually a mixture of multiple-choice and fill-in questions. The purpose of the quizzes is to insure that you are keeping up on the course material. Cramming the night before an exam is a sure way to fail a course as dense as this one.

Lecture Exams:
Lecture material will be broken into four units with an exam on each unit. Exams are usually a mixture of multiple-choice, fill-in, and short answer questions. The exams will cover the material since the last exam and are not cumulative. You will have approximately 1 - 1 ½ hours to complete the exam. For lecture exams 1, 2, & 3 the exam may be repeated at home immediately following the in-class exam. The take-home exam must be turned in at the beginning of the lecture period EXACTLY a week after the exam was given. Late take-home exams will not be accepted. The final grade for the exam will be calculated as the in-class score plus one-fourth of the positive difference between the in-class and take-home score. DO NOT assume this means that you do not have to study for the in class exam. For example: You get an in-class score of 35 because you didn’t study. But you work hard from your notes and your book and get a take-home score of 95. 95 - 35 = 60 ÷ 4 = 15, so your final grade is 35 + 15 = 50. At 50% you are still failing! It is therefore important to do as well as possible on the in-class part. This is merely a way to correct your mistakes and learn from them while earning a few extra points, not a mechanism to get out of studying. The forth exam, on the last day of class, will be a standard in-class exam with no take-home component.

Laboratory Quizzes:
There will be two laboratory quizzes throughout the semester. They will generally cover three laboratory periods. You will be given approximately 15 minutes at the start of the class to complete the quiz. Do not be last as quizzes will be collected promptly after the appropriate amount of time has passed, regardless of when you arrived. If you wish for more time you may start the quiz ten minutes prior to class. Quizzes are usually a mixture of multiple-choice questions, fill-in questions and labeling of anatomical diagrams. The purpose of the quizzes is to insure that you have an understanding of the course material. Cramming the night before a practical exam is a sure way to fail a course as dense as this one.
Laboratory Practical Exams:
Laboratory material will be broken into two parts with an exam on each. The practical exam will cover material since the previous exam and are not cumulative. Laboratory practical exams tend to be in the format of question stations around the room where you are asked to identify features on the slide/specimen/object. Spelling does matter and no word banks are provided. The time allotted to a lab exam will be determined by the complexity of the exam and the manner in which it is administered. There may be additional new lab activities or lecture material following the practical exam.

Grading:
Your performance on four lecture exams, two lab practical exams, four quizzes, and four homework assignments will determine your overall grade for the course. The grading will be broken up as follows:
- Lecture Exams: 40% (4 x 10% each = 40%)
- Practical Exams: 20% (2 x 10% each = 20%)
- Lecture Quizzes: 20% (4 x 5% each = 20%)
- Laboratory Quizzes: 10% (2 x 5% each = 10%)
- Homework: 8% (4 x 2% each = 8%)
- Class Participation: 2%

100%

Calculating your grade:
Lecture and Laboratory Exams: __ ÷ 100 = ___; ___ x 10 = ___ pts out of 10 pts

Example for Lecture Exams:
Exam 1 = 85%; Exam 2 = 93%; Exam 3 = 75%; Exam 4 = 97%
85 ÷ 100 = 0.85; 0.85 x 10 = 8.5 pts out of 10 pts.
93 ÷ 100 = 0.93; 0.93 x 10 = 9.3 pts out of 10 pts.
75 ÷ 100 = 0.75; 0.75 x 10 = 7.5 pts out of 10 pts.
97 ÷ 100 = 0.97; 0.97 x 10 = 9.7 pts out of 10 pts.

**Add all pts. Received: 8.5 + 9.3 + 7.5 + 9.7 = 35 pts out of a possible 40 pts.

Lecture and Laboratory Quizzes: __ ÷ 20 = ___; ___ x 5 = ___ pts out of 5 pts.

Example for Lecture Quizzes:
Quiz 1 = 18/20; Quiz 2 = 15/20; Quiz 3 = 10/20; Quiz 4 = 19/20; Quiz 5 = 20/20
*Drop your lowest quiz grade. In this example that would be Quiz 3.*
18 ÷ 20 = 0.90; 0.90 x 5 = 4.5 pts out of 5 pts.
15 ÷ 20 = 0.75; 0.75 x 5 = 3.75 pts out of 5 pts.
19 ÷ 20 = 0.95; 0.95 x 5 = 4.75 pts out of 5 pts.
20 ÷ 20 = 1.00; 1.00 x 5 = 5.0 pts out of 5 pts.

**Add all pts. Received: 4.5 + 3.75 + 4.75 + 5.0 = 18 pts out of a possible 20.
Lecture Homework’s: ___ ÷ 20 = ___; ___ x 2 = ___ pts out of 2

Example for Homework Grades:
HW 1 = 19/20; HW 2 = 20/20; HW 3 = 18/20; HW 4 = 20/20
19 ÷ 20 = 0.95; 0.95 x 2 = 1.9 pts out of 2 pts.
20 ÷ 20 = 1.00; 1.00 x 2 = 2.0 pts out of 2 pts.
18 ÷ 20 = 0.90; 0.90 x 2 = 1.8 pts out of 2 pts.
20 ÷ 20 = 1.00; 1.00 x 2 = 2.0 pts out of 2 pts.

**Add all pts. Received: 1.9 + 2.0 + 1.8 + 2.0 = 7. 7 pts out of a possible 8.

Extra Credit:
Remember: There may be some opportunity for extra credit points via extra credit questions on exams and quizzes, along with additional interactive laboratory assignments (TBA).

Translating Numbers into your Final Grade:
Your final grade will be calculated according to the college catalog as follows:

- 90% and above = A
- 85.0 – 89.9% = B+
- 80.0 – 84.9% = B
- 75.0 – 79.9% = C+
- 70.0 – 74.9% = C
- 65.0 – 69.9% = D+
- 60.0 – 64.9% = D
- 59% and below = F

Work hard and Good Luck!
Record your grades here to keep track of your progress:

LECTURE:

Lec. Quiz 1: ______________
Lec. Quiz 2: ______________
Lec. Quiz 3: ______________
Lec. Quiz 4: ______________
Lec. Quiz 5: ______________
Lec. Homework 1: __________
Lec. Homework 2: __________
Lec. Homework 3: __________
Lec. Homework 4: __________
Lec. Exam 1: ______________
Lec. Exam 2: ______________
Lec. Exam 3: ______________
Lec. Exam 4: ______________

LABORATORY:

Laboratory Practical 1: __________
Laboratory Practical 2: __________
Laboratory Quiz 1: __________
Laboratory Quiz 2: __________
<table>
<thead>
<tr>
<th>Wk #</th>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTER for Lecture</th>
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<tbody>
<tr>
<td>1</td>
<td>2/1/10</td>
<td>Course Policy &amp; Introduction to A &amp; P</td>
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<td>&amp; 2/3/10</td>
<td><strong>Organic Chemistry</strong></td>
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<td>(Read Chapters 1 &amp; 2. You are expected to know the material up to Organic Chemistry for the next lecture! General Chemistry is a prerequisite: lecture time will not be spent reviewing it.)</td>
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<td>2/8/10</td>
<td><strong>Organic Chemistry</strong></td>
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<td>&amp; 2/10/10</td>
<td><strong>Cellular Organization</strong></td>
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<td>2/15/10</td>
<td>Presidents Day: No Class</td>
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<td></td>
<td>&amp; 2/17/10</td>
<td><strong>Quiz #1 (on Ch. 1 &amp; 2)</strong></td>
<td>3 &amp; 25 (respiration only)</td>
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<td><strong>Cellular Organization &amp; Cellular Respiration</strong></td>
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<td>4</td>
<td>2/22/10</td>
<td><strong>Cellular Respiration &amp; Tissues</strong></td>
<td>25 (Respiration Only)</td>
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<td>&amp; 2/24/10</td>
<td><strong>Exam #1 (on Ch. 1, 2, 3, &amp; 25)</strong></td>
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<td><strong>Homework #1 Due (for Ch. 3)</strong></td>
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<td>3/1/10</td>
<td><strong>Tissues</strong></td>
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<td>&amp; 3/3/10</td>
<td><strong>Take-Home Exam Due</strong></td>
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<td><strong>Integumentary System</strong></td>
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<td>3/8/10</td>
<td><strong>Skeletal System</strong></td>
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<td>&amp; 3/10/10</td>
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<td>3/15/10</td>
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<td>&amp; 3/17/10</td>
<td><strong>Quiz #2 (on Ch. 4 &amp;5)</strong></td>
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<td>8</td>
<td>3/22/10</td>
<td><strong>Skeletal System</strong></td>
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<td>&amp; 3/24/10</td>
<td><strong>All College Day: No Class</strong></td>
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<td><strong>SPRING BREAK: No Class</strong></td>
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<td>3/29/10</td>
<td><strong>Skeletal System</strong></td>
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<td>&amp; 3/31/10</td>
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<td><strong>Homework #2 Due (on Ch. 6 &amp; 7)</strong></td>
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<td>&amp; 4/7/10</td>
<td><strong>Quiz #3 (on Ch. 8 &amp; 9)</strong></td>
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<td><strong>Take-Home Exam Due</strong></td>
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<td><strong>Muscular System &amp; Nervous System</strong></td>
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<td>4/19/10 &amp;</td>
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<td><strong>Homework #3 Due (on Ch. 10 &amp; 11)</strong></td>
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<td>5/3/10 &amp;</td>
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<td><strong>Quiz #4 (on Ch. 12, 13)</strong></td>
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<td><strong>Take-Home Exam Due</strong></td>
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<td>Nervous System</td>
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<td>14</td>
<td>5/10/10 &amp;</td>
<td>Special Senses</td>
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<td><strong>Quiz #5 (on Ch. 14, 15)</strong></td>
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<td>Special Senses</td>
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<td>5/17/10 &amp;</td>
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<td><strong>Exam #4 (on Ch. 12, 13, 14, 15, 16 &amp; 17)</strong></td>
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<td>2/1/10</td>
<td>Microscopy &amp; Anatomical Terminology</td>
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<td>2/8/10</td>
<td>Cell Anatomy</td>
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<td>Cell Transport Mechanisms</td>
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<td>3</td>
<td>2/22/10</td>
<td>Cellular Processes: Mitosis, Cellular Respiration, &amp; Enzyme Activity</td>
<td>5</td>
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<td></td>
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<td>Supplemental experiment worksheet</td>
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<td>4</td>
<td>3/1/10</td>
<td>Histology: Tissue Types</td>
<td>6A &amp; Fig. 7.2a, Fig 7.6b, Fig 9.3c, Fig. 9.4, Fig.14.3, Fig. 14.4b, &amp; Fig. 17.2c</td>
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<tr>
<td></td>
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<td><em>Lab Quiz #1 (lab #1-3)</em></td>
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<td>5</td>
<td>3/8/10</td>
<td>Integumentary System</td>
<td>7</td>
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<tr>
<td>6</td>
<td>3/15/10</td>
<td>Skeletal System I: Bone Histology &amp; Axial Skeleton Bones and Markings</td>
<td>9, 10, 12</td>
</tr>
<tr>
<td>7</td>
<td>3/22/10</td>
<td><em>Lab Practical Exam #1</em></td>
<td>Labs 1-6</td>
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<td></td>
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<td><em>Ex. 1, 3, 4, 5, 6A, 7, 9, 10, 12</em></td>
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<tr>
<td>8</td>
<td>3/29/10</td>
<td>SPRING BREAK: No Class</td>
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<tr>
<td>9</td>
<td>4/5/10</td>
<td>Skeletal System II: Appendicular Skeleton Bones and Markings, Synovial Joints, &amp; Movements</td>
<td>11, 13</td>
</tr>
<tr>
<td>10</td>
<td>4/12/10</td>
<td>Muscular System I: Skeletal Muscle Anatomy, Locations &amp; Actions</td>
<td>14, 15</td>
</tr>
<tr>
<td>11</td>
<td>4/19/10</td>
<td>Muscular System II: Skeletal Muscle Origins and Insertions (Review appendicular skeleton markings in context of skeletal muscle attachments)</td>
<td>15</td>
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<tr>
<td>12</td>
<td>4/26/10</td>
<td>Nervous System I: Nervous Tissue Anatomy, Spinal Cord, Spinal Nerves, &amp; Reflexes</td>
<td>17, 21, 22</td>
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<td><em>Lab Quiz #2 (lab #8-10)</em></td>
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<tr>
<td>13</td>
<td>5/3/10</td>
<td>Nervous System II: Brain and Cranial Nerves</td>
<td>19</td>
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<td>14</td>
<td>5/10/10</td>
<td>General and Special Senses</td>
<td>23, 24, 25, 26</td>
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<tr>
<td>15</td>
<td>5/17/10</td>
<td><em>Lab Practical Exam #2</em></td>
<td>Labs 8-11</td>
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<tr>
<td></td>
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<td><em>Ex. 11, 13, 14, 15, 17, 19, 21, 22, 23, 24, 25, 26</em></td>
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### List of All Quizzes, Exams, Practical Exams, and Homework due Dates:

#### February:
- **Wednesday, Feb. 17:** Lecture Quiz 1 Ch. 1, 2  
- **Wednesday, Feb. 24:** Lecture Exam 1 Ch. 1, 2, 3  
  Homework 1 Due Ch. 3

#### March:
- **Monday, March 1:** Lab. Quiz 1 Ch. 1-3  
- **Wednesday, March 3:** Exam 1 Take-home Due Ch. 1, 2, 3  
- **Wednesday, March 17:** Lecture Quiz 2 Ch. 4, 5  
- **Monday, March 22:** Lab. Practical Exam 1 Ch. 1-7

#### April:
- **Wednesday, April 7:** Lecture Exam 2 Ch. 4, 5, 6, 7  
  Homework 2 Due Ch. 6, 7  
- **Wednesday, April 14:** Lecture Quiz 3 Ch. 8, 9  
  Exam 2 Take-home Due Ch. 4, 5, 6, 7  
- **Monday, April 26:** Lab. Quiz 2 Ch. 8-10  
- **Wednesday, April 28:** Lecture Exam 3 Ch. 8, 9, 10, 11  
  Homework 3 Due Ch. 10, 11

#### May:
- **Wednesday, May 5:** Lecture Quiz 4 Ch. 12, 13  
  Exam 3 Take-Home Due Ch. 8, 9, 10, 11  
- **Wednesday, May 10:** Lecture Quiz 5 Ch. 14, 15  
- **Monday, May 17:** Practical Exam 3 Ch. 8-14  
- **Wednesday, May 19:** Lecture Exam 4 Ch. 12-17  
  Homework 4 Due Ch. 16 – 17