Biology 200B – Human Anatomy & Physiology I
Spring Quarter 2012 Syllabus

General Course Information

Instructor/Course Coordinator/Lab Coordinator
Mr. Robert L Stewart Jr. – Part-time Faculty, Department of Biological Sciences
Email Address: rlstewart10@gmail.com (new email address)
Office: ASCB 365
Office Hours/Open Lab: Tuesday & Thursday 7:15pm-10pm; Friday 9am-12pm

Lab Instructors: Mr. Andre Baghoomian; Dr. Anahid Mirzatoni; Mr. Behnam Radi; Mr. Robert L Stewart Jr
Please see your lab instructors for their contact information and/or office hours
Do not contact me for lab instructor contact information, get this settled day one of lab.

Course Description and Meeting Times

This course provides an introduction to human anatomy and physiology for non-science majors. The general objectives of the course are to gain a detailed understanding of the structure and function of the human body; to appreciate the relationship between structure and function; and to understand how various cells, tissues, organs and organ systems work together to maintain homeostasis. To achieve these general objectives, we will study the structure and function of the human body from a systems viewpoint.

The entire Biology 200 course is presented in two quarters. This quarter, we will cover the nervous system, the endocrine system, the reproductive system (including gametogenesis and development), the cardiovascular system (some lymphatic system included) and the respiratory system.

Meeting Times: Lecture - Monday, Wednesday and Friday 8:00am-8:50am, ASCB 132 Lecture Hall
Laboratory – M/W or T/Th in room ASCB 365

Course Website

Mastering A & P – Will contain syllabus, lecture slides (not lecture notes), mandatory lab and lecture quizzes, your progress, and anything else the teaching staff deems relevant to your successful completion of the course.

Also, use Mastering A & P to take advantage of the many online resources that the website/program offers. The resources are great and very helpful. You can find all sorts of activities to help you in this course in addition to pictures of tissues, models, dissection specimens, quizzes, practice lab exams, games, ect.
Also take advantage of the many online resources that the textbooks offer. They are great and very helpful. You can find all sorts of activities to help you in this course in addition to pictures of tissues, models, dissection specimens, quizzes, practice lab exams, games, ect.
Prerequisite: Biology 200A; I will drop anyone who does not have this prerequisite; no exceptions.

Suggested Textbooks

Required Textbooks
Laboratory: Integrate: The Pearson Custom Library for Anatomy & Physiology/ (9th) Custom Edition for California State University Los Angeles; E.N. Marieb and S.J. Mitchell; Benjamin Cummings/Pearson Higher Education 2011. I suggest getting the Lab Manual (mandatory) which is bundled with the E-textbook and the Mastering A & P program (also mandatory). This is the best deal and can be found in the campus bookstores.

IMPORTANT NOTICE!
Cell Phones (or other electronic devices) are NOT ALLOWED to make any sound that may disrupt the learning process. Therefore, please turn your cell phones (or other electronic devices) off or to silent mode prior to entering the classroom. There will be 5 points deducted from your total score whenever your cell phone disrupts the lecture or the laboratory sections of this course. If my phone goes off, then every student receives 5 points. Fair? I think so.

Course Requirements

Attendance

Lecture attendance is very important to the overall progress you can achieve in this course. While I cannot police attendance in such a large course, there are some privileges that come with regular attendance. Any extra credit assignments or in-class assignments (that will be worth points) can only be taken advantage of by the students in attendance on that day. There is no make-up for assignments given in class, no matter what the excuse. There may or may not be a prior announcement made. All extra credit opportunities for the course will be given in lecture only, unless the lecturer decides different.

Laboratory attendance is also very important to the level of success of this course. You must be enrolled in a lab session, where you will perform experiments, study and manipulate anatomical models and charts, study histological specimens, and view demonstrations relevant to the topics in the lecture material. The laboratory section is NOT another lecture, it is designed for collaborative, exploratory, and inquiry based learning. Therefore, come to lab prepared to work (this implies that there is some learning that should be done prior to arriving at lab)!

Grading

You will receive a single grade for the lecture and lab portions of the course. Letter grades will be determined based on the (already curved) grading scale below. You must have at least 662 points (50%) to pass the course. The plus/minus grading system will be used. There will be NO makeup exams. Missed exams with a justified, written, valid and verifiable excuse (ie, physician's note) will be prorated based on scores on other exams. The final lecture exam must be taken to receive a grade for the course.
## Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>1240 - 1325</td>
<td>(94% - 100%)</td>
</tr>
<tr>
<td>A-</td>
<td>1161 - 1239</td>
<td>(88% - 93%)</td>
</tr>
<tr>
<td>B+</td>
<td>1134 - 1160</td>
<td>(86% - 87%)</td>
</tr>
<tr>
<td>B</td>
<td>1041 - 1133</td>
<td>(79% - 85%)</td>
</tr>
<tr>
<td>B-</td>
<td>1002 - 1040</td>
<td>(76% - 78%)</td>
</tr>
<tr>
<td>C+</td>
<td>975 - 1001</td>
<td>(74% - 75%)</td>
</tr>
<tr>
<td>C</td>
<td>869 - 974</td>
<td>(66% - 73%)</td>
</tr>
<tr>
<td>C-</td>
<td>816 - 868</td>
<td>(62% - 65%)</td>
</tr>
<tr>
<td>D+</td>
<td>776 - 815</td>
<td>(59% - 61%)</td>
</tr>
<tr>
<td>D</td>
<td>697 - 775</td>
<td>(53% - 58%)</td>
</tr>
<tr>
<td>D-</td>
<td>662 - 696</td>
<td>(50% - 52%)</td>
</tr>
<tr>
<td>F</td>
<td>Below 662</td>
<td>Below 50%</td>
</tr>
</tbody>
</table>

### Component | Points in Overall Grade | Worth | Comments |
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom Assessments</td>
<td>200</td>
<td>20pts each</td>
<td>(10) Lecture-based Timed Website quizzes</td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>200</td>
<td>100pts each</td>
<td>(2) In class midterm exams; formats may be any or all of the following: multiple choice, short-answer, fill in the blanks, diagramming</td>
</tr>
<tr>
<td>Research Paper</td>
<td>50</td>
<td>50 pts</td>
<td>(1) Research Paper. Details will be posted on the websites.</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
<td>200 pts</td>
<td>(1) In class final exam; format may be any or all of the following: multiple choice, short-answer, fill in the blanks, diagramming.</td>
</tr>
<tr>
<td>Total Lecture Points</td>
<td>650</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory</td>
<td>675</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mini-Practical Exams</td>
<td>150</td>
<td>50 pts each</td>
<td>(4) In lab mini-practical exams; lowest one will be dropped. 25 questions worth 2 points each.</td>
</tr>
<tr>
<td>Practical Exams</td>
<td>200</td>
<td>100 pts each</td>
<td>(2) In lab practical exams. 50 questions worth 2 points each.</td>
</tr>
<tr>
<td>Pre-lab quizzes</td>
<td>95</td>
<td>5 pts each</td>
<td>(19) pre-lab quizzes found in the lab manual before each exercise. Due at the beginning of the lab on the scheduled day for each exercise.</td>
</tr>
<tr>
<td>Online lab quizzes</td>
<td>115</td>
<td>5 pts each</td>
<td>(23) Timed Web Quizzes based on Review Exercises (5 pts each); Including Physioex Exercises</td>
</tr>
<tr>
<td>Physioex Lab Reports</td>
<td>40</td>
<td>10 points each</td>
<td>(4) Lab Reports generated from the 4 Physioex Exercises in Lab: 18B, 29B, 34B and 37B</td>
</tr>
<tr>
<td>Subjective evaluation</td>
<td>75</td>
<td>75 pts maximum</td>
<td>Each lab instructor can award these points on a case to case basis. Subjective points will reflect lab attendance, lab collaboration, lab preparedness, lab productivity, lab behavior (including whether you put things back how you found them, cleaning your area prior to leaving lab, level of respect for others, how long you stay in lab, plagiarism, following lab rules, etc).</td>
</tr>
<tr>
<td>Total Lab Points</td>
<td>675</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1325 points</td>
<td>Percentage of total points determines the course grade</td>
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</tbody>
</table>

### Late Assignments

Late assignments will have 10% of total possible points deducted for each day late.
Academic Honesty

Students are expected to abide by the University’s Academic Honesty Policy, which can be found at http://www.calstatela.edu/univ/stuaffrs/Academic_Honesty.htm. Students who violate this policy will be subject to disciplinary action, and may receive a failing grade in the course for a single violation. **I HIGHLY SUGGEST THAT YOU GO TO THIS SITE AND FIND OUT WHAT SORTS OF ACTIVITIES CAN GET YOU INTO HOT WATER AS FAR AS ACADEMIC HONESTY GOES.**

Tape Recorders and Laptops in Lecture

You may bring tape recorders to record the lectures. You may also bring laptops to be used for purposes consistent with engaging yourself with the lecture. However, if it is ever determined that you are using your laptop to do other things such as instant messaging, internet chatting, etc., the class will lose this privilege.

Lecture Exam Procedure

All students are to wait outside on exam days. The teaching staff needs to come in and set up for the exam. When you are invited into the hall, you will leave your personal items either at the back of the lecture hall, or on the floor in front of the lecture hall. You may only sit in seats that contain an exam. The only items you can take to your seat are the materials needed and allowed to take the exam such as pencils, pens, erasers, scantrons, etc. **If you are seated next to someone with the same version of the exam as yours, raise your hand and alert the instructors so that it may be exchanged (prior to beginning the exam). No electronic devices of any kind are allowed to be on your person on exam days (ipods, cell phones, mp3 players, laptops, ect)**.
### ADA Statement

Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation.
Laboratory Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 02, 03</td>
<td>Histology of Nervous Tissue; Brain Anatomy</td>
<td>17 &amp; 19</td>
</tr>
<tr>
<td>Apr 04, 05</td>
<td>Brain Anatomy; Cranial Nerves</td>
<td>19</td>
</tr>
<tr>
<td>Apr 09, 10</td>
<td>Spinal Cord, Spinal Nerves, ANS</td>
<td>21</td>
</tr>
<tr>
<td>Apr 11, 12</td>
<td>Mini-Practical #1; Human Reflexes</td>
<td>22</td>
</tr>
<tr>
<td>Apr 16, 17</td>
<td>Neurophysiology of Nerve Impulses; EEG</td>
<td>18A; 18B; 20</td>
</tr>
<tr>
<td>Apr 18, 19</td>
<td>General Sensation; Eye &amp; Vision</td>
<td>23 &amp; 24</td>
</tr>
<tr>
<td>Apr 23, 24</td>
<td>Hearing &amp; Equilibrium; Taste &amp; Smell</td>
<td>25 &amp; 26</td>
</tr>
<tr>
<td>Apr 25, 26</td>
<td>Mini-Practical #2; Review for Midterm</td>
<td></td>
</tr>
<tr>
<td>4/30, 5/01</td>
<td>Midterm Practical Exam</td>
<td></td>
</tr>
<tr>
<td>May 02, 03</td>
<td>Endocrine System</td>
<td>27</td>
</tr>
<tr>
<td>May 07, 08</td>
<td>Reproductive Anatomy &amp; Physiology</td>
<td>42 &amp; 43</td>
</tr>
<tr>
<td>May 09, 10</td>
<td>Blood &amp; Heart Anatomy</td>
<td>29A, 29B; &amp; 30</td>
</tr>
<tr>
<td>May 14, 15</td>
<td>Mini-Practical #3; Heart Anatomy cont.</td>
<td>30</td>
</tr>
<tr>
<td>May 16, 17</td>
<td>Heart Anatomy &amp; Blood Vessels</td>
<td>30 &amp; 32</td>
</tr>
<tr>
<td>May 21, 22</td>
<td>Blood Vessels &amp; Lymphatics (Immune)</td>
<td>32; pp. 525-529 (35A)</td>
</tr>
<tr>
<td>May 23, 24</td>
<td>Cardiovascular Physiology; ECG</td>
<td>31 &amp; 33A; 34B</td>
</tr>
<tr>
<td>May 28, 29</td>
<td>Memorial Day Holiday</td>
<td>No Lab</td>
</tr>
<tr>
<td>May 30, 31</td>
<td>Respiratory Anatomy</td>
<td>36</td>
</tr>
<tr>
<td>June 04, 05</td>
<td>Mini-Practical #4</td>
<td>37A &amp; 37B</td>
</tr>
<tr>
<td></td>
<td>Respiratory Mechanics</td>
<td></td>
</tr>
<tr>
<td>June 06, 07</td>
<td>Final Practical Exam</td>
<td></td>
</tr>
</tbody>
</table>

MP 1 will cover the period from April 02 – April 10
MP 2 will cover the period from April 11 – April 24
Midterm Practical will cover the period from April 02 – April 26
MP 3 will cover the period from May 02 - Blood
MP 4 will cover the period from Heart Anatomy – May 31
Final Practical will cover the period from May 02 – June 05

All assigned Physioex exercises are to be completed by the student on a computer away from the laboratory (home or school computers). Physioex exercises will be included on the online lab quizzes, and will be covered on lab exams.

Open Lab - We will open an additional lab as much as we can to allow students to study. Open lab is for you to increase your chances of getting the grade you want out of this course. There will be no extra credit given for your taking advantage of open lab opportunities. Remember, the teaching staff is opening the additional lab voluntarily (no extra pay). Furthermore, open lab is not merely another taught lab that you can attend in lieu of your assigned lab. The teaching staff is there to supervise, not to teach. Please use “office hours” or your assigned lab period to discuss anything you are not understanding with your own lab instructor.
Laboratory Safety and Rules

- Evacuation Procedures (Follow directions of your instructor)
- Hazardous Materials – be careful when handling glass and sharp objects such as microscope slides, test tubes, and dissecting tools. Report any injury, spill or broken equipment to your instructor.
- No eating or drinking in the lab. Do not even bring food into the lab unless it is secure within your backpack or other closed carrying apparatus. Bottled water is acceptable.
- Be careful with all lab equipment. Follow any instructions on how to operate any equipment in the lab. Be careful not to write on any charts, models, lab benches, etc. Make sure to handle models, bones, skeletons, etc with extreme care as they are very expensive.
- Make sure to leave the lab as you found it when you arrived. Clean up after yourselves, put all models and keys back where you found them; reassembled and in order. Push your lab stools under the lab bench before you leave. Failure to do so will result in a deduction of subjective points.
- Lab coats are not required, but may be useful on days when performing dissections or other “wet lab” procedures. Lab coats will protect your clothing.
- **NO PHOTOGRAPHY** will be allowed in the laboratory. Your textbooks have excellent and adequate online resources for you in the form of pictures, models, histology slides, etc. It has not been seen in this course that taking pictures helps anyone’s grades. We are convinced of that.
- **CELL PHONES (and other electronic devices)** are not allowed to sit on the lab benches, are not allowed to be used in the laboratory, are not allowed to ring or make any other noise during the lab period. The penalty for cell phone (or other electronic device) disruption is a deduction of 5 points every time it happens. You may not plug your cell phones or other electronic devices into the laboratory electrical outlets (**Laptops excepted when being used as a laboratory learning tool**).
- You may bring a laptop in order to be used for educational purposes only. If you are caught using the laptop for anything not relevant to this course, you will lose your privilege to use it during your laboratory period.
- You must take your laboratory time seriously, therefore, no horseplay or unnecessarily loud conversations during lab. You may be affecting the concentration of your colleagues around you. However, collaboration, discussion and polite debate of the course subject matter are encouraged within groups (or even between groups).
- You will be given a copy of this contract to sign which says that you understand the laboratory rules for this course. You must sign this agreement in order to begin subjective evaluation.
- Failure to turn in assignments, unexcused tardiness, unexcused absences, lack of effort in lab will all result in a reduction of your subjective lab points.

Please sign below.

I understand and agree to follow all laboratory safety procedures and rules.

Name: ____________________________ Date: ____________________

Lab Instructor’s Name: ____________________________ Date: ____________________
The Nervous System

By the end of the quarter term, students will be able to:

- List the basic functions of the nervous system
- Explain the structural and functional divisions of the nervous system
- List the types of neuroglia and cite their functions
- Define neuron, describe its important structural components, and relate each to a functional role
- Differentiate between a nerve and a tract, and between a nucleus and a ganglion.
- Explain the importance of the myelin sheath and describe how it is formed in the central and peripheral nervous systems.
- Classify neurons structurally and functionally.
- Describe the process of brain development
- Name the major regions of the adult brain
- Name and locate the ventricles of the brain
- Describe how meninges, cerebrospinal fluid, and the blood-brain barrier protect the central nervous system
- Describe the formation of cerebrospinal fluid, and follow its circulatory pathway
- Define resting membrane potential and describe its electrochemical basis
- Compare and contrast graded potentials and action potentials
- Explain how action potentials are generated and propagated along neurons
- Define absolute and relative refractory periods
- Define salutatory conduction and contrast it to conduction along unmyelinated fibers
- Define synapse
- Distinguish between electrical and chemical synapses by structure and by the way they transmit information
- Distinguish between excitatory and inhibitory postsynaptic potentials
- Describe how synaptic events are integrated and modified
- Define neurotransmitter and name several classes of neurotransmitters
- Understand the general manner by which neurotransmitters affect targets
- Name and describe the components of a reflex arc and distinguish between autonomic and somatic reflexes
- Compare and contrast stretch, flexor, crossed-extensor, and Golgi tendon reflexes
- List the major lobes, fissures, and functional areas of the cerebral cortex
- Explain lateralization of hemisphere function
- Differentiate between commissures, association fibers, and projection fibers
- Describe the general function of the basal nuclei
- Describe the location of the diencephalon, and name its subdivisions and functions
- Identify the three major regions of the brain stem, and note the functions of each area
- Describe the structure and function of the cerebellum
- Locate the limbic system and the reticular formation, and explain the role of each functional system
- Define electroencephalogram (EEG) and distinguish between alpha, beta, theta, and delta brain waves
- Describe the gross and microscopic structure of the spinal cord
- List the major spinal cord tracts, and classify each as a motor or sensory tract
- Define ganglion and indicate the general body location of ganglia
- Describe the general structure of a nerve
Name the 12 pairs of cranial nerves, state whether they are motor, sensory, or mixed, and indicate the body regions and structures innervated by each

Describe the formation of a spinal nerve and the general distribution of its rami

Define nerve plexus

Name the major plexuses and describe the distribution and function of the major peripheral nerves arising from each plexus.

Define a dermatome, and understand how dermatomes can be used to locate spinal cord damage

Define autonomic nervous system and explain its relationship to the peripheral nervous system

Compare the somatic and autonomic nervous systems relative to effectors, efferent pathways, and neurotransmitters released

Compare and contrast the functions of the parasympathetic and sympathetic divisions

Describe the site of CNS origin, locations of ganglia, and general fiber pathways for the parasympathetic and sympathetic divisions

Define cholinergic and adrenergic fibers, and list the different types of their receptors

State the effects of the parasympathetic and sympathetic divisions on several organs

Describe autonomic nervous system controls.

Classify general sensory receptors by structure, stimulus detected, and body location

Identify the special senses

Describe the structure and function of accessory eye structures, eye layer, the lens, and humors of the eye

Trace the pathway of light through the eye to the retina, and explain how light is focused for distant and close vision

Describe the events involved in the stimulation of photoreceptors by light, and compare and contrast the roles of rods and cones in vision

Trace the visual pathway to the visual cortex

Describe the structure and function of accessory eye structures, eye layers, the lens, and humors of the eye

Trace the pathway of light through the eye to the retina, and explain how light is focused for distant and close vision

Describe the events involved in the stimulation of photoreceptors by light, and compare and contrast the roles of rods and cones in vision.

Trace the visual pathway to the visual cortex

Describe the structure and general function of the outer, middle, and internal ears.

Describe the sound conduction pathway to the fluids of the internal ear, and follow the auditory pathway from the spiral organ (of Corti) to the temporal cortex

Explain how one is able to differentiate pitch and loudness, and localize the source of sounds

Explain how the balance organs of the semicircular canals and the vestibule help maintain dynamic and static equilibrium

Understand the homeostatic interrelationships between the nervous system and other body systems

The Endocrine System

By the end of the quarter term, students will be able to:

- Indicate important differences between hormonal and neural controls of body functioning
- List the major endocrine organs, and describe their body locations
- Distinguish between hormones, paracines, and autocrines
- Describe how hormones are classified chemically
Describe the two major mechanisms by which hormones bring about their effects on their target tissues.

List three kinds of interaction of different hormones acting on the same target cell.

Explain how hormone release is regulated.

Describe structural and functional relationships between the hypothalamus and the pituitary gland.

List and describe the chief effects of anterior pituitary hormones.

Discuss the structure of the posterior pituitary, and describe the effects of the two hormones it releases.

Describe important effects and regulation of the two groups of hormones produced by the thyroid gland.

Understand the basics of thyroxine formation and release.

Understand the general functions and regulation of parathyroid hormone.

List hormones produced by the adrenal gland, and cite their physiological effects.

Describe the importance of melatonin in sleep-wake cycles.

Compare and contrast the effects of the two major pancreatic hormones.

Discuss the regulation of blood glucose levels.

Describe the functional roles of hormones of the testes, ovaries, and placenta.

Name a hormone produced by the heart.

Understand hormone secretion via organs outside of the endocrine system.

Understand the homeostatic interrelationships between the endocrine system and other body systems.

**The Reproductive System**

By the end of the quarter term, students will be able to:

- Describe the structure and function of the testes, and explain the importance of their location in the scrotum.
- Describe the location, structure and function of the accessory reproductive organs of the male.
- Discuss the sources and function of semen.
- Describe the phases of the male sexual response.
- Discuss hormonal regulation of testicular function and the physiological effects of testosterone on male reproductive anatomy.
- Describe the location, structure, and function of the ovaries.
- Describe the location, structure, and function of each of the organs of the female reproductive duct system.
- Describe the anatomy of the female external genitalia.
- Discuss the structure and function of the mammary glands.
- Describe the ovarian cycle phases, and relate them to events of oogenesis.
- Describe the regulation of the ovarian and uterine cycles.
- Discuss the physiological effects of estrogens and progesterone.
- Define meiosis. Compare and contrast it to mitosis.
- Outline events of spermatogenesis.
- Describe the process of oogenesis and compare it to spermatogenesis.
- Understand the homeostatic interrelationships between the reproductive system and other body systems.

**The Cardiovascular System**

By the end of the quarter term, students will be able to:

- Describe the composition and physical characteristics of whole blood.
List eight functions of blood
Discuss the composition and functions of plasma
Describe the structure, function, and production of erythrocytes
Describe the chemical makeup of hemoglobin
List the classes, structural characteristics, and functions of leukocytes
Describe how leukocytes are produced
Describe the structure and function of platelets
Describe the process of hemostasis
List factors that limit blood clot formation and prevent undesirable clotting
Describe the ABO and Rh blood groups.
Explain the basis of blood transfusion reactions
Describe the size, shape, location, and orientation of the heart in the thorax
Name the coverings of the heart
Describe the structure and function of each of the three layers of the heart wall
Describe the structure and functions of the four heart chambers
Name each heart chamber and provide the name and general route of its associated great blood vessel(s)
Trace the pathway of blood through the heart
Name the major branches and describe the distribution of the coronary arteries
Name the heart valves and describe their location, function, and mechanism of operation
Describe the structural and functional properties of cardiac muscle, and explain how it differs from skeletal muscle
Describe the basic events of cardiac muscle cell contraction
Name the components of the conduction system of the heart, and trace the conduction pathway
Draw a diagram of a normal electrocardiogram (ECG) tracing
Name the individual waves and intervals of an ECG and indicate what each represents
Name some abnormalities that can be detected on an ECG tracing
Describe normal heart sounds
Describe the timing and events of the cardiac cycle
Name and explain the effects of various factors regulating stroke volume and heart rate
Explain the role of the autonomic nervous system in regulating cardiac output
Describe the three layers that typically form the wall of a blood vessel, and state the function of each
Define vasoconstriction and vasodilation
Compare and contrast the structure and function of the three types of arteries
Describe the structure and function of a capillary bed
Describe the structure and function of veins, and explain how veins differ from arteries
Define blood flow, blood pressure, and resistance, and explain the relationship between these factors
List and explain the factors that influence blood pressure
Describe how blood pressure is regulated
Define hypertension, and describe its manifestations and consequences
Explain how blood flow is regulated in the body in general
Outline factors involved in capillary dynamics, and explain the significance of each
Define circulatory shock
Trace the pathway of blood through the pulmonary circuit, and state the importance of this special circulation
Describe the general functions of the systemic circuit
Name and give the location of the major arteries and veins in the systemic circulation
Describe the structure and special function of the hepatic portal system
Understand the homeostatic interrelationships between the cardiovascular system and other body systems
The Lymphatic System

By the end of the quarter term, students will be able to:

- List the functions of the lymphatic vessels
- Describe the structure and distribution of lymphatic vessels
- Describe the source of lymph and mechanism(s) of lymph transport
- Describe the basic structure and cellular population of lymphoid tissue
- Describe the general location, histological structure, and function of lymph nodes
- Understand the homeostatic interrelationships between the lymphatic system and other body systems

The Respiratory System

By the end of the quarter term, students will be able to:

- Identify the organs forming the respiratory passageway(s) in descending order until the alveoli are reached
- Describe the location, structure, and function of each of the following: nose, paranasal sinuses, pharynx, larynx, and trachea
- List and describe several protective mechanisms of the respiratory system
- Distinguish between conducting and respiratory zone structures
- Describe the makeup of the respiratory membrane, and relate structure to function
- Describe the gross structure of the lungs and pleurae
- Explain the functional importance of the partial vacuum that exists in the intrapleural space
- Relate Boyle’s law to events of inspiration and expiration
- Explain the relative roles of the respiratory muscles and lung elasticity in producing the volume changes that cause air to flow into and out of the lungs
- List several factors that influence pulmonary ventilation
- Explain and compare the various lung volumes and capacities
- Define dead space
- Indicate types of information that can be gained from pulmonary function tests
- State Dalton’s law of partial pressures and Henry’s Law
- Describe how atmosphere and alveolar air differ in composition, and explain the differences
- Relate Dalton’s and Henry’s laws to events of external and internal respiration
- Describe how oxygen is transported in the blood, and explain how oxygen loading and unloading is affected by temperature, pH, BPG, and PCO2
- Describe carbon dioxide transport in the blood
- Describe the neural controls of respiration
- Compare and contrast the influences of arterial pH, arterial partial pressure of oxygen and carbon dioxide, lung reflexes, volition, and emotions on respiratory rate and depth
- Compare and contrast the hyperpnea of exercise with hyperventilation
- Understand the homeostatic interrelationships between the respiratory system and other body systems