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Course Syllabus
BIOL 2402-72427
Winter 2017

Math, Natural Science & Sports Sciences Learning Center
Division Office: P-330
Phone: 972-273-3500
Hours: Vary by semester so check the posted hours.

This course syllabus is intended as a set of guidelines for Anatomy and Physiology. Both North Lake College and your instructor reserve the right to make modifications in content, schedule, and requirements as necessary to promote the best education possible within prevailing conditions affecting this course.

Instructor Information

Instructor: Dr. Ticiano Alegre
Email: talegre@dccc.edu
Office Phone: 972-273-3239 (best to email me)
Office: C336 (Main Campus)
Office hrs: By appointment

Course Information

Course title: Applied Human Anatomy and Physiology I
Course number: BIOL 2402
Credit hours: 4 Credit Hours
Course description: A continuation of Applied Human Anatomy and Physiology I designed for students considering a career in the health field. The following body systems are included: digestive, respiratory, cardiovascular, lymphatic/immune, renal/excretory, and reproductive. Emphasis is on homeostasis. This course is intended for students seeking to complete an Applied Science.
Course prerequisites: BIOL 2401.
Choose your section

<table>
<thead>
<tr>
<th>Section number</th>
<th>72427</th>
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<tbody>
<tr>
<td>Class Meeting Time</td>
<td>INET (online) All exams are to be taken at a testing center.</td>
</tr>
<tr>
<td>Lab Meeting Time</td>
<td>INET (online) All exams are to be taken at a testing center.</td>
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Recommended course code including textbook


https://he.kendallhunt.com/Alegre_APII

Lecture-Lab Required book

Course Objectives

This course is divided into units/chapters; each unit/chapter will have objectives which are included in the lecture-lab textbooks. All objectives, which are decided by the district curriculum committee, are measurable or observable and will be evaluated. Different modes of instruction will be utilized in evaluation analysis. SCIT 1408 will be presented using an integration of lecture with a nontraditional mode of instruction.

I. Student must be able to identify basic anatomy associated with each system and use appropriate vocabulary.

II. Student must be able to understand the basic physiology of each system and describe it with appropriate vocabulary.

III. Students must be able to integrate vocabulary, anatomy and physiology of the various systems.

IV. Students must demonstrate the ability to communicate their knowledge using appropriate vocabulary.
Course Learning Outcomes

1. The student will discuss the structure and function of the basic parts of the nervous system (special senses) and their relation to the rest of the body.
2. The student will diagram the structure and function of the various components of the heart and circulatory system and the blood circulation pathway.
3. The student will identify the structures of the lungs as well as the passageways and organs of the body that provide for air transfer between the body and the environment.
4. The student will illustrate the mechanisms for breathing and for production of voice.
5. The student will locate the digestive organs and discuss their roles in handling food from preliminary tasting to final evacuation.
6. The student will describe the roles of chemicals in the action of digestion.
7. The student will discuss absorption, storage, and transport of nutrients from the digestive system.
8. The student will identify the structures and function of the excretory system.
9. The student will identify the principles structures and functions of the reproductive system.
10. The student will locate the principle endocrine glands.
11. The student will discuss the role of the endocrine system as it relates to different systems of the body.
12. The student will described how hormones effect change in target tissues.

The Course Learning Outcomes are addressed in more detail for each chapter in the Appendix A: More in depth Learning Objectives: These outcomes (objectives) will be assessed using methods of testing through departmental exams and in class group work.

Course Outline (Class Schedule)
Please see e-campus for a complete and detailed Course Outline (Calendar). Pay careful attention to the listed dates.
Evaluation Procedures

Please read the: Start Here Button, Required Reading, and FAQ with in e-campus.
Lecture: Power Point, Blackboard, Projector, Exam Reviews and lecture exams.)
Laboratory Skills: Power Point, Blackboard, Reviews, and Hands On and lab. exams
End of Chapter power points questions: Exam review and practice.
These questions are to be finished by the end of the course.
Digital hands on: Great 3D illustration of full body anatomical views for digital hands on.

Exams and Assignments

- 5 exams (multiple choice) (drop lowest exam) -------------------------------50%
- 4 Laboratory Exams (drop lowest exam) ---------------------------------- 40%
- Certification and course orientation Quiz--------------------------------- 10%
- Required book (need to purchase code, please see required text within e-campus)
  including: Graded exercises, Clinical cases, 3D anatomical illustration (for digital
  hands on), videos, and quizzes, all-inclusive in the GRL or WebCOM 2.0 site.

Grading Scale
Standard college grading is used to compute the final grade.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>100-90</td>
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<td>B</td>
<td>89-80</td>
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<tr>
<td>C</td>
<td>79-70</td>
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<td>Below 70 No Certification in various programs</td>
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<td>D</td>
<td>69-60</td>
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<td>F</td>
<td>59 and Below</td>
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Online students take all lab and lecture exams at the testing center on the stated dates.
On-campus students take all lecture exams at the testing center except the final exam
(which is taken at the classroom). Also, all on-campus students take all lab exams at
the lab where we meet weekly (not online).
For the computer exams at the testing center, you need to log on to eCampus and click on
the “Lecture or Lab Exams” button and select the exam. You may take the exam once the
testing center has put in the password. All Exam scores will appear on e-campus
immediately upon completion of the exam (except lab and the final lecture exam for On-
campus students, these will be input by hand).
No exam can ever be repeated, reason why we drop the lowest lecture and lab grade. All lab
and lecture are required to be taken.

If you need special accommodations you must submit a request to the Disability Services
Office in person (A430) or by phone at 972-273-3165. Visit the North Lake College
Disability Services for more information.
**Missed exam:** For a missed exam with an **excused absence at the due date**, the exam must be taken as soon as possible, within 24 to a maximum of 48 hours after the exam’s deadline. Excused absences will **only** be offered for one of the following reasons: illness, death in family, official University business, or documented emergency.

Please, **do not ask for additional extra credit**. We already have extra credit by dropping a lecture and lab exam (this is quite a bit).

To calculate your grade at any time you may wish to use: The Calculation your grade Rubric (located in your e-campus site).

The testing center will provide scratch paper and a copy of the periodic table. You **must** turn in these when you are finished with the exam. Do **NOT** take any testing materials with you when you finish the test. This includes the test, answers, charts, scratch paper, etc. To do so constitutes Academic Dishonesty.

**Do NOT open or use any other websites (beside the test provided) or other additional information during the test other than what is provided as that also constitutes Academic Dishonesty.**

You should fill out the Test Request Form upon arrival at the testing center and you may want to bring a quarter for the coin return lockers. You may not bring personal items such as bags, cell phones or pagers into the testing area. You may not bring any children to the testing center.

Be sure to know the following information when you request your test:

- Instructor’s name
- Subject, course number, and section number (ex: SCIT 1408-71111)
- Exam number (1st, 2nd, 3rd, etc.)

NLC Testing Center is located in A425. Be sure to arrive in plenty of time to take the exam. Be aware that exams are not given within one hour of closing. **Do not wait until the end of the last day as you may not get in due to large numbers of students taking exams and there are no extensions of the deadlines due to over crowding or schedule conflicts.**

Be sure to **check the hours** of the testing center particularly if there are changes due to **holiday hours**. For more information about the Testing Center go to **North Lake College Testing Center**

Important: Government- or school-issued photo identification is required & enforced.

- You may not bring personal items into the Test Center. This includes bags, cell phones and pagers. Coin-reimbursable (quarter) lockers are available for student use. **Please do not share lockers.**
- Please show courteous and cooperative behavior while using the services provided by the Testing Center.
- **Do not bring children to the testing center.** You must make arrangements for the care of your children prior to your exam date. The police department will be notified of any unattended children.
- **Do not** take any testing materials with you when you leave the Testing Center. This includes the test, answers, charts, scratch paper. These items will be attached to your test.
Discipline/ Course/ Department/Policies

CLASSROOM POLICIES
• Attendance in all class lectures and labs are mandatory and roll will be taken daily. Please arrive on time every day so as not to disturb the class with a late arrival. You are encouraged to ask questions and to participate in class discussions. You are expected to be an active learner and not a passive one. Students should be aware of the fact that they are responsible for all material provided and all announcements made during their absence regardless of the reason(s) of the absence.
• Excused absences will only be offered for one of the following reasons: illness, death in family, official University business, or documented emergency. For any excused absence written documentation is required. To obtain an excused absence, email me or call me at 972-273-3236 by the next class period. Documentation should be brought to the next class meeting.
• No cell phones or beeping devices allowed.
• Distractive talking or any disorderly conduct is prohibited. Please be courteous of others.
• Taping of lectures is not allowed unless permission is obtained from the instructor.
• Follow the Code of Student Conduct for model behavior.
• You ultimately earn your grade.
• Students are encouraged to go to the Science Learning Center

SCIENCE LEARNING CENTER
The Science Learning Center (P333) provides free tutorial services for North Lake science students. The center features tutors, software, videos, CDROM’s, internet, Anatomical models, places to study quietly, places for group work, and other materials to assist in science classes. In order to access resources of the center a North Lake College ID Card is required. The subject specific schedule of tutors is updated every semester and is located at the front of the center, just ask a tutor. For more information call 972-273-3273 or go to North Lake College Tutorial Services

Institutional Policies

ACADEMIC DISHONESTY
The Student Code of Conduct prohibits academic dishonesty and prescribes penalties for violations. According to this code, which is printed in the college catalog, "academic dishonesty", includes (but is not limited to) cheating, fabrication, facilitating academic dishonesty, plagiarism, and collusion."
1) The Vice-President of Academic & Student Affairs may initiate disciplinary proceedings against a student accused of academic dishonesty.

2) Academic dishonesty includes, but is not limited to, cheating on a test, plagiarism and collusion.

3) Cheating on a test includes:
   a) Copying from another student’s test paper;
   b) Using, during a test, materials not authorized by the person giving the test; Another example: **Opening a website apart from the test been provided, not matter which one**
   c) Collaborating with another student during a test without permission to do so.
   d) Knowingly using, selling, stealing, transporting, or soliciting in whole or part the contents of an un-administered test.
   e) Substituting for another student, or permitting another student to substitute for you to take a test; and
   f) Bribing another person to obtain an un-administered test or information about an un-administered test.

4) “Plagiarism” means the appropriation of another’s work (ideas and/or words) and the unacknowledged incorporation of that work in one's written work offered for credit. Quotes not identified as quotes constitute a form of plagiarism even if the borrowed ideas are documented.

5) “Collusion” means an unauthorized collaboration with another person in preparing written work offered for credit.

Academic dishonesty may result in the following sanctions, including, but not limited to:
1. A grade of zero on the Exam at hand (not able to drop this grade as your lower grade).
2. A reprimand.
3. Suspension from the college.

**NOTIFICATION OF ABSENCE DUE TO RELIGIOUS HOLY DAY(S)**
Students who will be absent from class for the observance of a religious holiday must notify the instructor in advance. Please refer to the Student Obligations section of the college catalog for more explanation. You are required to complete any assignments or take any examinations missed as a result of the absence within the time frame specified by your instructor.

**REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT**
North Lake College provides academic accommodations to students with disabilities, as defined under ADA law. It is the student's choice and responsibility to initiate any request for accommodations. If you are a student with a disability who requires such ADA accommodations, please contact North Lake College's Disability Services Office in person (A430) or by phone at 972-273-3165. View more information by going to **North Lake College Disability Services**
If you are a student with a disability and/or special needs, or if you think you may have a disability, please contact the college Disability Services Office (DSO). Please note that all communication with DSO is confidential. If you are eligible for accommodations, please provide or request that the DSO send your accommodation letter to me as soon as possible (students are encouraged to contact DSO at the beginning of the semester). For more information regarding the College Disability Services Office, please visit the Student
A Note on Harassment, Discrimination and Sexual Misconduct
We are committed to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX and DCCCD policy prohibit harassment, discrimination and sexual misconduct. If you encounter harassment, sexual misconduct (sexual harassment, sexual assault, stalking, relationship violence, stalking), retaliation or discrimination based on race, color, religion, age, national origin, disability, sex, sexual orientation, gender identity, and/or gender expression, please contact your College Title IX Coordinator or the Office of Institutional Equity. We treat this information with the greatest degree of confidentiality possible while also ensuring student welfare and college safety. We are concerned about the well-being and development of our students, and are available to discuss any concerns. There are both confidential and non-confidential resources and reporting options available to you. If students wish to keep the information confidential, please contact the college Counseling or Student Health Services. As required by DCCCD policy, incidents of discrimination and/or sexual misconduct shared with faculty will be reported to the College Title IX Coordinator or District Title IX Coordinator. The Title IX Coordinator will contact the student and determine if further investigation is needed. For more information about policies, resources or reporting options, please contact your college Title IX Coordinator or visit www.dcccd.edu/titleIX.

North Lake College Title IX Coordinator: Rosemary Meredith(acting), TitleIX-NLC@dcccd.edu, 972-860-3992
District Title IX Coordinator: Office of Institutional Equity, LaShawn Grant, TitleIX-District@dcccd.edu, 214-378-1633

The Office of Institutional Equity, in coordination with DCCCD colleges, has the primary responsibility for reviewing, updating and implementing compliance policies and procedures. The Institutional Equity and Compliance Officer and the Office of Institutional Equity will ensure compliance with College District policies, federal and state laws related to sexual assault, Title IX, Title II (Americans with Disabilities Act) and the Military Veterans Full Employment Act to support diversity and inclusion.

DROP POLICY
If you are unable to complete this course, you must officially withdraw by the date stated on the academic calendar. Withdrawing is a formal procedure which you must initiate; your instructor cannot do it for you. There are important additional factors which are affected by withdrawals. See the categories below for additional information. It is strongly encouraged that a student speaks with the instructor before withdrawing. If a student stops attending class and does not officially withdraw, that student will receive a performance grade based on work completed and missed. For more details concerning withdrawals go online to Dropping or Withdrawing from Classes.

All Dallas County Community Colleges charge a higher tuition rate to students registering the third time for a course. This rule applies to the majority of credit and Continuing Education / Workforce Training courses. Developmental Studies and some other courses are not charged a higher tuition rate. Third attempts include courses taken at any DCCCD college since the fall 2002 semester. For further information, go online to Third Attempt at DCCCD.
ADMINISTRATIVE WITHDRAWAL
Students with valid extenuating circumstances may be eligible for an administrative withdrawal by the Dean of the Division in which the course or courses are taught. An administrative withdrawal will not be awarded to students who simply fail to withdraw prior to the last day to receive a “W.” The request for an administrative withdrawal must be made in writing to the Dean of the Division with any supporting documentation attached. This must occur before the last official day of the semester.

FINANCIAL AID STATEMENT
Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. Students who fail to attend or participate are also subject to this policy.

To apply for financial aid in the DCCCD, students must complete FAFSA (Free Application for Federal Student Aid) on the web at FAFSA.

Financial Aid Certification of Attendance: You must attend and participate in your on-campus or online course(s) in order to receive federal financial aid. Your instructor is required by law to validate your attendance in your on-campus or online course in order for you to receive financial aid. You must participate in an academic related activity pertaining to the course such as but not limited to the following examples:

- Initiating contact with your instructor to ask a question about the academic subject studied in the course;
- Submitting an academic assignment;
- Taking an exam;
- Completing an interactive tutorial;
- Participating in computer-assisted instruction;
- Attending a study group that is assigned by the instructor;
- Participating in an online discussion about academic matters relating to the course.

In an online class, simply logging in is not sufficient by itself to demonstrate academic attendance. You must demonstrate that you are participating in your online class and are engaged in an academically related activity such as in the examples described above.

STOP BEFORE YOU DROP
For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: eConnect Facts About Dropping Classes.
COUNSELING SERVICES
Counseling services for personal issues are provided to all students currently enrolled at North Lake College. These services are provided by licensed professionals who are bound by confidentiality (within ethical parameters) at no charge. With the assistance of a counselor, students are able to identify, understand, resolve issues and develop appropriate skills. To make an appointment, call 972-273-3333 or visit A 430.

THE ACADEMIC SKILLS CENTER (ACS)
The ASC is designed to provide assistance to students in the following areas:
• Labs for students enrolled in foreign language, Developmental Reading, and ESOL courses. One-on-one tutoring is available.
• The Writing Center can help students clarify writing tasks, understand instructors’ requirements, develop and organize papers, explore revision options, detect grammar and punctuation errors, and properly use and document sources. Rather than merely editing or "fixing" papers, tutors focus on helping students develop and improve their writing skills.
• The Online Writing Lab (OWL) allows students to submit papers to our writing tutors electronically and get feedback within 24-72 hours. The OWL can be accessed through eCampus. After logging on to eCampus, click on the Community Tab at the top. Type “Owl” in the search field and click “Go.” Next, click on the double drop-down arrows next to “NLC-OWL2,” and then click on “Enroll.” Once enrolled, students can receive services from the OWL. For more information or to schedule a tutoring appointment, come by A-332 or call 972-273-3089

Exemplary Educational Objectives
The objective of the study of a natural sciences component of the core curriculum is to enable the student to understand, construct and evaluate relationships in the natural sciences and to enable the student to understand the bases for building and testing theories. This course satisfies all of the Exemplary Educational Objectives. The exemplary educational objectives are:

1. To understand and apply appropriate methods and modern technology to the study of natural sciences. A web based program, McGraw Hill Connect, will be used to assist the learning process.
2. To recognize scientific and quantitative methods and the differences between these approaches and the other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing.
3. To identify and recognize the differences between competing scientific theories.
4. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
5. To demonstrate knowledge of the interdependence of science and technology and their influence on and contribution to, modern culture.
**General Educational Outcomes**

Gen Ed Outcome I: Communication Skills  
1. Writing: Process and produce effective written communication adapted to audience, purpose, and time constraints  
2. Speaking: Produce effective oral communication adapted to audience, purpose, and time constraints.  
3. Listening: Comprehend, and analyze oral information.

Gen Ed Outcome II: Critical Thinking Skills  
1. Accurately summarize and evaluate information for elements such as facts, opinions, inferences, presumptions, bias, viewpoints, and arguments presented orally or in writing.  
2. Solve problems by constructing, testing, and defending well-reasoned conclusions by applying relevant criteria.

Gen Ed Outcome III: Information Literacy and Technological Competency  
1. Effectively access, evaluate, synthesize and communicate information using a variety of sources, including print and electronic.  
2. Select and use appropriate technology.

Gen Ed Outcome IV: Ethical and Civic Values  
1. Display integrity, honesty, and fairness.  
2. Use ethical reasoning to analyze moral issues and articulate the consequences of various actions.

Gen Ed Outcome V: Cultural Diversity and Global Awareness  
1. Demonstrate understanding of cultural diversity and such influences as history, politics, humanities, technology and science on global societies.  
2. Recognize assumptions and biases that shape our perceptions.

Gen Ed Outcome VI: Workforce and Interpersonal Skills  
1. Collaborate effectively and reliably as part of a team.  
2. Apply efficient time and task management.
APPENDIX A: More in depth Learning Objectives:

Unit III - The Endocrine System

1. Define “endocrine gland” and be able to locate and identify the major endocrine glands of the body. *

3. Explain the basics of hormones chemistry and action including chemical make-up, second messengers, direct gene activation, and hormone release factors which are hormonal, humoral or neural

3. Identify the sources of hormones secreted by the anterior and posterior pituitary gland and their relationship to the hypophyseal portal system.

4. Explain the relationship between the nervous system and endocrine system with particular emphasis on the relationship of the hypothalamus with the pituitary. *

4. List the secretions of each endocrine gland (or histological region of the gland), its target tissue and its effect. What is the mechanism of regulation for each of these secretions? Which are examples of negative feedback? Which are examples of positive feedback? *

6. Given a physiological imbalance, correctly identify the gland(s), hormones and effects which would correct the imbalance. Be able to relate this type of mechanism with homeostasis.

7. Recognize the anatomy of the testes. Be familiar with the mechanisms regulating testosterone production and its effects. Include a discussion of spermatogenesis. *
8. Describe the anatomy of the ovaries. Be familiar with their structure and functions.

9. Discuss the hormonal interactions which control the menstrual (uterine) and ovarian cycles.

10. Describe the ovarian cycles and relate them to the ebb and flow of endocrine secretions.

11. Understand the histology of each endocrine gland. Know which hormones are secreted by each histological region of each gland.

Unit IV - The Cardiovascular, Lymphatic, & Respiratory Systems

Blood

1. List the functions of blood. *

2. Describe the composition of whole blood. *

3. Describe the composition and functions of plasma. *

4. Describe the composition of plasma including the proteins, nutrients, electrolytes and respiratory gases found there. *

5. Identify the seven major formed elements of blood. For each formed element provide its source, relative number in normal blood and its function. *

6. Distinguish between antigens (agglutinogens) and antibodies (agglutinins). *

6. Be familiar with antigen/antibody distribution for the ABO and Rh blood groups. When given the ABO-Rh genotype of parents be prepared to describe the genotype and phenotype of the potential offspring. *

8. Describe the endocrine cycle which is responsible for maintaining appropriate levels of erythrocytes.

9. Contrast intrinsic and extrinsic coagulation.

10. Describe the conditions contributing to hemolytic disease of the newborn (erythroblastosis fetalis). *

Unit IV (cont.) - The Heart

11. Describe the location of the heart. *

13. Describe the route of blood flow through the heart, listing the blood vessels that enter and leave the heart, and the chambers and valves which are found there. *
14. Describe coronary circulation. Explain how oxygenated blood is distributed to the right ventricle and the left ventricle. Also explain how the blood eventually rejoins systemic venous blood. *

14. Describe the structure of the heart wall and pericardium. *

15. Describe how cardiac muscle tissue is specially adapted for the pumping action it performs. *

16. Recognize the electrical conduction system of the heart. Include the SA node, AV node, Interventricular bundles, left and right bundle branches and purkinje fibers. *

17. How do the structures described in #16 above relate to the ECG pattern of a normal healthy heart?

18. How does the action potential of cardiac muscle differ from that of skeletal muscle? How are these differences explained?

19. Describe the events of the cardiac cycle.

20. Name and explain the effects of various factors regulating stroke volume and heart rate.

Unit IV (cont.) - Blood Vessels

21. Describe the three layers that typically form the wall of a blood vessel, and state the function of each.

22. Define vasoconstriction and vasodilation.

23. Describe how arteries, veins and capillaries differ.

24. Name the major factors which control movement of materials into and out of the blood within capillary beds.

25. Given a set of capillary dynamics, be prepared to determine which direction there is net movement of materials.

26. Be prepared to identify the major arteries and veins assigned in lab. Know what organs or areas are served by these arteries or veins. *

27. List and explain the factors that influence blood pressure, and describe how blood pressure is regulated.

28. Clearly distinguish between systemic, pulmonary and coronary circulation. *

29. Describe how fetal circulation differs from postnatal circulation. *

Unit IV (cont.) - The Lymphatic System

30. Describe the general organization of the lymphatic system and define its major functions within the body.
31. Describe the structural characteristics of lymph vessels.

32. Describe the structure of lymph nodes. How does their placement within the body relate to one of their functions?

33. Describe the composition of lymph.

34. Explain how tissue fluid gathered from capillary beds as lymph is returned to the cardiovascular system.

Unit IV (cont.) - The Respiratory System

35. Describe the general anatomy of the respiratory system. Include specific body cavities, specific organs, serous membranes, and passage-ways involved. *

36. Describe the cellular organization of alveoli. Include type II surfactant secreting cells, type I alveolar wall cells, alveolar pores, macrophages, elastic fibers, and capillaries.

37. Describe the functions of the respiratory system at the following levels:
   a. pulmonary ventilation
      • On the basis of the gas laws discussed, explain the forces which cause air to alternately flow into the lungs and then reverse its direction and flow out.
   b. external respiration
   c. transport of respiratory gases
      • 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.
   d. internal respiration

38. Describe the neural controls of respiration.

39. Explain what is meant by the following terms:
   a. total lung capacity
   b. tidal volume
   c. residual volume
   d. conducting zone
   e. respiratory zone

Unit V – Digestive, Urinary, & Reproductive Systems

The Digestive System

1. Describe the function of the digestive system, and differentiate between organs of the alimentary canal and accessory digestive organs.

3. List and define the major processes occurring during digestive system activity: ingestion, mechanical digestion, propulsion, chemical digestion, absorption, defecation.

4. Describe the tissue composition and the general function of each of the four layers of the alimentary canal.

5. Describe the composition and functions of saliva.
6. Describe the anatomy and basic function of each organ and accessory organ of the alimentary canal:
   - Oral cavity:
     - Describe the composition and functions of saliva.
     - Ingestion – bolus
   - Esophagus:
     - Muscular composition of esophageal wall
     - Peristalsis
   - Stomach:
     - Functions and anatomy
     - Gastric pits and their secretions
     - Hormones and enzymes released
     - Chyme
     - Chemical digestion and absorption taking place
   - Small Intestines:
     - Functions and anatomy
     - Villi
     - Segmentation and peristalsis
     - Hormones and enzymes released
     - Chemical digestion and absorption taking place
     - Lacteals, hepatic portal system
   - Liver:
     - Functions
     - Bile composition (bile salts) function (of bile)
     - Digestive hormone(s) that act on liver
   - Gall bladder:
     - Function
     - Digestive hormone(s) that act on gall bladder
   - Pancreas:
     - Functions
     - Secretions (enzymes & bicarbonate)
     - Digestive hormone(s) that act on pancreas
   - Large Intestine:
     - Anatomy and functions
     - Describe the regulation of defecation

Unit V (cont.) - The Urinary System

7. Describe the major structures associated with the urinary system and point out their location within the body. *
8. Gross anatomical features of the urinary system:
   Kidneys (Cortex, Medulla, Pelvis, pyramids, nephrons), Ureter, Bladder, Urethra *
9. Describe the structure of a nephron and its related blood supply using the following terms:
   Renal corpuscle, renal tubule, collecting duct, Bowman’s capsule, proximal convoluted tubule, descending limb, ascending limb, loop of Henle, distal convoluted tubule, glomerulus, afferent arteriole, efferent arteriole, peritubular capillaries, vasa recta
10. Describe the processes involved in urine formation: 1) Glomerular filtration, 2) Tubular reabsorption, and 3) Tubular secretion.
11. Explain how effective filtration pressure can be determined by knowledge of blood hydrostatic pressure, capsular hydrostatic pressure and blood osmotic pressure.
12. Describe how the following hormones relate to the kidney. (renin, erythropoietin, ADH and Aldosterone)
15. Describe the neural pathways involved in micturition.

Unit V (cont.) - The Reproductive System

13. Correctly identify major anatomical features of both the male and female reproductive systems. Be prepared to trace the sources, composition and pathway for ejaculation of semen. Trace the ovum from the ovarian follicle stage through ovulation, fertilization and implantation.
14. Explain the role of each of these anatomical features in the reproductive process.
15. Describe the development (production) of both eggs and sperm. Be familiar with the histology of both ovaries and testes.
16. Explain the significance of meiosis as it relates to chromosome number.
17. Outline the ovarian and uterine cycles, and describe the hormonal involvements. Discuss the hormone HCG.

Course Outline: Topics
1. The Special Senses
2. The Endocrine System
3. Blood
4. The Heart
5. Blood Vessels and Circulation
6. The Lymphoid System and Immunity
7. The Respiratory System
8. The Digestive System
9. Metabolism and Energetics
10. The Urinary System
11. Fluid, Electrolyte, and Acid-Base Balance
12. The Reproductive System
13. Development and Inheritance
Course Outline: Laboratory Book exercises
1. Special Senses
2. Structure and Function of the Endocrine System
3. Blood Components and Blood Tests
4. Heart Structure
5. Blood Vessel Structure and Function
6. Blood Vessel Identification
7. Lymphatic System Structure
8. Respiratory System Structure
9. Digestive System Structure
10. Urinary System Structures:
11. Male Reproductive System Structure and Function:
12. Female Reproductive System Structure
13. Human Development

Study Tips
- **Don’t procrastinate.** Start today (not next week) to read and study.
- **Show up** for class and be actively listening (not daydreaming). Some material will be from sources other than the text. You will not know the material if you have missed class.
- Lecture chapters should be read ahead of lecture, and reviewed after lecture. Research shows that information reviewed within 24 hours, and, a second time, within 72 hours of being presented is retained easier. This is a fast paced course; don’t fall behind!
- **Read** your textbook; don’t waste your $100! We will cover 1-2 chapters per week. First, **go over headings, diagrams and charts.** Then (before reading the chapter) **read over the questions** you are to answer. **Then read & answer the questions.** Finally **read the summary** at the end.
- Students may be quizzed orally, during lecture, over the material covered in the previous lecture.
- **Seek help.** Take advantage of the instructor’s office hours, feel free to come by and ask questions or seek help.
- Take courses or seminars to **improve your study skills.** Do you know how you best learn? Different approaches to studying? Ask me for some ideas.
- Each day before lecture begins, **read the lecture notes from the day before.** This will cut study time during preparation before tests.
- Make a **vocabulary** with definitions or identifications. Your medical vocabulary should be expanding exponentially during this course. You can find charts on line to use for practice in labeling parts.
- **Work with a study partner,** preferably someone who is serious about learning A & P and using time productively. Quiz each other on vocabulary, concepts, and identifications.
- **Practice being the “expert”** with your family and friends. Most people are very interested in the human anatomy and physiology. Tell them about what you learned in class. Explaining a concept to someone else helps you remember it longer.
**eCAMPUS**

1. Class notes and announcements will be posted on the web on eCAMPUS at "ecampus.dcccd.edu".
2. You are expected to access "eCAMPUS" on a regular basis to be up to date with the class information.
3. Make sure you enter your email address. Let me know if you need help with "eCAMPUS".
4. All students can apply for a free email address/internet access at the Computing Center.