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Course: BIOL 2020 Human Anatomy and Physiology II (4 credit hours)
A continuation of BIOL 2010 with emphasis on endocrine, cardiovascular (including hemodynamics), lymphatic, respiratory, digestive, urinary (including water and electrolyte balance), and reproductive systems, growth and development, and genetics.

Textbook:

STUDENT LEARNING OUTCOMES
1. Communicate orally and in written form with a vocabulary conducive to the natural and physical sciences as related to the specific course objectives.
2. Perform appropriate mathematical operations as they relate to the natural and physical sciences.
3. Demonstrate an understanding of the principles and concept of the sciences specifically related to the program.
4. Demonstrate knowledge of the scientific method, its strengths, limits, and interrelationship with society.
5. Gather, analyze, organize and interpret data in mathematical, written and/or verbal form.

COURSE OBJECTIVES When you complete this course you should be able to:

1. Define hormones and the endocrine system.
2. Name several organs of the endocrine system and contrast these with organs that have an exocrine function.
3. Explain the structural and functional differences between the different chemical classes of hormones.
4. Compare and contrast the nervous and endocrine systems.
5. Describe the functions and major components of the circulatory system.
6. Describe the components and physical properties of blood. You should also be able to explain why blood is classified as a connective tissue.
7. Describe the composition of blood plasma and the significance of the osmolarity of the blood plasma.
8. Describe in general terms how blood is produced.
9. Explain what determines a person’s ABO and Rh blood types and how this relates to transfusion compatibility.
10. Describe the role of platelets and other blood components in controlling bleeding.
11. Define and distinguish between the pulmonary and systemic circuits.
12. Describe the general location, size, and shape of the heart.
13. Describe the pericardial sac that surrounds the heart.
14. Describe the layers of the heart wall and identify the heart chambers and valves between chambers and major blood vessels.
15. Trace the flow of blood through the heart and describe the arteries that nourish the myocardium and the veins that drain it.
16. Describe the structure of a blood vessel.
17. Describe the different types of arteries, capillaries, and veins.
18. Trace the flow of blood through major vessels to and from various organs of the body.
19. Identify the principal arteries and veins in the pulmonary and systemic circuits of the body.
20. List the functions of the lymphatic system and explain how lymph is formed and returned to the bloodstream.
21. Describe the form and function of red bone marrow, thymus, lymph nodes, tonsils, and spleen.
22. Identify the three lines of defense against pathogens and contrast nonspecific resistance and immunity.
23. Explain the inflammatory response what accounts for its cardinal signs.
24. Define specific immunity; contrast cellular and humoral immunity, active and passive immunity, and natural and artificial immunity.
25. State the functions of the respiratory system and name and describe the organs of the respiratory system.
26. Trace the flow of air from the nose to the pulmonary alveoli.
27. Explain the roles of muscle contraction and control by the nervous system in breathing.
28. Name and locate the organs of the urinary system; list several functions of the kidneys in addition to urine formation.
29. Define excretion and name the major nitrogenous wastes that are removed through excretion.
30. Describe the gross and fine structure of the kidney and explain the various processes underlying the formation of urine via nephrons.
31. List the major fluid compartments in the body and discuss water movement between them; list the body’s sources of water and routes of water loss.
32. Discuss the body’s homeostatic mechanisms relative to maintenance of water balance.
33. Describe the physiological roles of many of the mineral-derived ions (electrolytes) found in the body; describe the mechanisms involved in regulating the abundances of these ions.
34. Define buffer substances and write out chemical equations for the major buffer systems of the body.
35. Discuss the various metabolic and physiological factors that affect the body’s pH balance; discuss the homeostatic regulation of pH and its significance for normal body function.
36. Distinguish between chemical and mechanical digestive processes; describe the various chemical processes and substrate molecules and their degradation.
37. List and describe the structural and functional features of the different regions of the digestive tract.
38. Describe the types of movement in the gut.
39. Define nutrient and list the six major categories of nutrients; state the function of each class of macronutrients and the major dietary sources of each.
40. Name the major lipoproteins, vitamins, and minerals required by the body and the general functions of each.
41. Describe and explain the major steps of glucose, lipid, and protein catabolism; contrast anaerobic versus aerobic metabolic processes.
42. Explain the major processes involved in ATP formation in cells.
43. Identify the most fundamental biological distinction between males and females; define the primary and secondary sex organs, and secondary sex characteristics.
44. Explain chromosomal sex determination versus environmental sex determination.
45. Describe the major components and functions of the reproductive systems of males and females.
46. Describe the role of sex hormones in the development, maintenance, and regulation of the reproductive systems and functions of males and females.
47. Explain meiosis and its role in gamete production and enhancement of genetic variation through recombination of the genetic material (DNA).
48. Explain the major stage in human development.
49. Describe the formation and functions of the placenta.
50. Explain the various kinds of aneuploidies and other genetic anomalies that can affect an individual’s phenotype.

This list is not comprehensive. I reserve the right to cover additional items not covered by the list above.
### COURSE OUTLINE

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### DECORUM

1. The lectures will be structured around material as it is presented in the Hole’s text. To get the most out of the course, you will need to purchase the text (and the lab manual – see your lab instructor about things relating to lab) and read the appropriate sections.

2. I like to use PowerPoint slides as an anchor for material I am covering. Students can follow along but sometimes they decide to just listen passively. **You should resist that temptation. ALWAYS take good notes in class.** The exams are over the material in those notes. Review these notes frequently and check them against information from the book.

3. You are expected to attend class regularly and complete all assignments. Please make every effort to attend and **BE ON TIME** so as not to disrupt the class for others and myself.

4. **Do not even think about cheating.** If you are caught cheating you will receive a zero for the test/final. Two incidences, you be referred to Student Services and will result in a zero for the course. Don’t cheat – it’s that easy.

5. Do not sleep in class.

6. Cell phone use – I think it goes without saying that you should not talk or text on cell phones during class. If you cannot adhere to this policy you will be asked to leave the class. **Please turn your cell phone off/place on silent at the start of class.**

7. Do not leave trash behind in the classroom. Also, be sure to refrain from eating and drinking in the labs. You will be working with materials (e.g., bacteria sampled from drinking fountains and door handles! Yay!) that could be hazardous if accidentally ingested.

8. **There is no tobacco use in the buildings. This includes chewing tobacco or dipping snuff. THIS IS NOW A CAMPUS-WIDE POLICY!**
HUMAN ANATOMY AND PHYSIOLOGY II

POLICIES

Grading will be based upon the following – with points being approximate:

- 6 major exams at 100 points each (6 x 100) = 600 pts
- 10 in class quizzes (10 x 100) = 100 pts
- 1 comprehensive final 100 points (1 x 100) = 100 pts

Total points available in lecture = 800 pts

Grading Scale: A = 90% and higher; B = 80 – 89%; C = 70 -79%; D = 60 – 69%; F < 60%

The lecture is worth 70% of the course grade; the lab is worth 30% of the course grade. You must pass the lab to pass the course.

How to compute your final average: The course grade will be based on the overall average in the lecture and lab combined. For example if you earn 93% of the total points in lecture and 87% of the total points in lab your overall average would be (93 X 0.7) + (87 X 0.3) = 91.2% and you would earn an A.

In cases of borderline grades, I reserve the right to assign the higher grade based on the student’s participation, attendance, and attitude. Students who habitually sleep in class, disrupt class, or walk in late will obviously be at a disadvantage.

2. You are expected to attend class regularly. Please make every effort to be in class and on time. Attendance is taken for financial aid purposes. Don’t be chronically late. That’s rude. Get to class on time.

3. Quizzes are given at the beginning of class. If you miss class, or you come in late after the quiz, you miss the quiz. If you miss an exam you are expected to make it up by the following class period. It is your responsibility to contact the instructor to get it made up. If you don’t, that exam is a zero. Period. I don’t have time to chase you down and you are an adult. Special consideration will be given on an individual bases. Two missed exams = two 0’s. Don’t miss exams. No there is no drop test or grade. Everything counts.

4. No extra credit will be given. Don’t even ask – it ain’t happening. Never.

5. Students with diagnosed disabilities will be provided reasonable and necessary academic accommodations if they are determined eligible by the college’s Disability Resource Center (DRC) staff. The instructor must receive a “Special Accommodations Agreement Form” signed by the DRC staff before granting disability related accommodations in this course.

It is the student’s responsibility to initiate contact with the DRC and follow established procedures to be allowed accommodations by the instructor. All information about a student’s actual disability(ies) is kept confidential.

The DRC is located in the Counseling and Career Services Office in the Student Center. Please contact the Dean of Students, Linda Nickell, at 731-424-3520 ext – 50354 or at lnickell@jscc.edu. Information also is available on the JSCC website at: http://www.jscc.edu/about-jackson-state/student-services/disabled-student-services.html.

Note: The contents of this syllabus are subject to changes as conditions dictate. I will notify you in writing of any changes that may arise.