

Zoology 141 (CRN 62125) Human Anatomy and Physiology

MW: 5:30-6:45 PM

‘Imiloa 123

INSTRUCTOR: Ross Langston, PhD
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EFFECTIVE DATE: Fall, 2009

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

CATALOG DESCRIPTION

The first semester of a two-semester course in human anatomy and physiology. Topics include: gross anatomy, human embryology, microanatomy, physiology, pathology, and homeostatic relationships. This course is intended for students entering health care or medically related fields such as nursing, physical therapy, and medical technology. (3 hrs. lect)

Activities Required at Scheduled Times Other Than Class Times: None

STUDENT LEARNING OUTCOMES

Upon successful completion of ZOOL 141, the student should be able to:

1. Use the scientific method to design a medical research study.
2. Critically evaluate scientific claims made in primary journal articles and popular literature.
3. Discuss the major chemical elements found in the human body and describe the different ways in which these elements combine to form molecules and compounds.
4. Understand the functions of cellular organelles, and be able to trace the path of protein manufacture in the cell.
5. Compare and contrast the physical, chemical, and biological factors governing the transport of materials across the cell membrane.
6. Discuss the link between cells and tissues and describe how tissue structure determines its suitability for secretion, absorption, support, or protection.
7. Use standard medical terminology to describe body positions and the orientations.
8. Describe the anatomy and function of the integumentary, skeletal, muscular, and nervous systems, and discuss how these systems maintain homeostasis in the human body.
9. Discuss how negative feedback maintains homeostasis in each of the above body systems. Also, be able to explain how disease and disorders disrupt the homeostasis of each of the above body systems

and discuss how common medical treatments and drugs are used to restore homeostasis.

COURSE CONTENT

Concepts or Topics

The student will describe and integrate basic biological principles and define basic biological terms presented in lecture, required texts, and other instructional materials. These principles include the following areas:

- Philosophy and characteristics of science and the scientific method;
- The difference between hypotheses, theories and laws;
- Hierarchical architecture of the human body (cells, tissues, organs, and organ systems);
- The chemical composition of the human body and the functions of the major groups of biological molecules;
- Anatomy and physiology of cells including: protein production, cellular respiration, mitosis, and meiosis, senescence and cell death (apoptosis).
- Anatomy and physiology of the systems that make up the human body, including skeletal, integumentary, muscular, and nervous systems.
- Mechanisms for maintenance of homeostasis in the human body.

COURSE TASKS

- 1) Attend class at scheduled times.
- 2) Complete assigned readings prior to lecture.
- 3) Participate in class discussions.
- 4) Complete 3 in-class examinations.
- 5) Term Paper

ASSESSMENT TASKS AND GRADING

EXAMINATIONS (300 points total-100 points for each exam). You will take 3 exams (non-cumulative) to demonstrate knowledge and understanding of information presented in the lectures, lecture outlines, text readings, and study guide activities.

ATTENDANCE (20 points): Attendance is mandatory and is worth 20 points towards your final grade. You are allowed two absences without penalty. Each absence above two will result in a deduction of points from your attendance score.

TERM PAPER (80 points): As part of this course, you are required to write a 5-page term paper on a topic assigned by your instructor. The format for this paper will be discussed during the first week of class. The term paper is due by the last scheduled class period (NO EXCEPTIONS).

EXTRA CREDIT: You may attend THREE additional Common Book presentations and write a 1-page summary or reaction paper for each (10 points each for a maximum of 30 points). They should be marked "Extra Credit #1" etc. As above, these papers will be due one week following the presentation.

Format for Papers: All papers must be typed, 12 point font, double-spaced with 1" margins.

METHOD OF GRADING

The assignment of points will be according to the following:

| | |
|-------------------|-------------------|
| Examinations | 300 points |
| Term Paper | 80 |
| <u>Attendance</u> | <u>20 points</u> |
| TOTAL | 400 points |

GRADING SCALE

| Total Points | Percentage Points | Grade |
|--------------|-------------------|-------|
| 358-400 | 90-100 | A |
| 318-357 | 80-89 | B |
| 278-317 | 70-79 | C |
| 238-277 | 60-69 | D |
| <277 | 0- 59 | F |

Grades may be curved at my discretion; however, you should use the above grading scale to evaluate your performance throughout the class. If you miss an examination because of an illness or legitimate emergency, you must contact me **within 48 hours** to arrange a time to take a make-up exam. I may request that you present evidence of the illness or emergency that caused you to miss the exam. If you miss an exam for any other reason, you may be prohibited from taking a make-up exam, thus failing to receive any points for the missed exam. While make-up exams will cover the same content as a missed exam, the exam format and questions may be different. **No retests will be given for any reason.**

ACADEMIC DISHONESTY

Students involved in academic dishonesty will receive an "F" grade for the course.

Academic dishonesty includes cheating on exams and plagiarism. See page 16 of the 2006-2007 course catalog for a description of the University's policies concerning academic dishonesty.

LEARNING RESOURCES

Textbook: Marieb, E.N. and K. Hoehn. Human Anatomy and Physiology. 8th Ed. Pearson/Benjamin Cummings. San Francisco. ISBN: 978-0-8053-9569-3

Zoology 141 Lecture Notes (Available from the WCC Bookstore)

Laulima: <https://laulima.hawaii.edu/portal> Contains links to lecture outlines, lab activities, and review materials. Students will need a UH email account and access to a computer to access the Laulima site.

Additional Information

STUDENT RESPONSIBILITIES

You are expected to attend lectures, participate in all course activities, and complete all examinations and course assignments on time. Please be considerate of other students by turning off any cell phones or beepers during class. Any changes in the course schedule, such as examination dates, deadlines, etc., will be announced ahead of time. It is your responsibility to be informed of these changes. It is also your responsibility to be informed about deadlines critical to making registration changes (e.g., last day for making an official withdrawal).

HOW TO SUCCEED IN THIS CLASS

Although you will be given lecture outlines, you will not succeed in this class without attending lecture and taking detailed notes on the corresponding material in the textbook. Merely reading the chapter will not suffice. Science courses at WCC generally require a minimum of two to three hours of independent study time for each hour in class. It is your responsibility to allocate the appropriate amount of time needed for study and be realistic about all personal and professional commitments that may cut into your study time.

As part of your studies, you will need to understand a veritable *mountain* of medical and anatomical terms, most of which will probably be foreign to you (e.g., Sphincter of Oddi, progeria, trabeculae, and post-synaptic potential). Most important vocabulary words appear in **boldface** throughout your textbook. One way to learn these vocabulary words is to make flash cards to quiz yourself. Answering the matching and fill-in-the-blank questions located in the back of each text chapter can also be a helpful way to learn new vocabulary. Be warned: Merely knowing the *definitions* of vocabulary words will be of little use if you do not know how the anatomy of the structures they represent.

In addition to vocabulary, you will be expected to have a detailed understanding of the mechanisms regulating human body systems. In many cases, these systems are regulated by negative feedback loops (Chapter 1, Figure 1.2). **Knowledge of negative feedback mechanisms is absolutely crucial to understanding how the human body maintains homeostasis.** For example, you should know how the body maintains optimal blood calcium levels (see chapter 6). To answer this type of question effectively, you will need to develop an intuitive understanding of how the body monitors blood calcium and what actions it takes when blood calcium is too low or too high. One way to do this is to make a diagram of how the feedback loop works (see figure 6.11). Most negative feedback loops have 3 parts. 1) a **receptor**, which monitors the condition (in this case, blood calcium levels) 2) a **control center** which “decides” when the condition has exceeded optimal setpoint values 3) and an **effector** which modifies the values of a controlled condition as directed by the control center. Once you have created your diagram (and labeled the above parts) you should ask yourself what types of **stimuli** may cause the controlled condition to drop below or exceed the setpoint and then trace the steps necessary to bring the controlled condition back into homeostasis (back to the setpoint).

ACCOMODATION FOR STUDENTS WITH DISABILITIES

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale ‘Akoakoa 213 for more information.

ZOOLOGY 141 (CRN 62125) FALL, 2009
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| Week | Date | Topics | Lect | Text |
|------|---------|--|-------|----------------|
| 1 | M 8/24 | Course Introduction | | Syllabus |
| | W 8/26 | Scientific Method | 1 | Supplement |
| 2 | M 8/31 | Introduction to the Human Body | 2 | Ch 1: 1-22 |
| | W 9/2 | Chemical Level of Organization | 3 | Ch 2: 23-41 |
| 3 | M 9/7 | HOLIDAY-Labor Day | | |
| | W 9/9 | Important Biological Macromolecules | 3 | Ch 2: 42-59 |
| 4 | M 9/14 | Intro to the Cell & Membrane Transport | 4 | Ch 3: 61-81 |
| | W 9/16 | Cellular Organelles and Cell Division | 4 | Ch 3: 83-112 |
| 5 | M 9/21 | Tissue Level of Organization | 5 | Ch 4: 113-147 |
| | W 9/23 | Review for Exam #1 | | |
| 6 | M 9/28 | Exam # 1 | | |
| | W 9/30 | The Integumentary System | 6 | Ch 5: 148-171 |
| 7 | M 10/5 | Bone Tissue | 7 | Ch 6: 172-197 |
| | W 10/7 | The Axial Skeleton | 8 | Ch 7: 198-225 |
| 8 | M 10/12 | The Appendicular Skeleton | 8 | Ch 7: 225-247 |
| | W 10/14 | Joints | 9 | Ch 8: 248-274 |
| 9 | M 10/19 | Muscular Tissue | 10 | Ch 9: 275-319 |
| | W 10/21 | Muscular System | 11 | Ch 10: 320-350 |
| 10 | M 10/26 | Muscular System | 11 | Ch 10: 350-384 |
| | W 10/28 | Review for Exam #2 | | |
| 11 | M 11/2 | Exam # 2 | | |
| | W 11/4 | Nervous Tissue: Anatomy and Histology | 12 | Ch11: 385-395 |
| 12 | M 11/9 | Nervous Tissue: Physiology of Nerve Impulses | 12 | Ch 11: 395-428 |
| | W 11/11 | Central Nervous System: Spinal Cord | 13 | Ch 12: 466-483 |
| 13 | M 11/16 | Central Nervous System: The Brain | 14 | Ch 12: 429-466 |
| | W 11/18 | Central Nervous System: The Bran (Cont'd) | 14 | Ch 12: 429-466 |
| 14 | M 11/23 | Peripheral Nervous System and Reflex Activity | 15-16 | Ch 13: 484-524 |
| | W 11/25 | Special Senses: Olfaction, Taste, Hearing & Equi | 17 | Ch 15: 569-588 |
| 15 | M 11/30 | Special Senses: Vision | 18 | Ch15: 547-568 |
| | W 12/2 | Autonomic Nervous System | 19 | Ch 14: 525-545 |
| 16 | M 12/7 | Autonomic Nervous System (cont'd) | 19 | Ch 14: 525-545 |
| | W 12/9 | Review for Exam #3/ TERM PAPER DUE! | | |

- Last day to drop without "W" grade: 9/14
- Last day to Withdraw ("W" entered on transcript): 10/27
- **Final Exam:** Wednesday, 12/16 5:30-7:20 PM