

**HUMAN PHYSIOLOGY**  
**ZOOLOGY 2235-004, Lab Sec. 005, 006, & 003**  
**SPRING 2017**

**Professor: Sandra Lehmann Vierra, MPH**

E-mail: [slehmannvierra@csustan.edu](mailto:slehmannvierra@csustan.edu)

Phone: 209-667-3838 (prefer email)

Blackboard

Jupiter/Juno: Follow email to website (email me if you have not been added)

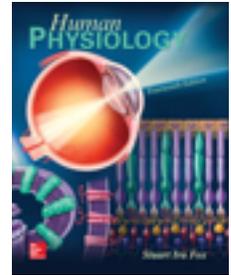
FB: Human Physiology at CSUStan (<https://www.facebook.com/groups/CSUStanPhysiology/>)

Office Hours: Room N252, T 12:50pm-1pm and F 12pm–12:50pm, or by appt.

Note: Students are responsible for reading and knowing the information within this syllabus. If it is in the syllabus, do not ask the question; you will be referred back to the syllabus. The instructor reserves the right to make changes to the syllabus, points, and grading scale as necessary.

**Required Material**

- *Human Physiology*, 14<sup>th</sup> edition, Stuart Ira Fox, McGraw Hill Education, 2015 -- ebook or hardcopy
  - <http://connect.mheducation.com/class/s-vierra-csustan-monday>
  - <http://connect.mheducation.com/class/s-vierra-csustan-wednesday>
- Biopac Student Laboratory Guide, Biopac Systems Inc. (Blackboard)
- Lecture outline on Blackboard
- Recommended: basic calculator, 3-ring binder, colored pencils
- Four 100-question exam scantrons
- Access to and simple proficiency with computers



**Course Description**

Zoology 2235 is an in depth study into the functions of the human body. It covers physiological systems, with extended detail on metabolism, nerves, muscles, cardiovascular, respiratory, and urinary functions. For students desiring to enter nursing program or kinesiology. Course Prerequisites/Requirements: BIOL 1010/1020 or BIOL 1050. Grade of C or better in ZOOL 2250 and Human Anatomy.

SPRING 2017: Lecture Sec. 004 — MWF 8am - 8:50am in B245

Lab Sec. 005 — M 9am-11:50am in N229

Lab Sec. 006 — W 9am-11:50am in N229

Lab Sec. 003 — M 9am-11:50am in N229

**Course Content**

The lecture content, in outline form, consists of the following topics:

1. The Study of Body Functions
2. Chemical Composition of the Body
3. Cell Structures and Genetic Control
4. Enzymes and Energy
5. Cell Respiration and Metabolism
6. Interactions Between Cells and the Extracellular Environment
7. The Nervous System: Neurons and Synapses
8. The Central Nervous System
9. The Autonomic Nervous System
10. Sensory Physiology
11. Endocrine Glands: Secretion and Action of Hormones
12. Muscle: Mechanisms of Contraction and Neural Control
13. Blood, Heart, and Circulation
14. Cardiac Output, Blood Flow, and Blood Pressure
15. The Immune System
16. Respiratory Physiology
17. Physiology of the Kidneys
18. The Digestive System
19. Reproduction

The methods of instruction for this material will be in the form of lectures, classroom discussions, the occasional multimedia/videotape, and laboratory assignments.

## Course Objectives

Students will:

1. Describe the topics studied in physiology and explain the importance of physiology in modern medicine.
2. Examine the role of the scientific method in the study of physiology as it relates to evaluating evidences and drawing logical conclusions.
3. Examine fundamental physiological principles, and the progression of structural levels of organization, and evaluate them as they apply to the homeostasis of human systems.
4. Investigate the chemical basis of life with emphasis on structure and function of macromolecules.
5. Describe the mechanisms of dehydration synthesis and hydrolysis reactions and their significance.
6. Examine the tissue level of organization and interpret the role of tissues in human systems.
7. Compare and contrast the location, organization and function of the four basic classifications of human tissues.
8. Define homeostasis and explain how this concept is used in physiology and medicine.
9. Describe the nature of negative and positive feedback loops and explain how these mechanisms act to maintain homeostasis.
10. Distinguish between intrinsic and extrinsic regulation and the roles of nervous and endocrine systems.
11. Examine and describe the major features and functions of the cardiovascular, respiratory, muscular, digestive, immune, reproductive, and renal systems and their contributions to homeostasis.

## Course Policy, Student Conduct, and Expectations

- **Lecture Policy:** Courteous behavior is expected at all times. The expectations are basic.
  - Arrive on time to class. Coming in late is disrespectful. Two tardies equal one absence.
  - Respectful and positive attitudes toward all people.
  - No private talking or other disturbances during lecture. This includes talking while instructor lectures, talking while other students ask questions, disrupting discussions, or creating any other disrupting or disrespectful noise. You will be asked to leave class.
  - All cell phones off or on silent during class. **ABSOLUTELY NO TEXT MESSAGING!!** If you must take a phone call or text message, leave class. **Cell phones must be off (not even vibrating) and be completely stored in your backpack during exams.**
  - Computers are allowed in class, but you are on the honor system. No gaming or messaging. Outlines will be posted in my Blackboard Site. During class you are encouraged to listen and take notes. Focus on listening in lecture.
  - Computer usage outside of class is **REQUIRED**. All students have access to computers and internet on campus.
  - Students must attend lecture. Attendance will be taken. It is the student's responsibility to notify the instructor of unavoidable absences as soon as possible so that the matter can be discussed.
  - Regardless of reason for missing class, the student is responsible for any information or assignments missed because of the absence.
  - **Instructor may drop student without notice if 3 lectures are missed regardless of reason for missing.**
  - **Although instructor drops are likely, it is your responsibility to drop the class.** Failure to drop and attend class, may result in an "FW".
- **Laboratory Policy:**
  - Students must attend lab within their scheduled section.
  - Only one make-up lab may be completed during a different lab section during the same week in the case of personal emergency or legal responsibility, but this is only contingent on space availability and approval by instructor.
  - Students must be on time and must consistently attend lab. **Instructor will drop student without notice if more than 2 labs are missed regardless of your reason for missing.** Even missing one lab may be problematic. Vocabulary, concepts, and experiments covered in the laboratory are included on lecture exams and lab exams. Whether or not you complete the lab, you are responsible for the lab work. Any missed labs not arranged in advance, or for a documented medical emergency, will result in a zero for lab work that week.
  - **Every two late arrivals will be counted as an absence.**
  - **Leaving early before the lab work has been completed and checked will result in a zero.**
  - **Every two incomplete labs will be counted as an absence.**
  - **Excessive late arrivals or incomplete assignments in lab may result in being DROPPED.**
  - Safe laboratory procedure and protocol must be followed at all times. **Safety glasses and lab coats are required for participation in lab.**
  - No pets or children allowed in lab.

- Treat all lab equipment and supplies with respect. You are responsible for leaving the lab in a cleanly manner.
  - All cell phones/pagers off or on silent during lab. If you must take a phone call, go outside lab. **Cell phones must be off and be completely stored during exams.**
  - Respectful and positive attitudes only.
  - Students will work with partners, but are responsible to do their own work and in their own words. Lab instructor reserves right to issue a zero if there is evidence of copying – no excuses.
  - All students are required to complete all labs, regardless of personal objection to any lab procedure.
  - Students must have laboratory manual, lab coat, and closed-toe shoes each time you attend lab. A calculator and colored pencils are also suggested.
  - Each lab is worth 10 points.
- **Reasonable Accommodations:** If you have a verified physical, medical, psychological, or learning disability or perhaps you feel you may have one of these disabilities which impact your ability to carry out assigned course work, please contact the Disability Resource Services (DRS) office. DRS staff will review your needs and determine what accommodations are necessary and appropriate. All information and documentation is confidential. DRS is located in the Mary Stuart Rodgers Bldg. Room MSR 210, phone (209) 667-3159. DRS students MUST take all exams by the day of the scheduled exam.
- **Academic Honesty:** Academic honesty is expected of all students in this course. Academic dishonesty includes (but not limited to) cheating and plagiarism, and extends to students who may aid or abet such acts. Plagiarism is defined as presenting someone else's writing or ideas as your own, including copying from another student or printed source without citation. Cheating includes any attempt to defraud, deceive, or mislead the instructor in arriving at an honest grade assessment, including looking at or copying from another student's work, allowing another student to copy your work, exchanging written or oral communication, using notes, or opening a text book. If the unfortunate situation of academic dishonesty arises, the course policy is as follows: The student (or students) involved will receive a zero on the assignment or exam and a letter will be sent to the appropriate college authorities. This zero will be calculated into the student's total score. Once in the hands of the university, however, the student may be expelled from California State University, Stanislaus as indicated by the official University Policy regarding dishonesty and misconduct.
- **Quiz and Exam Policy:**
    - Exams and quizzes will be multiple-choice, true/false, matching, short answer, and essay.
    - Students must provide scantrons when expected and will be required to use the computer.
    - All testing will be done in assigned lecture, lab section, and final assignment.
    - MAKE-UP EXAMS ONLY IN EXTREME CASES! In case of jury duty or other legal responsibility, verification will be required. In case of severe illness or death in immediate family, verification will also be required. Approved make-ups must be taken within the week of the exam.
- **Lecture and Laboratory Evaluations**
    - **Lab Assignments:** Each lab corresponds to worksheets, lab write up, and/or quiz. Ten of the 12 scores will be included in the total score.
    - **Lab Exams:** There will be two lab exams in virtual practicum format. The exam will be multiple choice, true/false, and matching.
    - **Brochure and Presentation:** This project will consist of a problem/condition/procedure in physiology that you are interested in. The assignment will require a proposal, an outline/draft, a final handout with citations, and a classroom presentation. To begin, the student will provide three ranked topic choices. Next, the instructor will decide and approve the topic. Once the topic is approved, the student will begin to gather sources -- books, scientific articles, and WEB sites. Each of these type of sources must be used. You will work individually to create a handout that may be provided to a client or patient that informs them of the disease, condition, or procedure. The handout must include text, visual information, and sources. Each handout must be either a single sheet 8.5" x 11" flyer (front and back) or an 8.5" x 11" folded brochure (front and back). Be sure to write your own text and use only graphics that are in the common domain (with proper acknowledgement) or are personally created. Do not plagiarize! It is your job to explain the topic in your own words. Make sure your sources are cited at the end. MLA format is required. Be sure that it fits into the required space. Design, mechanics, organization, knowledge, completeness, and sources will be graded. Each presentation must be approximately 2 minutes. Presentations will occur when the handout is due in lab. The handout and presentation is worth 70 points. Be sure that it fits into the required space. If the assignment is not ready on the due date, you will lose 5 points per day that it is late.

- **Case Study:** There will be one case studies due during the semester. Students will be assigned a case and will answer directed questions regarding the case. You will need to type up the answers to the questions, using MLA format. Students may (and are encourage to) work with others on the cases, but each students should have individualized write-ups. Plagiarism and copying will result in a zero for the case and the students will be reported to the University.
- **Lecture Quizzes:** Seven quizzes will be given where each will be counted. Quizzes will be in the format of multiple choice, true/false, matching, short answer, and short essay. Five of the 7 scores will be included in the total score.
- **Lecture Exams:** There will be three midterm exams. They will cover the designated material and are not comprehensive, although material learned earlier as a foundation is necessary. Each exam will be worth 100 points each for a total of 300 points. They will be in the format of multiple choice, true/false, matching, short answer, and essay. Failure to appear at exam time without 24 hours prior notice to the instructor with an appropriate excuse, or an appropriately documented emergency, will result in zero points for that exam.
- **Final Exam:** There will be one final during Finals Week. It will consist of two sections: 1) A section of questions covering the remaining material not covered by previous lecture exams and 2) general cumulative material taken from all lecture material.
- **Grading Policy:**
  - Total = 1000 plus pts
    - 10/12 Lab Assignments: 10 pts each for a total of 100 pts
    - 2 Lab Exams: 75 pts each for a total of 150 pts
    - 1 Brochure Project: 70 pts
    - 1 written Case Study: 30 pts
    - 5/7 Lecture Quizzes: 20 pts each for a total of 100 pts
    - 3 Lecture Exams: 100 pts each for a total of 300 pts
    - 1 Final Comprehensive Exam: 200 pts (Final must be taken to receive a passing grade.)
    - Occasional online video assignments with evaluations for a total of 50 pts
  - Grades:
    - A: 93-100%
    - A-: 89-92%
    - B+: 86-88%
    - B: 83-85%
    - B-: 79-82%
    - C+: 76-78%
    - C: 73-75%
    - C-: 69-72%
    - D+: 66-68%
    - D: 60-65%
    - F 0-59%
  - Note: You are responsible for reviewing your grades periodically on Jupiter for mistakes.

- **Grades of “Incomplete”:**

*From The University Catalog* – An Incomplete signifies (1) that a portion of required coursework has not been completed and evaluated in the prescribed time period due to unforeseen but fully justified reasons beyond the student’s control, and (2) that there is still a possibility of earning credit. It is the responsibility of the student to bring pertinent information to the attention of the instructor and to determine from the instructor the remaining course requirements which must be satisfied to remove the Incomplete. The conditions for removal of the Incomplete shall be put in writing by the instructor and given to the student, with a copy placed on file with the department chair. A final grade will be assigned when the work agreed upon has been completed and evaluated.

Any Incomplete must be made up within the time limit set by the instructor; in any case, no more than one calendar year following the end of the term in which the Incomplete was assigned. An Incomplete should never be used to (1) give a failing student an opportunity to redo unsatisfactory work or complete additional work; or (2) give a student more time to complete his/her work when the reasons for the delay have been within his/her control. This limitation prevails whether or not the student maintains continuous enrollment. Failure to complete the assigned work will result in an incomplete reverting to a grade of NC for grading options 1 and 2, and to a grade of IC for grading option 3. (See the Academic Standards section of this catalog and the Schedule of Classes Informational Guide for grading options.)

In cases of prolonged illness or any emergency which necessitates an extension of time to complete the course, the student may petition through the academic department where the course was offered. Students may not be permitted to graduate until all Incompletes are removed or evaluated as "IC" grades. Students are not to reregister in courses in which they have an Incomplete.

### **EIGHT HABITS TO PRACTICE IN ORDER TO SUCCEED IN PHYSIOLOGY**

1. **Prepare for Class.** Complete reading assignments and online work before you come to lecture and lab. This is VERY important. Reading and hearing the terms and concepts will aid comprehension and help with in class discussions.
2. **Attend all classes AND take notes.** Successful students never miss class except in a dire emergency. It is essential for mastery of material that you read it, hear it, discuss it, and apply it. Taking additional notes will help you focus during class.
3. **Review your notes nightly.** Re-write, modify, and expand your notes within 24 hours of a lecture. Use mind-mapping, charts, summary tables, and doodling to help you to understand concepts.
4. **Be proactive and form a study group or attend tutoring.** For many people, learning is social. It can help to explain material or think through problems posed in class. Talk to people around you and find a group that you think will benefit your learning. Challenge each other to apply the concepts we discuss. It will help you build concepts.
5. **Ask questions.** Don't be shy. Feel free to contact the instructor if you have any questions. You may also ask for help from your fellow students on Facebook. If you do not understand something, chances are that someone else has the same question. Stop the instructor and ask questions in lecture or lab. Go to office hours.
6. **Find your learning style.** We all learn differently and at different rates. Identify the techniques that help you learn best. Most of us are a mixture of visual, tactile, auditory, social, read/write learners. Using your learning strength will help you in this class and throughout your college career. Check out [www.vark-learn.com](http://www.vark-learn.com) to learn more about your own approach to learning.
7. **Do not fall behind.** The pace in this class is fast. We cover a lot of material in lecture, in lab, and with homework assignments. Keep up with your reading and lab write-ups. Remember you are learning a new language. Cramming does not work. Only you can put in the time that will lead to a deep understanding. Understanding translates into a good grade.
8. **Make it about learning;** not about getting a good grade. If you focus on understanding, the grades will follow.



## **Tentative Schedule of Assignments**

### **WEEK 1 (01/27)**

F Lecture - Course Introduction

### **WEEK 2 (01/30 - 02/03)**

M Lecture - HOMEOSTASIS, Ch. 1

W Lecture - ANATOMICAL CONCEPTS, Ch. 1

F Lecture - TISSUES, Ch. 1

Lab 1 - Introduction, Metrics, and Charts

### **WEEK 3 (02/06 - 02/10)**

M Lecture - CHEMICAL COMPOSITION OF THE BODY, Ch. 2

W Lecture - CHEMICAL COMPOSITION OF THE BODY, Ch. 2

F Lecture - CELL STRUCTURE, Ch. 3; **QUIZ 1 (Introduction)**

Lab 2 - Homeostasis and Scientific Method

### **WEEK 4 (02/13 - 02/17)**

M Lecture - CELL STRUCTURE, Ch. 3

W Lecture - ENZYMES AND ENERGY, Ch. 4

F Lecture - CELL INTERACTIONS, Ch. 6 (Membrane Transport)

Lab 3 - Diffusion and Osmosis

### **WEEK 5 (02/20 - 02/24)**

M Lecture - **EXAM 1 (Homeostasis - Enzymes)**

W Lecture - CELL RESPIRATION, Ch. 5

F Lecture - METABOLISM, Ch. 5

Lab 4 - Glucose Metabolism

### **WEEK 6 (02/27, 03/03)**

M Lecture - METABOLISM, Ch. 5; **QUIZ 2 (Membrane Transport)**

W Lecture - CELL INTERACTIONS, Ch. 6 (Equilibrium Potential)

F Lecture - THE NERVOUS SYSTEM: NEURONS AND SYNAPSES, Ch. 7

Lab 5 - BSL Intro and Galvanic Skin Response/Electrodermal Activity (EDA)

### **WEEK 7 (03/06 - 03/10)**

M Lecture - THE NERVOUS SYSTEM: NEURONS AND SYNAPSES, Ch. 7

W Lecture - CNS, Ch. 8

F Lecture - ANS, Ch. 9; **QUIZ 3 (Neurons)**

Lab 6 - Neuron Potentials, Senses, and Reaction Time

### **WEEK 8 (03/13 - 03/17)**

M Lecture - ENDOCRINE GLANDS, Ch. 11

W Lecture - ENDOCRINE GLANDS, Ch. 11

F Lecture - MUSCLE, Ch. 12

Lab - **LAB EXAM 1 (Introduction - Reaction Time)**

### **WEEK 9 (03/20 -03/24) - SPRING BREAK**

### **WEEK 10 (03/27 - 03/31)**

M Lecture - MUSCLE, Ch. 12

W Lecture - **EXAM 2 (Cell Interactions - Endocrine)**

F Lecture - **CEASAR CHAVEZ DAY**

Lab 7 - Muscle Physiology and Electromyograms (EMG)

### **WEEK 11 (04/03 - 04/07)**

M Lecture - HEART PHYSIOLOGY, Ch. 13 and 14 (Heart and Circulation)

W Lecture - HEART PHYSIOLOGY, Ch. 13 and 14 (Heart and Circulation)

F Lecture - BLOOD VESSELS, Ch. 13 and 14 (Blood Vessels and Circulation); **QUIZ 4 (Muscle)**

Lab 8 - The Heart, ECG, and Cardiovascular Physiology

**WEEK 12 (04/10 - 04/14)**

M Lecture - BLOOD, Ch. 13

W Lecture - IMMUNITY, Ch. 15 (Non-Specific); **QUIZ 5 (Heart)**

F Lecture - IMMUNITY, Ch. 15 (Specific)

Lab 9 - Pulmonary Physiology

**WEEK 13 (04/17 - 04/21)**

M Lecture - RESPIRATORY PHYSIOLOGY, Ch. 16

W Lecture - RESPIRATORY PHYSIOLOGY, Ch. 16

F Lecture - **EXAM 3 (Muscle - Immunity)**

Lab 10 - Acid/Base Balance

**WEEK 14 (04/24 - 04/28)**

M Lecture - RESPIRATORY PHYSIOLOGY, Ch. 16

W Lecture - PHYSIOLOGY OF THE KIDNEYS, Ch. 17

F Lecture - PHYSIOLOGY OF THE KIDNEYS, Ch. 17; **QUIZ 6 (Respiratory)**

Lab 11 - Renal Physiology

**WEEK 15 (05/01 - 05/05)**

M Lecture - DIGESTION, Ch. 18; **QUIZ 7 (Kidneys)**

W Lecture - DIGESTION, Ch. 18

F Lecture - REGULATION OF METABOLISM, Ch. 19

Lab 12 - Exercise Physiology; **Brochure due**

**WEEK 16 (05/08 - 05/12)**

M Lecture - REGULATION OF METABOLISM, Ch. 19

W Lecture: CELL DIVISION, Ch. 3 and Ch. 20

F Lecture: REPRODUCTION, Ch. 20

Lab - **LAB EXAM 2 (EMG - Exercise Physiology)**

**WEEK 17 (05/15 - 05/17)**

M Lecture: REPRODUCTION, Ch. 20; **Case Study due**

W Lecture - CATCH UP AND REVIEW

**WEEK 18 (12/17) -- FINALS**

**FINAL (Comprehensive) — Friday, May 20: 8:30am-10:30am**