

ZOOL 4280, PHYSIOLOGY OF HUMAN SYSTEMS

FALL 2014

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|--------------|---|----------------------|-------------------------------------|
| Instructor: | Mark A. Grobner | Office Hours: | MW 10-11, W 9-10, or by appointment |
| Office: | N268 | Term: | Fall, 2014 |
| Phone: | (209) 667-3268 | Class Meeting Days: | MWF |
| E-Mail: | mgrobner@csustan.edu | Class Meeting Hours: | 9:00-9:50 |
| Website: | Http://www.csustan.edu/grobner | Class Location: | P166 |
| Corequisite: | ZOOL 4282 | | |

COURSE INFORMATION

University Course Catalog Description

Human Physiology presented at cellular and organ system levels: membrane transport, nerve excitation, muscle contraction, cardiovascular physiology, kidney function, hormone function, reproduction, and digestion.

Course Prerequisites/Requirements

Students must have completed Biol 3310 and Chem 3010 and Chem 3012 or equivalent.

Required Texts and Materials

Human Anatomy & Physiology 9/E, Marieb and Hoehn

Biopac Student Laboratory Guide, Biopac Systems Inc. Manual (available in lab)

MasteringAandP.com (<http://www.masteringAandP.com> course ID **ZOOL4280F14**)

Course Learning Outcomes -

1. Describe how the body works, from the molecular level to organ systems and to the whole body
2. Explain the importance of physiology in modern medicine.
3. Examine the role of the scientific method in the study of physiology as it relates to evaluating evidences and drawing logical conclusions.
4. Examine the tissue level of organization and interpret the role of tissues in human systems. Compare and contrast the location, organization and function of the four basic classifications of human tissues.
5. Define homeostasis and explain how this concept is used in physiology and medicine.
6. Describe the nature of negative and positive feedback loops and explain how these mechanisms act to maintain homeostasis.
7. Distinguish between intrinsic and extrinsic regulation and the roles of nervous and endocrine systems.
8. Examine and describe the major features and functions of the cardiovascular, respiratory, muscular, digestive, immune, reproductive, and renal systems and their contributions to homeostasis.
9. Describe the relationship between homeostatic imbalance and diseases in each of the organ systems.

COURSE ASSIGNMENTS AND GRADING

This course will consist of chapter quizzes to be completed with each chapter at the publisher web site, <http://www.masteringAandP.com> (100 points), iClicker responses (100 points) and three exams worth 100 points each and a service learning project worth 50 points. The laboratory is worth 400 total points distributed in 2 exams at 50 points each, pre-lab quizzes worth 70 points, 5 graded laboratory assignments at 20 points each, and a PI report worth 80 points total.

Academic Dishonesty and Misconduct

Exams, reports, and presentations are indicators of individual performance. Copying off another student's exam, plagiarized reports, presentations or papers constitutes cheating. There is zero tolerance for cheating. Cheating in any capacity in this class will result in penalties ranging from a minimum of a zero on the assignment or exam to a maximum of expulsion from California State University, Stanislaus as indicated by the official University Policy regarding dishonesty and misconduct.

Class attendance is highly recommended

Missing classes may result in poor performance in the course. You are responsible for any information or assignments you missed in your absence. You will also miss on iclicker points for questions given during lecture, there is no making up missed iclicker points. I highly recommend reading the assigned chapters before coming to class.

Exams

There will be three exams during the term worth 100 pts. each. Exams may consist of any of the following: multiple choice, definitions, fill in the blank, matching, and short answer essay questions.

You will need Scantron form # 882-E for the exams. Note that:

1. only answers on the scantron will be graded, so transfer answers carefully
2. take care to erase well those answers you do not want marked
3. illegible answers in the written portion will not be graded.

There will be no make-up exams

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.

iClicker questions

Each lecture, you will be asked to respond to a number of questions using the iClicker student response system. The questions will come from lecture material that was covered previously, so it is in your best interest to keep up with the material. You will receive one point for answering the questions asked each day and an additional point for each correct answer. Your final iclicker grade will be based on the percentage of points you have earned out of the total possible. You will then be awarded points out of a total of 100 corresponding to your percentage points earned. Any student found in possession of more than one iClicker during lecture will be given an automatic F in the course.

MasteringAandP.com

For each chapter, there is a set of review questions on the web site <http://www.masteringAandP.com> (course ID Z0OL4280F14). You are to complete these review quizzes by the listed due dates for each set. You can complete these anytime up to the due date, I will not allow

you to complete assignments that are not done on time. Your final masteringAandP grade will be based on the percentage of points you have earned out of the total possible. You will then be awarded points out of a total of 100 corresponding to your percentage points earned.

Laboratory Work

In lab, students work in groups of three, you will need to come up with a lab group name for submitting all of your laboratory exercises under. Each lab is three hours in length. You are expected to stay the entire length of the lab and not leave until all materials are put away and your area cleaned. This semester's lab sessions will start with an introduction to the scientific method, writing and reviewing skills. The subsequent labs will consist of investigative experiments utilizing various techniques such as glucose determination, urinalysis, and collecting physiological data such as ECG, EMG. and pulmonary functions, using BioPac (a software program). Each group of students is responsible for carrying out all and understanding the assigned experiments. Of the investigative experiments, each student will choose one exercise for full-length lab report using the scientific method as described elsewhere. A list of appropriate labs for the PI report will be found on the Blackboard site for the course. The full-length lab report will utilize the *principal investigator system* described below.

Laboratory Pre-lab Quizzes

The first 5 minutes of each laboratory will be devoted to a quiz over the exercise to be conducted that day. Questions will be asked that you should be able to answer only if you read the day's exercise. Each quiz will be worth 5 points and there will be no making up the quiz if you are late or miss lab.

Laboratory Exams

There will be two practical laboratory exams during the term covering the reading material for the labs and the exercises themselves. Each exam is worth 50 points for a total of 100 points.

Laboratory Exercises

For each laboratory exercises you will find sheets for recording data and answering questions. These sheets are due at the beginning of the next laboratory period after the lab was completed and will be submitted by group. Completed sheets must be turned in before the laboratory starts, no late exercise write-ups will be accepted. PhysioEx exercises are submitted via email and are due at the end of the lab period they have been assigned. Be sure to put the lab group name and exercise number in the subject line. I will at random, choose 5 of these exercise write-ups to grade; they are worth 20 points each for a total of 100 points.

PI laboratory report

A principal investigator (PI) is the lead person in a research group that is responsible for initiating the project, overseeing the experiment, writing the paper and incorporating reviewer's comments into the final draft of the paper. For each investigative lab there will be one PI and two reviewers. In this semester every student will be a PI once and reviewer twice. The table below outlines the PI system. Each paper is worth 60 points to the PI and 20 points for each reviewer. The reviewer's points are awarded based on the percentage points earned by the PI. If the PI gets 100% on the lab, each reviewer will get 15 points and if the PI gets 50%, the reviewers only get 7.5 points. The reviewers therefore contribute to the total number of points for the paper. The PI would lose points if the reviewer does not do a good job. The comments and editing from each reviewer should be included with the final version of the paper. Lab reports are due 2 weeks from the date of completion of the exercise. Late papers will be penalized 5 points per day. All reports need to be submitted electronically in Blackboard. The peer review sheets can be turned in as paper, but reports must be submitted in electronic form.

Principal Investigator (PI) System

| | PI Lab 1 | PI Lab 2 | PI Lab 3 |
|-----------|----------|----------|----------|
| Student A | PI | Reviewer | Reviewer |
| Student B | Reviewer | PI | Reviewer |
| Student C | Reviewer | Reviewer | PI |

The PI Laboratory Grading sheet

| | |
|--|------------------|
| Introduction | 10 points |
| Results-text | 5 points |
| Results- figures/tables | 5 points |
| Discussion | 15 points |
| Conclusion | 5 points |
| Clarity, general grammar and mechanics | 5 points |
| References | 5 points |
| Report Total | 50 points |
| Peer reviewer (2 @ 15 points each) | 30 points |
| TOTAL | 80 points |

Service Learning Project

For this part of your grade, you are to develop an exercise that either allows others to learn about the scientific method or to learn about a biological/physiological concept. This activity must be accomplished with materials generally available (low cost) from the home. The first option is developing an activity to demonstrate the steps in the scientific method including collecting and analyzing data to test a hypothesis. The second choice is to develop an activity that demonstrates a biological or physiological concept or principle. The target audience should learn something about biology of physiology from the activity. Each project should take around 15 minutes to complete, no more than 30 minutes total. These projects will be demonstrated in lab and the best ones chosen for a Science Saturday or Science Day event. These Science Day events are to expose community members to science, hopefully making them a little more science literate and also developing an interest in kids to attend college and get a degree in one of the science disciplines.

For each project you will need to provide the following:

- A clear explanation of the project and the learning outcomes (i.e. students will understand how to use the scientific method to answer questions).
- Age group for which the activity is designed (i.e. 5-6th grade, High School)
- A teacher's guide that explains how the materials should be presented to the group along with any hints or prompts and a materials list.
- An example of any worksheet or handout required for the project.
- A budget listing all materials required for 24 and for 500 participants.

We will present the projects to the rest of the class during the last 5 lab periods, including the day of the lab final. A signup sheet will be available for the various dates to present.

Course Grading

Your grades will be assigned as follows:

| Assessment | Total Points |
|--------------------------|--------------|
| Exams | 300 |
| iClicker responses | 100 |
| MasteringAandP | 100 |
| Prelab quizzes | 70 |
| Lab Exams | 100 |
| Lab Exercises | 100 |
| PI Lab report | 80 |
| Service Learning Project | 50 |
| Total | 900 |

I will use plus/minus grading.

| Grading Scale (%) | |
|-------------------|----|
| 94-100 | A |
| 90-93 | A- |
| 87-89 | B+ |
| 84-86 | B |
| 80-83 | B- |
| 77-79 | C+ |
| 74-76 | C |
| 70-73 | C- |
| 67-69 | D+ |
| 64-66 | D |
| 60-63 | D- |
| 0 - 59 | F |

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.

http://catalog.csustan.edu/content.php?catoid=12&navoid=541&returnto=search#indi_stud_cour

COURSE POLICIES: TECHNOLOGY AND MEDIA

Email

Questions regarding course materials should be directed to me at mgrobner@csustan.edu. Please be sure to put ZOO 4280 in the subject line as I get a lot of emails everyday and I want to be sure to respond to yours quickly. For issues with BlackBoard, please contact the helpdesk, linked from the BlackBoard login page.

Cell Phones

Cell phones should not be out or used during class. Any cell phones out during lecture or laboratory will be confiscated and returned at the end of the period. If your cell phone is out during an exam, this will result in an automatic F for the exam.

University Academic Conduct Policy

There will be zero-tolerance for plagiarism/cheating. Plagiarism and/or cheating will result in a 0.0 for the class. For further information, please see the CSU Stanislaus catalog for Student Code of Conduct http://catalog.csustan.edu/content.php?catoid=3&navoid=115#stud_cond

RESOURCES

University Library

For help with researching materials for your service learning project, please go to the following for tutorials on the various resources the library has to offer:

<http://library.csustan.edu:8080/researchassistance.html>

Disability Resource Services

CSU Stanislaus respects all forms of diversity. By university commitment and by law, students with disabilities are entitled to participate in academic activities and to be tested in a manner that accurately assesses their knowledge and skills. They also may qualify for reasonable accommodations that ensure equal access to lectures, labs, films, and other class-related activities. Please see the instructor if you need accommodations for a registered disability. Students can contact the Disability Resource Services office for additional information. The Disability Resource Services website can be accessed at

<http://www.csustan.edu/DRS/>

Phone: (209) 667-3159

Recording Policy:

Audio or video recording of classes (tape and digital format) or use of cameras/phones to photograph or record lectures is not permitted. An exception is made for students registered with Disability Resource Services, who are approved for this accommodation. In such exceptions, DRS students will be asked to sign a "Recording Agreement" which disallows them from sharing recordings with other individuals unless approved by the DRS program.

COURSE SCHEDULE**Tentative Lecture Schedule**

Materials will be active online with due dates, please check Blackboard and Mastering Anatomy and Physiology periodically to make sure you don't miss any assignments.

| DATE | TOPIC | CHAPTER |
|--------------------|---|----------------|
| Aug 22, 25 | Introduction: The Meaning of Physiology The Human Body-Levels of Organization Homeostasis | 1 |
| Aug 27, 29 & Sep 1 | Chemical Compositions of the Body Enzymes and Energy | 2 |
| Sep 3, 5 | The Plasma Membrane: Functions | 3 |
| Sep 8, 10 | Fundamentals of the Nervous System | 11 |
| Sep 12, 15 | Central Nervous System | 12 |
| Sep 17, 19, 22 | The Autonomic Nervous System | 14 |
| Sep 24 | EXAM 1 | |
| Sep 26, 29 | Cardiovascular System - Blood | 17 |
| Oct 1, 3 | The Heart | 18 |
| Oct 6, 7, 8 | Physiology of Circulation | 19 |
| Oct 13, 15 | The Lymphatic System | 20 |
| Oct 17, 20, 22 | Immune System | 21 |
| Oct 24, 27, 29 | The Respiratory System | 22 |
| Oct 31 | Exam 2 | |
| Nov 3, 5 | The Muscular System | 9 |
| Nov 7, 10, 12 | The Digestive System | 23 |
| Nov 14, 17 | Nutrition, Metabolism, and Body Temperature | 24 |
| Nov 19, 21 | The Urinary System | 25 |
| Nov 24, 26, Dec 1 | Fluid and Electrolyte balance | 26 |
| Dec 3, 5, 8 | Reproductive System | 27 |
| Dec 15 | Final Exam (8:30-10:30) | |

Tentative Lab Schedule

| Date | Topic | Section | PhysioEx |
|---------------|--|--|-------------------------|
| Aug 25, 27 | Getting Started Introduction of general Conceptual Models | Introduction, Homeostasis, Flowcharts and Metric System BioPac Tutorial | |
| Sep 1, 3 | Diffusion, Osmosis and Tonicity | Transport | PhysioEx 1 #2, 4 & 5 |
| Sep 8, 9 | Action Potential | Neurophysiology of Nerve impulses | |
| Sep 15, 17 | The Nervous System - Hearing and Equilibrium, Mammalian Eye | Vision Ear | PhysioEx 3 #2, 5 & 6 |
| Sep 22, 24 | Glucose Action of Nicotine, Cocaine and Marijuana in the Brain | Plasma Glucose Video | PhysioEx 4 #1 |
| Sep 29, Oct 1 | Cardiovascular | BioPac 5 & 6 | |
| Oct 6, 8 | Blood Pressure and heart sounds Components of the EKG and pulse | BioPac 7 | PhysioEx 6 #1, 2 & 4 |
| Oct 13, 15 | Immune System Lab exam 1 | Immunity | |
| Oct 20, 22 | The Respiratory System | Video BioPac 12 & 13 | |
| Oct 27, 28 | Acid/Base balance | Respiratory Acidosis and alkalosis | PhysioEx 10 #3 & 4 |
| Nov 3, 5 | The Muscular System | BioPac 1 & 2 | PhysioEX 2 #6 & 7 |
| Nov 10, 11 | Digestive System | Digestion | |
| Nov 17, 19 | Renal Regulation of Fluid and Electrolyte Balance, Urinalysis | Renal | PhysioEx 10 |
| Nov 24, 26 | Thanksgiving | NO LAB | |
| Dec 1, 3 | Laboratory final | | |