

# California State University | Stanislaus

## ZOOL 4280, PHYSIOLOGY OF HUMAN SYSTEMS

FALL 2018

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Instructor:	Mark A. Grobner	Office Hours:	MW 9:00-10:00, R 2:00-3:00
Office:	N268		Or by appointment
Phone:	(209) 667-3268	Lecture Meeting Times:	MWF 8:00-8:50
E-Mail:	<a href="mailto:mgrobner@csustan.edu">mgrobner@csustan.edu</a>	Lecture location:	N104
Website:	<a href="http://www.csustan.edu/grobner">Http://www.csustan.edu/grobner</a>	Laboratory Meeting Times:	MW 2:00-4:50
Corequisite:	ZOOL 4280 Sec. 2 or 3	Laboratory Location:	N229

### 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 3010/3012 or equivalent with grades of C- or higher. Students must also be enrolled in ZOOL 4280 lab.

#### Required Texts and Materials

*Anatomy and Physiology* is an open source book available to view online or download as a PDF here:

<https://openstax.org/details/books/anatomy-and-physiology>

You may also pick up a copy in the bookstore or order a hard copy online.

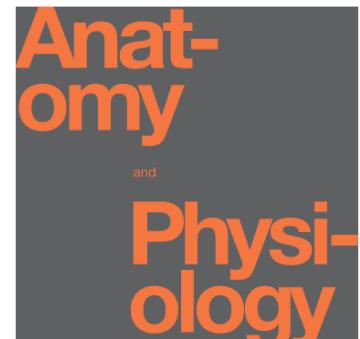
Publisher: OpenStax College; 1st edition (January 1, 2013)

ISBN-10: 1938168135

ISBN-13: 978-1938168130

*iClicker* class response system

ISBN: 9781464120152



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

#### Supplementary Texts and Materials

<https://openstax.org/details/books/anatomy-and-physiology#student-resources-section>

*Pocket Companion to Guyton and Hall Textbook of Medical Physiology*, 13e (Guyton Physiology) 13th Edition

Publisher: Saunders; 13 edition (June 4, 2015)

ISBN-10: 145577006X

ISBN-13: 978-1455770069

### **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 lecture portion of the course will consist of three exams (100 points each), and 50 points for iClicker responses, for a lecture total of 350 points. The laboratory is worth 200 total points distributed in pre-lab quizzes worth a total of 60 points, graded laboratory write-ups at 10 points each (total of 140 points), and a Science Activity Service Learning project worth 50 points.

#### **Exams**

There will be three exams during the term each worth 100 points. The first 50 points of each exam will consist of an online multiple choice exam available for the 72 hours before the in-class written test will be taken. The written portion will consist of matching and short answer questions. Questions for either part of the tests may come from laboratory materials as well as lecture.

#### **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 **all** 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**, you will receive the equivalent percentage of the 50 available points based on your accumulated points. Any student found in possession of more than one iClicker

during lecture will be given an automatic F in the course. You can earn up to 50 points for your responses.

### **Laboratory Work**

In lab, students work in groups of three, and submit all assignments as a group. Each lab is three and one half 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.

### **Laboratory Pre-lab Quizzes**

The first 5 minutes of each laboratory will be devoted to an iClicker 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 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. Be sure to put the lab group name and exercise number in the subject line. They are worth 10 points each for a total of 140 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. A written set of materials must be submitted to Blackboard by midnight November 2 for each group.

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 4 lab periods. 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	50
Prelab quizzes	60
Lab Exercises	140
Science Activity	50
Total	600

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

### 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.

### 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](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](mailto:mgrobner@csustan.edu). Please be sure to put ZOOL 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, if I see you using your cell phone in class I will ask you to leave as your use of a cell phone during lecture is disruptive to other students. During exams, cell phones must be turned off and placed upside down on your desk in front of you. Any cell phone found not in this manner during a test 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](http://catalog.csustan.edu/content.php?catoid=3&navoid=115#stud_cond)

#### **RESOURCES**

##### **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 periodically to make sure you don’t miss any assignments.

DATE	TOPIC	CHAPTER
Aug 22, 24	Homeostasis: A Framework for Human Physiology	1
Aug 27, 29	Chemical Composition of the Body	2
Aug 31, Sept 5	Movement of Molecules Across Cell Membranes	3
Sep 7, 10, 12	Nervous System	12
Sept 14, 17, 19	Central Nervous System	13
Sep 21, 24, 26	Autonomic Nervous System	15
<b>Sep 28</b>	<b>EXAM 1</b>	
Oct 1, 3	Endocrine System	17
Oct 5, 8	Muscle	10
Oct 12, 15	Cardiovascular system: Blood	18
Oct 17, 19	Cardiovascular System: Heart	19
Oct 22, 24	Cardiovascular System: Vessels and Circulation	20
Oct 26, 29, 31	Immune System	21
<b>Nov 2</b>	<b>Exam 2</b>	
Nov 5, 7	Respiratory System	22
Nov 9, 14, 19	Digestive System	23
Nov 21, 26	Metabolism	24
Nov 28, 30, Dec 3	Urinary System/Fluid Balance	25, 26
Dec 5, 7, 10	Reproductive System	27
<b>TBA</b>	<b>Final Exam</b>	

### Tentative Lab Schedule

<b>Date</b>		<b>Topic</b>	<b>Section</b>
Aug 27, 29	1	Getting Started Introduction of General Conceptual Models	Homeostasis, Flowcharts and Metric System
Sep 5, 10	2	Diffusion, Osmosis and Tonicity	Transport
Sep 12, 17	3	Nervous System/BioPac Tutorial	Vision/Hearing
Sep 19, 24	4	Electroencephalogram	BioPac 3 & 4
Sep 26, Oct 1	5	Polygraph	BioPac 9
Oct 3, 8	6	The Muscular System	BioPac 1 & 2
Oct 15, 17	7	Electrocardiography (ECG)	BioPac 5 & 7
Oct 22, 24	8	Blood Pressure and Heart Sounds	BioPac 16 & 17
Oct 29, 31	9	Immune System	Immunity
Nov 5, 7	10	The Respiratory System	BioPac 12 & 13
Nov 14, 19	11	Acid/Base Balance – Science Activities	Acid/Base
Nov 21, 26	12	Diving reflex – Science Activities	Diving reflex
Nov 28, Dec 3	13	Glucose – Science Activities	Plasma Glucose
Dec 5, 10	14	Renal Regulation of Fluid and Electrolyte Balance, Urinalysis	Renal

\*The laboratory schedule is tentative and may change. There will be a total of 13 iClicker quizzes, but only 12 will be counted, your lowest quiz score will be dropped.