Biology 436: Human Physiology Laboratory – Course Information

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Introduction / Overview:
Biology 436 – Human Physiology Lab – is the laboratory course designed to accompany and reinforce concepts learned in either the Bio 336 or the Bio 590 Physiology lecture courses. It is a high level lab course intended to prepare students for the transition into medical, dental, veterinary or physical therapy programs or graduate level programs in biology, microbiology or environmental health sciences. Furthermore, if you have already taken Biol 261, the UNIVERSITY will NOT give you credit for this class.

Prerequisite:
Credit for or concurrent enrollment in Biology 336 or Biology 590 is required.

Add/Drop Policy:
All students will have pre-requisites checked. If you have been flagged at registration because the system has not yet shown your pre-requisite(s) has been fulfilled you must provide me with your Degree Audit Report (preferable via email to "knorgard@mail.sdsu.edu") or an Unofficial Transcript for verification. If you have not met the pre-requisites, you will be administratively dropped 1-2 days after receiving an email about the lack of pre-requisites.

For students wishing to "Crash" the class, I will be generating a "Crasher List" on the first day of lecture, but not before! Students will have to provide evidence of completing the pre-requisites, and spots will be filled based on a variety of factors, such as how many courses are required to graduate. There are generally a few spots held in reserve in each lab section and all spots will be filled. Open University students will have the lowest priority as required by the University policies.

Required Texts: (Available at Aztec Book Shop)
1. Lab Exercises for Human Physiology – by Norgard-Sumnicht, Brandt, Sabbadini & Krown
2. PhysioEx 9.1 for Human Physiology – Laboratory Simulations in Physiology – by Zao, Stabler, Smith, Lokuta & Griff
(Note - the lab books above should be new, as pages of these books are turned in as part of your grade.)
Supplemental material and grades will all be posted on Blackboard.

Recommended Reference Text:
Any basic physiology textbook - I have placed a few, (by both Fox and Silverthorn) on reserve in Love Library.

Course Description and Learning Objectives:
This is an INTENSIVE laboratory course designed to help prepare students who are planning on entering a physical therapy Ph.D. program, a scientific Masters or Ph.D. program or medical school. This course is NOT applicable as an introduction course to physiology. It is assumed that the students have a general knowledge of chemistry and chemical reactions, and that they have taken or are currently enrolled in either Biol 336 (Principles of Human Physiology) or Biol 590 (Physiology of Human Systems).

After completion of the course the student should be able to demonstrate an IN DEPTH understanding of the concepts and mechanisms that our bodies use to help maintain homeostasis. At the cellular and biochemical level the student should understand how the physical properties of a molecule will dictate how the molecule is transported both into and out of a cell, realize the importance of pH and temperature with respect to an enzymes ability to work and understand how pH and temperature changes are related to the stability of all proteins in the body. Aspects of the nervous system that will be mastered include a basic understanding of the anatomy of the neuron and how action potentials are transmitted down the length of the axon. How the signals from neurons are translated to activation of skeletal muscle tissue and an understanding of how neurons and the central nervous system helps us to interpret not only changing conditions inside our body but outside as well and how we are equipped to respond to these changes. Students will explore and understand how analysis of our blood is used in a variety of settings to help to ascertain the health of an individual. At the tissue level, this course will focus on the cardiovascular, respiratory and renal systems to understand the anatomy and the functioning of these systems as they pertain to the maintenance of the homeostasis of the body at rest and during exercise.

This will be a very fast paced course and at times intensive, it is assumed that since you have already taken a physiology class (or are currently enrolled), that only comprehensive reviews of the material
covered in the labs will be required and given. Being an upper division, undergraduate laboratory course also implies that you demonstrate a fairly “in depth” knowledge of physiology as determined by examination.

To do well in this course, you should keep up with the material on a weekly basis. Attend all lectures, take notes, go over your notes while the lecture is fresh in your mind, and use outside texts available on reserve to fill in gaps and correct ambiguities. Be sure you understand the material; memorizing facts without being able to integrate the facts and overall concepts will not help you pass the difficult exams. One of the best ways to study for a class such as physiology is to teach what you have learned to a fellow classmate or friend, this often helps you to see areas that you thought you understood but really haven't mastered.

Lecture:
It is very important that you attend all lectures! To gain the most out of the lectures, make sure to come prepared to be an active listener while in the class. Study questions and vocabulary are provided for you on Blackboard. You will absorb much more of the information if you re-read your last lecture notes, read the assigned reading in the text, go over your lab material, and try to complete the study questions prior to attending lecture.

PDF files of the lecture slides can be printed off from Blackboard. It is best if you print these off before the lecture, or pull them up on your computer during lecture. These should only be part of your lecture-taking tools, and should not be used to replace your own lecture notes.

Use of computers for note-taking purposes is encouraged. If you use your computer during lecture for personal business (games, non-physiology related work, etc.) however, I will ask you to leave the lecture hall.

Please do not talk while I am lecturing! It is disruptive to me and to others around you and you may be asked to leave the lecture hall. However, questions that arise during the lecture are greatly encouraged. If you arrive late, or need to occasionally leave lecture early, please make sure you sit near the exits. If the lecture seems to go too fast, please feel free to tape the lecture.

While in lecture, please TURN OFF ALL ELECTRONIC DEVICES (with the exception of your computer and tape recorder), especially CELL PHONES!

Laboratory:

Attendance of labs is mandatory! Attendance is taken at each lab meeting. Missing more than one lab without a legitimate and documented excuse will result in a failing grade. If you are ill or injured, and are unable to attend, you need to contact me ASAP, Dr. Karin Norgard-Sumnicht E-mail: knorgard@mail.sdsu.edu.

Look to the Lab Schedule to determine the numbers and types of books that you should bring to lab. ALWAYS read the lab material prior to attending lab.

Grading:
Exams: Two exams will be given (100 points each). The exams consist of both multiple choice and fill-in-the-blank questions. The second exam will NOT be cumulative. Each exam will cover the lecture material and any related material covered in the laboratories. See below for make-up policies.

Laboratory Quizzes/ Laboratory Reports: Laboratory Quizzes will be given at the beginning of some laboratory periods. They will be worth between 10-20 points and will be multiple-choice format. The questions will consist of material covering previous lecture/laboratory exercise(s). Some labs will require group or individual laboratory reports (short answers or write-ups). The write-ups will consist of the collected data displayed in appropriately labeled graph form, with any conclusions or answers to questions from the exercise included. The laboratory portion of the course will contribute ~20 points total toward your final grade.

Final Grades: Your lecture exam grades will count for ~50% of your final grade and your laboratory grade the other ~50% of your final course grade. No minus grades are given. Plus grades are given to those who are one percentage point away from the next grade. The course grade will be determined by the percentage of the total point score earned and will be based on the following Grading Scale:

- 85% and above = A
- 75-84.9% = B
- 65-74.9% = C
- 55-64.9% = D
- 54.9% or below = F

(Syllabus is at the end of this document.)
**Cheating:**

READ CAREFULLY!!!

Cheating is taken VERY seriously. You should be aware that most students who are caught cheating are reported by OTHER STUDENTS!! Students who cheat, not only lose the respect from their peers and instructors, but they are willfully negating their nursing education. Past cheaters have lost scholarships and loans, chances for nursing school, and risked expulsion from SDSU!! DON’T RISK IT - IT IS NOT WORTH IT!!

Cheating includes (but is not limited to):

- **Receiving any specific information about a specific exam or quiz prior to you taking it.**
  Don’t discuss the exam or quiz with students who have already taken it.

- **Giving specific information about a specific exam or quiz prior to someone else taking it.**
  After taking the exam or quiz, don’t discuss the exam or quiz with students who have not already taken it.

- **Using any unauthorized information during an exam.**
  This includes looking at a neighbor’s exam or quiz, writing on yourself or any part of your clothing, use of cheat-sheets, or use of CELL PHONES, PORTABLE STORAGE DEVICES, (e.g. MP3 players, IPODs, or PDAs). All note cards, study sheets, AND CELL PHONES must be stored. You may not have them on your person during an exam.

- **Plagiarism - Submitting, as your own, a paper that was authored by another person.**
  This includes (but is not limited to) written, carbon, xerox, and computer copies.

*CHEATING WILL NOT BE TOLERATED.*

If you are caught cheating, or we even suspect it, we WILL report you to the Student Rights and Responsibilities Department. The penalty will be stiff - in the past, this has meant an “F” in the course.

**Accommodations:**

Students who need accommodation of their disabilities should contact me privately at least **one week prior to their first exam** to discuss specific accommodations for which they have received authorization. You may also choose to inform your lab instructor, since all exams and quizzes are taken in lab. If you need accommodation due to a disability, but have not registered with Student Disability Services at 619-594-6473 (Calpulli Center, Suite 3101), please do so before making an appointment to see me.

**Make-Up/Grading Policy:**

1. All Grade disputes must be resolved within one week of receipt of the grade.
2. Attendance of Labs is Mandatory. Attendance will be taken at each lab meeting, and missing more than one lab without a legitimate AND documented excuse WILL RESULT IN A FAILING GRADE! – NO EXCEPTIONS!
3. No Lab or Exam points can be made up without DOCUMENTATION – NO EXCEPTIONS! (Documentation DOES NOT include a simple email to me. Acceptable documentation includes: Physicians notes, Copy of Hospital Admittance forms, or Obituary notice of a family member that has passed away.) Documentation is designed to help prevent grievances against YOU from other students who may feel that you have had an unfair extension on an assignment or an exam. It also ensures that everyone will be treated fairly and equally.
4. Make-ups WILL NOT be given for traffic delays, work-related conflicts or personal out-of-town travel/events.
5. All Make-ups MUST be approved and cleared through Dr. Norgard-Sumnicht – NOT YOUR TA’s. It is your responsibility to notify me by email no later than the day of the lab/exam, or if injured, as soon as possible. If another lab section would be able to be attended that week, that is the preferable way to make up an excused absence. All contact with Dr. Norgard-Sumnicht regarding absences and makeup exams must be via email.
6. ALL MAKE-UPS MUST BE COMPLETED WITHIN ONE WEEK FOLLOWING THE EXCUSED ABSENCE PERIOD – After that you will receive a zero for the exercise, quiz or exam, regardless of whether you have documentation or not, and the zero will be averaged into your final grade. Make-ups will be arranged to be given at the instructor’s convenience.
7. Make-up quizzes and exams will be different than those given in class and may be in a different format.
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8. Any wet-lab we perform ABSOLUTELY CANNOT be made up, however with documentation, alternate assignments will be given to be completed at home, that must be turned in to Dr. Norgard-Sumnicht before the next scheduled lab meeting – NOT TO YOUR TA.

9. Unavoidable conflicts with major sporting events for student-athletes, or academic activities (such as graduate school interviews) should be kept to a minimum and documented by the appropriate university office. Documentation should be presented to the instructor during the first two weeks of class so that you can arrange to attend a different lab section for the excused week.

**Tips on How to Succeed in this Course:**

- **Attend all lectures and labs.** If you are unable to attend lecture, make sure you get complete notes from a friend.

- **Always prep before lecture or lab.** Before class, take a few minutes to read over your past lecture or lab notes. Read over, or scan, your chapter text so that you can anticipate the topics covered in class. Download the “Review Questions” from Blackboard, and read them over carefully before class.

- **Always review after lecture or lab.** Immediately after class, sit down and try to fill out the answers to the “Review Questions” (doing this with a partner promotes discussions on the course topics, and tends to help move the information into long-term memory). This will also allow you to find areas in your notes that may need clarification by the instructor.

- **Never fall behind!!** This class moves at a very fast pace. It is virtually impossible to catch up if you fall behind. Keep up with all reading and lab assignments. It is recommended that you do NOT simultaneously take physiology with other heavy courses, especially if they are lab courses.

- **Study in small groups.** Studying in groups with other students allows you to get a variety of perspectives on the topics covered. You must know the material quite well to share your own knowledge with those other students in your group. They are also not afraid to speak up if you’ve made a mistake! Historically, students studying together do better in class. Remember, grades are assigned on a set percentage, so if you all help each other, your grade won't suffer!

- **Ask questions and attend office hours, if confused!** Many students are reluctant to go to their Lab TA’s or professor’s office hours. Students who come in to clear up misunderstood information invariably do better on tests and quizzes. Sometimes a small bit of confusion can ruin an entire section covered in class.

- **See the “Big Picture”.** Many students are disappointed when their grade doesn't reflect what knowledge they feel they have. Frequently I find that the students have spent a great deal of time reading and trying to memorize, but not enough time “understanding”. Although reading, and even memorizing, will be part of the study process, it is very important that you work on understanding what you’re reading! If a student is missing a very basic physiological concept, they usually do poorly on the exams. Try to explain a relevant physiological concept to your parents, roommates, or your study buddy. Can you do it in a way that they understand? If not, there may be a gap in your knowledge. Don’t forget to make sure that you understand the “big picture” before you take your exams!
**Biology 436: Human Physiology Laboratory – Course Information**

**Biology 436 Human Physiology Lab Syllabus Spring 2014**

**Department Reminder:** Students are responsible for paying lab fees.

Dr. Karin Norgard-Sumnicht - Office (South) LSS 346, E-mail: knorgard@mail.sdsu.edu  Office Hours: TBA

<table>
<thead>
<tr>
<th>Week of:</th>
<th>Topic</th>
<th>(N) Norgard-Sumnicht et. al.</th>
<th>(Z) Zao et. al.</th>
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<tbody>
<tr>
<td>Jan. 20</td>
<td>Notebooks, Computers, Graphs &amp; Homeostasis</td>
<td>(N) - Ex 1 &amp; 3</td>
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<td>27</td>
<td>Diffusion, Osmosis, Cell Membrane Permeability</td>
<td>(N) - Ex 2</td>
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<td>Write-Up Feb. 3</td>
<td>Simulation Transport &amp; Intro to Chart Program</td>
<td>(Z) - 1</td>
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<td>Write-Up 10</td>
<td>Earthworm Nerve Study</td>
<td>(N) - Ex 4</td>
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<td>Write-Up 17</td>
<td>Human Reflexes &amp; Receptors</td>
<td>(N) - Ex 5</td>
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<td>Write-Up 24</td>
<td>Human Skeletal Muscle Study</td>
<td>(N) - Ex 6</td>
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<td>March 3</td>
<td><strong>Exam 1 – March 3rd during Lecture Time</strong></td>
<td>(Z) – 11 (BRING BOTH LAB MANUALS TO LAB)</td>
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<td>Blood Analysis Simulation in Labs</td>
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<td>10</td>
<td>Cardiac Muscle Demo &amp; Simulation</td>
<td>(N) - Ex 7, (S) 6</td>
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<td>(BRING BOTH LAB MANUALS TO LAB)</td>
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<td>17</td>
<td>No Labs, Campus Closed on Friday</td>
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<td>24</td>
<td>CV Dynamics</td>
<td>(Z) - 5</td>
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<td>31</td>
<td>Spring Break - March 31 to April 4</td>
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<td>Write-Up April 7</td>
<td>Human Electrocardiograms</td>
<td>(N) - Ex 8</td>
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<td>14</td>
<td>Human Respiratory Study</td>
<td>(Z) - 7 &amp; 10</td>
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<td>21</td>
<td>Human Response to Exercise</td>
<td>(N) - Ex 9</td>
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<td>28</td>
<td>Kidney Simulation</td>
<td>(Z) - 9 &amp; 10 (BRING BOTH LAB MANUALS TO LAB)</td>
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<td><strong>FINAL – May. 5th - Last day of lecture. No Exceptions!</strong></td>
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* Norgard-Sumnicht et. al. - *Lab Exercises for Human Physiology*
** Zao et.al. - PhysioEx 9.1

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