

PHYSIOLOGY OF EXERCISE SYLLABUS **Biology 115**

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Office hours Mon – Fri 9:15am to 10:30am Spring semester 2011

Purpose of Course

This subject is designed to allow you to learn how your body works primarily by studying its physiology and some anatomy. The role of nutrition is emphasized in regards to your general health and as ergogenic aids for improved performance. Of prime importance are the laboratory experiences. These are designed to help you understand the concepts offered in lecture. This requires that you will be made aware of basic physiological functions of your body at rest and then how it attempts to accommodate the physical stress of different exercise parameters. In short, you will be asked to:

Do it to understand it.

Objectives

Examination of the anatomy and physiology of the human body with concentration on muscle structure, and all organs involved in, or affected by, the stress of exercise. In this regard the role of nutrition must be included and thus principles of good health will be presented followed by some offerings on nutritional aids (ergogenic aids) for sports. In this latter area negative effects of supplements will also be presented.

The field of Exercise Physiology was developed in Europe long before its importance was noted in the USA. The history of its development is well stated in chapter one of your textbook. Briefly, in this introduction, the field was developed at Harvard University by Professor Henderson who established the Harvard Fatigue Laboratory. His original purpose was to conduct research on industrial hazards. Following the hiring of Dr. Bruce Dill the program expanded and Dill used the lab to educate business majors on the importance of health and exercise in order to be able to perform better in the work place.

Your Professor has followed this concept. He has added the need for you to follow a program in lecture leading through your acquiring knowledge of how the physiology of your body works and importantly, as stated above, have you experience and actually see via use of computers and electrodes which monitor various physiological traits on screen such reactions as your cardiac and pulmonary functions. This applies, in fact, to every major on this campus, not just business majors. Indeed, this course is the only time you will have an opportunity to see directly how your body works.

To effect these goals, your instructor has obtained the Bio Pac System. A bit of redundancy here, but it is wonderful for you to be able to see how your own works physiologically both at rest and comparatively under the stress of moderate exercise parameters. Once again, this Professor cannot overemphasize the importance of the laboratory. You cannot obtain this information from the text or from the net.

In lecture you will be offered various ways to learn the material. You may attend lecture and listen and learn. You may read the text. You may choose to follow the ancillary materials offered from the text. This Prof is well aware of your major interest and needs, particularly for last year seniors. However, it must be understood that this is still a course in basic physiology and as such the subject matter of this course must be learned if you are to graduate. Of prime importance to this Professor is that a reasonably clear understanding of bioenergetics need be learned. In order for your body to function you need energy sources. One such prime source is a compound called ATP. For your body to obtain this compound it must obtain it through the biosynthesis of carbohydrates, fats and to a lesser extent proteins. Without this compound your muscles won't work or will much else in the body including a rather important organ, your brain. So in the early part of the course, Chapter three in the text, you will have a bit of a time with that part particularly if you had no chemistry or biology in high school. However, in the history of this course, during this Professors time, the students have gotten through it fine and then move on to other subjects. So hang in there on that part. Indeed, the reading and comprehension of Chapter 3 may be tough for you. A caution, you will find it is not a good time to be playing computer games or communicating with a friend on your lap tops during lecture.

In accordance with this textbook, several areas will be studied designed to allow you to understand the external and internal factors affecting your physiology, your health and your physical performance. ie temperature, humidity, altitude, fatigue and your genetics. We will look at what advances have been made at the molecular level that could influence your health and potential physical ability. You will learn how ergogenic substances affect athletic physical performance either positively negatively or zip.

In lab, as stated, the major parts of the lab experiences are designed for you to understand first hand how your body works but you will have the opportunity as well to take minor tests to establish your own **physical fitness profile**.

Further, this Professor has helped students in setting up a program to either take off weight or put on weight or on occasion suggest a buff up program. This is not the purpose of this course but with 40 years in the business some suggestions from him may be of value to you. You are invited to discuss such interests in his office during office hours or by appointment.

Outline and Procedure of Course

The subject matter will follow the table of contents outlined in the assigned text. However, modifications will be made as chosen by the Professor. Several chapters will

be omitted and on a few occasions handouts will be given to you on current topics which may or may not agree with the authors which is quite normal in science, particularly in the area of Gross Anatomy on bones and muscles, not found in your text.

As mentioned in objectives, you may use the net or other suggestions presented in your text in preface page xvi. The professor has office hours and would welcome students during these hours. They are 9am to 10am daily. The Professor is often available as well after lecture until about 1:45pm Office location: ST 371. Office phone x4084. This professor will not discuss school business on the net or via email.

Your Professor has also written a required laboratory notebook in order for you to present your data from experiments that you will perform. This is your records of what you will be doing. Further, your lab works through a system that requires you to read laboratory directions, as well as instructions from the Professor, and you will follow those directions in order to effect the specific laboratory for that week. In order to do this there will be One Directions/methods Lab outline Text which remains in the lab through the semester. Three students are assigned to each of these Texts. Requiring each student to buy their own copy would be quite expensive so your instructor has paid for this text out of personal funds. Please handle that book with reasonable care. However, you will, as stated be required to purchase your own lab book in which you will record your own data. This book is submitted to the instructor at end of semester and is important in the evaluation of your grade. Do not lose your book and lack of submission of your lab book at end of semester will result in your receiving an F in the course.

A second book must be purchased in this course. This book is also prepared off campus by the instructor which saves you a great deal of money. This book is called Q notes and it is a page by page copy of the Quick Notes system used by your instructor in most lectures. It allows you to take brief notes from the picture by picture presentations the instructor will use in his lectures. If you are scholarly, it is expected that you will take your notes home and use the text to learn and memorize the material given at lecture and which you recorded on your Q notes book during lectures. The system has worked quite well over the years and it is hoped said system will work well for you.

GRADING

Four lecture exams are given, spaced out during the semester. Dates will be given during the semester and vary a bit depending on the progress of the specific class. The material is sequential with the chapters studied with occasional review questions. Generally, 75% of the questions on every exam is via the multiple choice method. Further, this professor presents considerable information from past experiences, most of which are not only relevant to this course but also quite important in your own values such as nutrition, health and concepts spreading out to other areas including psychological associations. This will be discussed for further clarification during lecture times. This material must be answered in essay form and will constitute from 10 to 25% of the grade. Also, several monvies relative to this subject will be given. You will be required to recall the materials in these movies and the answers are done in multiple choice fashion. Attending class is

up to you. However, missing class often results in missing films which are not available in the library. Assignments are not made. This is not grade school. It costs you or your parents, for this course at least, about \$100 a lecture. If you prefer to study at home that's your call. But again, if you miss films and specific material not in the text that is your call as well.

The assigned text, apparently can now be purchased on line or rented from the bookstore which is a large saving of bucks. The lab book written by your instructor and the Qnotes will cost you \$ 25 and that just covers the total cost to the instructor. Please get those funds to the instructors as soon as you get your books or within a lab period after that.

Grade breakdown	100-93=A	76-73=C
	92-90=A-	72-70=C-
	89-87=B+	69-67=D+
	86-83=B	66-63=D
	82-80=B-	62-60=D-
	79-77=C+	

CAUTION 1

Cell phones or text devices or any of those kind of gadgets are not acceptable in either lecture or laboratory during course or lab times. If your phone makes any kind of noise, or if you are observed texting and so on, you will lose a full grade on your final grade. If you choose to use your lap top that's fine but if you use it for any other reason than taking notes that's up to you. This Prof doesn't want to know about it. Walking behind you and seeing you playing computer games or studying another course is your business. If you are bored or asleep that's your bag. But phoning during course is an emphatic: NO NO.

CAUTION 2

Your Laboratory participation and laboratory attendance

As stated earlier, several times and here again: This laboratory experience is the most critical and important part if this course. In the labs designed to test your strength, anaerobic and aerobic strength and skills, there is no special grade given to the superior athlete. You are not in competition against each other. The labs are designed so that you have the opportunity to allow you to see what your own physical attributes are. Yes, you can compare your results to some norms that are presented in the lab book, and also tasks to allow you to compare yourself to your lab partners, for personal information, but this is not a lab for competitions with your fellow classmates. Grades thus, are not based on such criteria. You are doing this lab to observe your own abilities with hopes that you will carry on with physical fitness parameters through your future lives.

Labs must start on time. You are expected to get into the BioPac Lab book and read up on the lab as soon as lab starts. Importantly you need to know what you are doing and why. In this regard, it is essential for you to listen to the instructor on what the lab is about and how to do it. This cannot be done with students coming to lab randomly. In

order to effect this, points will be subtracted at each late and this can seriously affect your final grade. So come on time. Further, you must record your data as your experiment progresses and you must in essay form, record what you did and what you learned about yourself. There is a page at the end of each lab for this. You must fill in at least 2/3rds of a page and show your results to the instructor BEFORE you leave the lab. This will turn out to be a blessing when you hand your book in at end of semester. Most of your data must be printed out and that material inserted into your lab book. All this will be discussed at start of lab One.

Further

If you have a physical disability and cannot perform the tasks specified for that particular lab. You may still attend lab and use your partners data, but specify that you did so. A physicians note is required.

If you are on a team, it is essential that your coach be aware that you are obligated to do the required labs and there is no way to take the labs at different times. I am away of these issues, since this Instructor coached the USD mens and womens tennis teams a while back. Academics came first. In fact, this Professor, at no salary for coaching developed our first strong tennis teams and won the NCAA national mens in 1973. We also had a 16 and 1 record in womens but had zip funds to go to nationals.

Lab Attire Gym clothing should be worn. However, only a few labs will require physical exercise. This is not a course in physical education it is a course in human physiology and we use exercise on occasion to test your bodies and see how it performs under the stress of certain exercise parameters. Note that in several labs one must attach electrodes to the skin thus wear clothing that will allow these attachments to legs body chest face and so on. One requirement is quite clear and this is not from this course: As of 2010, in this building and in all labs be they Biology, Chemistry or Physics, all students must wear sneakers or tennis shoes or shoes of that nature. NO sandals or high heels or regular shoes or bare feet. You will not be allowed in the lab unless wearing proper athletic shoes, examples mentioned.

Addition on grading

Four lecture exams as stated - each exam is 100 points =	400
Your lab is also worth 100 points	<u>= 100</u>
Total	500 divide by 5 = 100%

Text Powers and Howley 7th ed 2009 Exercise Physiology McGraw Hill

Lab book C. W. Spanis,, 2010

Q Notes: Power Point Presentations 7th ed 2009 McGraw Hill/ C.W. Spanis