**HUMAN ANATOMY AND PHYSIOLOGY I**

Biology 2110, Fall, 2015

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**COURSE DESCRIPTION**

TEXT BOOK REQUIRED:

*Hole's Human Anatomy and Physiology* (13th Edition), 2013; Shier, Butler and Lewis. McGrawHill.

COURSE FOCUS:

This course will provide an introduction to the human body, its component parts and how they function. We will strive, as a class, to appreciate how structure (anatomy) and function (physiology) work together to produce an incredible, dynamic body. I hope that the background you develop during this course will give you a better understanding and appreciation of the variety and complexity of the human body, and will enable you to make informed decisions on current and future human health issues. There will likely be numerous handouts and things that you will want to print out throughout the semester. Because of this I strongly suggest that you purchase a 1.5" three ring binder to hold your notes and the handouts. This will enable you to place your handouts in areas of supporting notes and to ensure that you do not lose them.

We will begin the course with a brief exploration of chemical and cellular A&P and then learn how groups of cells function together as tissues. We will then discuss the organization of the outer covering of the body, the skin and integument. For the rest of the semester we will be studying the skeleto-muscular system. As we explore these different areas, keep in mind that these different tissues and structures are part of systems and that these systems interact. Ask yourself, after every lecture, the following questions:

1) How do the structures/compounds that I learned about today work (i.e. - what is their function)?,

2) How do they interact with the structures that I learned previously?, and

3) How does the system that we are currently studying interact with other systems?

Questions 2 and 3 will become more and more important as the semester progresses and we learn about more systems.

***This is a science course:***

• This course will focus on those ways of knowing that use scientific methodologies.

Observation, hypothesis testing, experimentation, application of technology, statistical methodologies will all be discussed in both lectures and labs. These processes will be implemented in labs.

• There will be opportunities for students to partake in the process of inquiry and discovery, or what is classically known as the scientific method.

*In the lab, students will be introduced to topics and equipment by performing a short, directed inquiry-based experiment. They will then be asked to design an experiment of their own, carry it out, analyze it using statistics, and then present their data/interpretations either orally or in a written format.*

• Emphasis will be placed on the fact that the road toward understanding is uneven, and proceeds by fits and starts.

*This will be primarily in the lecture portion of the course. Current examples will be used. Recent examples from the media that can be used are: 1) Hormone Replacement Therapy or not? 2) Calcium supplements or not? 3) Anabolic steroids or not? 4) Low/hi carb/fats/protein diets - do they work? 4) there will probably be at least 8-10 other areas that you will bring up in class and we will discuss at length.*

• Social, cultural, and political contexts will be provided, and ethical considerations will be thoroughly considered.

*This will be primarily in the lecture portion of the course. Again from recent mass media: 1) Food "Supplements" (Are the claims made for a wide variety of food supplements such as St. John's Wort true? Is this type of advertising legal? Ethical? What kinds of laws govern this type of food product? Are" herbs" more culturally/politically acceptable than "drugs"? Is there a difference?); 2) Alcohol/drug use; 3) Steroid use; 4) Blood doping; 5) Antibiotic (Over)use.*

• This course will show that science has real applications for your own life, and will help you to make sense of the explosion of information that you encounter every day.

*See previous two bullets; For example steroid use: "You are on the badminton team here at PSU and are trying to sort through the maze of information about steroids. The team physician and trainers say 'Stay away from them' but some of your teammates say those warnings are just scare tactics, and that everyone takes them. Where do you turn to for unbiased information? Does it exist? How do you evaluate it?" Other examples will include aerobic/anaerobic workouts benefits; diets; surgical choices and efficacies, etc.*

• Use of and facility with scientific methods in laboratory setting will be an integral part of this course.

*This will occur primarily in the lab portion although many focused lecture discussions will address the scientific processes used (hypothesis testing, etc.) as well as specific scientific techniques (e.g. - biochemical testing) needed to perform different procedures and/or gather information.*

• This course is designed so that you will:

1) develop your ability to propose answers, offer explanations, and make predictions,

*The above will be developed primarily in the lab although there will be many "thought' experiments that I will ask the students to design throughout the semester.*

2) learn about both the power and the limitations of the scientific method.

3) investigate the distinctions between rational thinking and anecdotal argumentation and

4) develop an understanding that answers are never final, but always subject to revision.

*We will have much more opportunity to discuss these issues in lecture but these issues will be addressed at least a few times in lab.*

WEBSITE: The following website contains lots of info that you may find useful

<http://oz.plymouth.edu/~chrisc/A%26PI/API.html>

MOODLE: You will be required to use your Moodle site for this class (be sure to click on the Meta Chabot class) for quizzes.

GRADING:

1. **Course: (75% of Course Grade)**

# @ Total

Exams 4 20 80%

## Chapter Quizzes 10 2 20% 100%

EXAMS:

Exams will be based solely on classroom lectures and discussions. There will be supplemental reading that you will also be responsible for reading and discussing in class. Generally, you should use the textbook to clarify and supplement lecture material. There will be four hourly exams including the final exam. The final is not comprehensive. All exams and quizzes will contain multiple choice and short answer/essay questions that will test your ability to use the information that has been presented to you. You are responsible for taking the exams as they are scheduled; NEITHER make-up exams NOR PAPERS are allowed WITHOUT A WRITTEN PHYSICIANS EXCUSE. If an emergency prevents you from attending an exam, you must notify the instructor as promptly as possible, otherwise you will receive a grade of zero for that exam. Otherwise, you must, in ALL cases notify the instructor BEFORE missing an exam or paper. The grades will be based roughly on the scale: ≥90% is an A, ≥ 80-89% is a B, ≥ 70-79% is a C, ≥ 60-69% is a D, < 60% is an F.

CHAPTER QUIZZES: You will be required to read the chapters, attend lectures, and then take and pass 10 quizzes before we cover them in class each based on one of the 9 chapters that are assigned. You must log on to MOODLE and take the quiz before the date assigned. Missing any of these decreases your final course average by 2 points for each quiz missed!

1. **Lab: Your lab average will be given to me by your lab instructor and will count towards 25% of your course grade.**

**Extra Credit: NONE ALLOWED.**

PSU’s ‘Standards for Fair Grading’ prohibit individual extra credit assignments. According to the Plymouth State University (2008-09, p. 53) Catalog, “Examples of violations of the fair grading policy include, but are not limited to, the following: 2. Allowing a student to perform extra work, over and above that described in the syllabus, to influence her or his grade, when that same opportunity has not been made available to all students.”

HELP!!

* There will be optional open lab sessions that will allow you to examine lab materials and/or ask questions about lecture and or lab material. Hands-on experience like this is often crucial for those of you who need visual demonstrations to really understand the spatial organization and functioning of the skeleton and its associated muscles. These sessions should be highly beneficial to those of you who would like to improve your grades and to better understand the skeleto-muscular system. CHECK THE OPEN LAB TIMES OUT SIDE OF YOUR LABS (B221 or 223). **TRY TO WORK THESE INTO YOUR SCHEDULE EARLY INTO THE SEMESTER** - hopefully they will be a permanent part of your weekly schedule.
* Plymouth State University is committed to providing students with documented disabilities equal access to all university programs and facilities. If you think you have a disability requiring accommodations, you should immediately contact the PASS Office in Lamson Library (535-2270) to determine whether you are eligible for such accommodations. Academic accommodations will only be considered for students who have registered with the PASS Office. If you have a Letter of Accommodation for this course from the PASS Office, please provide the instructor with that information privately so that you and the instructor can review those accommodations.
* If you are struggling (experiencing difficulties, missing classes, personal or family problems, etc.) there are offices at PSU available to provide academic support as well as career and personal counseling.  The PSU Counseling and Human Relations Center (across from Hyde Hall) 5-2461 can direct you to the proper source of help.  Confidentiality is assured.

ATTENDANCE:

Attendance is mandatory on exam days and the days that in-class papers will be done (these are un-announced – any paper that you miss will result in the loss of 1 point off from your semester average). Otherwise it is not mandatory, but is strongly encouraged. There is virtually always a direct correlation between a students' attendance and their grade.

OFFICE (B210) HOURS: MF 10-1200; WF - 10-11 or by appointment.

Feel free to stop by - I am here to help and I enjoy talking about anatomy and physiology. The information that we will cover is often difficult to comprehend the first time through. I didn't understand everything the first time through and I don't expect you to. However I do expect you to keep at it: with either my help, your peers help, or by reading the text, everyone in the class has the ability to comprehend all of the information that we will cover. Often, ACTIVE REPETITION is key. In addition, as described above, there will be teaching assistants and/or faculty available in Boyd 217 at other times listed above.

CLASS ETIQUETTE: Overall Goal - no disturbance of classmates and the improvement of your attention.

Cell Phones - no use at all (texting, talking, etc.) in class;

Computers - use only for note taking in class;

Late arrival - walk in the back of the class quietly (there is a way around, if locked, come in through front doors and apologize for the disturbance);

Drinks/food - bring them if you’d like but do not leave class for them, do not make a mess and bring the residue with you ;

Bathroom breaks - before or after class please.

Have a cold - bring tissues, some lozenges, something to drink.

Any violations of above - you will be asked to leave class for the day.

ACADEMIC INTEGRITY: Any instances of cheating on in-class exams will be brought before the Academic Affairs Committee. The usual minimal punishment for violators is an “F” in the course. Repeat offenders are usually expelled.

**TENTATIVE SCHEDULE**

TOPIC Week of: READING

Intro/Overview – Homeostasis Aug. 31 Chapt. 1

Biological Chemistry Sept. 5 Chapt. 2

Molecules, H2O, carbo's, proteins, lipids

Cells and Cell Structure Sept. 12 Chapt. 3

Membrane - movement across

Organelles - mitochondria, ER, golgi, lysosomes, skeleton, etc.

Cell Cycle Sept. 19 " " "

Interphase, Mitosis

radiation effects, differentiation, regulation, cancer

**EXAM 1 Tues, Sept. 27**

Cell Metabolism Sept. 29 Chapter 4

Carbohydrate - glycolysis, Krebs cycle, electron transport

DNA synthesis

Protein synthesis - genes, transcription, translation, control

Tissue Level of Organization Oct. 3 Chapt. 5

Development - 3 layers

Epithelial - characteristics, several types

Connective - " " ," "

Skin and Integument Oct. 17 Chapt. 6

skin, dermis, hypodermis, glands, hair, repair

**EXAM 2 Tues, Oct. 25**

Skeletal System Oct. 27 Chapt. 7

Bone tissue - development, growth, mature bone, homeostasis

Anatomical terms Oct. 31 Chapt. 8

Vertebrae, ribs, sternum " "

The skull - cranial, facial, mandible Nov. 7 " "

Pectoral girdle and upper extremities

Articulations (Joints) - types Nov. 14 “ “

Movements - shoulder, elbow, wrist

Muscles - move shoulder, humerus, elbow wrist Chapt. 9

**EXAM 3 Tues, Nov. 22**

Muscle Physiology Nov. 29 Chapt. 9

Development

Contraction, actin/myosin, troponin/tropomyosin

Excitation, Ca++ - coupling, metabolism and O2 needs-->ATP

Fiber Types: FG, SO, FOG; Motor units, exercise

Pelvic girdle and lower extremities

Skeletal system Dec. 6 Chapt. 7

Articulations - hip, knee, ankle Chapt. 8

Muscles - move ", ", " Chapt. 9

# Exam 4 (FINAL EXAM) – Tuesday, Dec. 13, 9 am (we are scheduled for 8-1030 but, because of your Biological Rhythms, the exam will begin at 9 am).