DR. FRED PRINCE

TEXT BOOK: Required Text – "Hole's Human Anatomy and Physiology"; (13<sup>th</sup> ed.; 11<sup>th</sup> or 12<sup>th</sup> ed. Is OK) Authors: Shier, Butler, and Lewis

OFFICE: Boyd 220

EXT: 2253 or 3198

SUGGESTED TEXT: "An illustrated Atlas of the Skeletal Muscles" (3<sup>rd</sup> ed.); Bowden and Bowden.

#### COURSE OBJECTIVES AND GENERAL COMMENTS:

This course will introduce you to the structure and function of the human body. The Fall Semester (A&P I) will cover the skeletal framework, joints, muscular system and begin the nervous system. The skeletal system is the foundation for an understanding of the joints and action of the muscles. Thus it is critical for the student to thoroughly learn the skeletal system early in the semester.

THE FIRST FEW WEEKS OF THE SEMESTER WILL CENTER ON CELL BIOLOGY. The reason for this is that without a basic knowledge of cell biology it will be impossible for us to study the functioning (physiology) of the human body. For example, topics such as bone growth, muscle hypertrophy, nerve regeneration or cardiovascular adaptations with exercise could not be appreciated without discussing what is happening at the <u>cell level</u>. A basic overview of general chemistry will be presented to allow students with little chemistry background to get "off on the right foot."

At the end of this first semester of A&P the student will: have a good elementary foundation in molecular and cellular biology; know in depth the skeletal framework and physiology; know individual skeletal muscles and their origin, insertion and action(s); have a beginning understanding of the nervous system and neurophysiology. This will require serious effort on the part of the student.

EXAMS/GRADING: The exams will be based on LECTURE material. The relevant reading in the book should be read prior to and after lectures. The text book should reinforce lecture notes and serve as a reference source. Take time to get familiar with the organization of the text. There will be supplemental handouts in class to help with any lecture material not covered in the text. There will be four or five exams (including the final Exam) which are of "equal weight".

STUDY GUIDE: (1) Read the chapter before class to get familiar with topic (at least "be on the same planet" as the lecture begins); (2) Take notes in class as best you can (exams are based on lecture material); (3) After class reread through chapter and reorganize your class notes – it is best to have a second notebook that you recopy the material in an edited form which is more suited to study from. This is not as time consuming as it sound and it will reinforce the material, as well as indicate to you areas that were unclear. HELP SESSIONS will be available two nights per week and a number of afternoons. These will be in the labs and the times will be announced the first day of class. Take your questions to the help session and thus "fill in" the blanks in your notes where you were confused. If you discipline yourself to put the work in day to day you will do fine in this course. If you put things off and wait to "cram" before a test you will not do well. (READ THE ABOVE PARAGRAPH AGAIN! YOU NEED TO START FROM DAY ONE!)

ATTENDANCE POLICY: Class attendance is an absolute must for success in Human A&P.

GRADING: The final grade will be based on averaging the five grades (4 exams and lab grade). The scale I have used here at PSU is a modified curve and follows:

90% = A88% = A

85% = B +

80% = B

75% = B-

72% = C +

68% = C

64% = C-

60% = D +

55% = D

Below 55% = F

General PSU Policy Statement: PSU 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.

### TENTATIVE TOPIC SCHEDULE

(Background Reading is given in parenthesis; I will give specific page reading assignments day by day)

WEEK 1 INTRODUCTION TO ANATOMY & PHYSIOLOGY (Chapters 1, 2)

Overview of course objectives Review of basic chemistry

Importance of cell biology to anatomy and physiology

WEEK 2 CELL STRUCTURE AND FUNCTION (Charter 3)

Biological molecules/Biochemistry

Cell diversity

Nucleus

Cellular organelles: Structure and function Cell membranes/diffusion/active transport

Mitosis/cell cycle

WEEK 3 CELLULAR METABOLISM (Chapter 4)

Proteins: structure and significance

Enzymes

Aerobic and anaerobic energy systems

Genetic code/DNA

Transcription and translation

Molecular genetics

# EXAM I (CELLS AND METABOLISM)

WEEK 4 TISSUE LEVEL OF ORGANIZATION (Chapter 5)

Development and differentiation Histogenesis/cell potentiality

Four major tissue types: Epithelial, connective, muscular, nervous

WEEK 5 INTEGUMENT/BODY ORGANIZATION (Chapters 1, 6)

Skin structure and function

Pigmentation

Anatomical language: The terminology of anatomy

Directional terms/body planes

### **EXAM II (TISSUES)**

WEEK 6 - 9 SKELETAL SYSTEM AND JOINTS (Chapters 7, 8)

Bone development and growth Structure and function of bone

Axial and appendicular skeleton: Specific bone landmarks on each bone Joint structure: Major joints will be studied with specific ligaments, cartilage

And functional aspects considered

## **EXAM III (SKELETAL AND ARTICULAR)**

WEEK 10 – 11 MUSCULAR TISSUE: PHYSIOLOGY (Chapter 9)

Muscular structure: Gross and microscopic

Contractile proteins/muscle function

Muscle physiology: Excitation-contraction coupling

Fiber types Motor types

Recruitment of muscle fiber types Adaptations with exercise: Cell level

Innervation/motor end plate

WEEKS 12-14 MUSCLES: ORIGIN, INSERTION, ACTION (Chapter 10)

Major skeletal muscles are studied in detail

Origin, insertion and actions for each muscle will be covered

WEEKS 12-14 INTRODUCTION TO NERVOUS TISSUE AND NEUROMUSCULAR

SYSTEMS (Chapter 11) Neurons; Neuroglial cells

Neurophysiology; Myelin; Neurotransmitters; Synapses

FINAL EXAM DURING FINALS WEEK GOOD LUCK!