

**Human Anatomy and Physiology I**  
**Biology 220 Online Summer 2009**  
**Class Prerequisite:** none

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You are welcome to call us any time, although we'd prefer not after 9 pm unless it's a situation requiring an immediate solution. **If there's a change in our locations for more than a day or two it will be posted on the course web page.** It is important that you check our location before trying to call, since we will be available at different locations at different times during the summer. We do not have or use voicemail.

### **I. Course Description:**

This is a general overview of the course and the activities in it. A detailed listing of topics and activities follows. Our study of Human Anatomy and Physiology involves a number of different types of learning activities. The course activities may be divided into the following four areas- study modules, examinations, case history files, and lab activities. All activities are completed at a location of your choosing. There are no requirements for on-campus visits.

**Study Modules:** A study module for each chapter of the text is available on our website. Each module consists of two parts. The first activity to be completed is a written study guide (SG) in a Microsoft Word format. There are different activities intended to assist you in your understanding of the material. The study guides consist of three different areas. They are

- a. A short summary or introduction to the chapters in the text.
- b. A list of the major learning objectives for the chapter.
- c. A series of questions will help you learn essential materials and will give you the opportunity to demonstrate your understanding of concepts or principles addressed in the chapter.

When you've completed the study guide and are satisfied that answers provided are correct, you'll submit it to us using the submission boxes. When you've submitted the study guide a chapter mastery quiz (CMQ) is next. It is an open-book activity, in which you may use any resources available to determine the correct answers. When it is submitted, the computer will grade the quiz and give you a score. You will be able to determine which questions are incorrect or partially correct by looking at the points awarded for each question. It will not give you the correct answer. You may then study the material further and retake the quiz. A total of three attempts on each quiz may be made. Some of the questions are fill-in-the-blank or short answer/essay. Each quiz is checked by one of us as the automatic grading system has limitations in recognizing correct answers. It's important for you to remember that although we try to anticipate all correct answers, there are going to be some in the short-answer questions which the computer will not give credit for. Again, we do check every question of that type to be sure you are given credit when due. The study modules are equal to 30% of the total grade.

**Integrated Laboratory Activities.** A series of lab activities have been designed which will allow you to experience some of the activities available to on-campus students. Some of the materials needed for dissections or other activities will be sent from the bookstore (lab kit). Other materials will be things commonly found in a kitchen. We'll provide specific instructions in their use in the content area of MOODLE, so there'll be no need to purchase a lab manual. For a few, we will send micrographs taken in the lab for you to interpret. Depending upon

the labs, there will be either written lab reports or lab quizzes to be completed. Lab reports for the activities should be completed and returned to us through the submission boxes for evaluation. Lab quizzes are completed online using the quizzing tools in Moodle. Some labs contain both activities. Lab activities are 25% of the total grade.

**Case History File:** At the completion of the Chapter 11 you will also be asked to complete a case history problem. You will be provided with information about a subject's reaction to exposure to two toxins and asked to answer questions about the processes involved and about the development of an antidote to such poisoning. You may use any resource- acquaintance, book, or internet- to develop your answers to the questions. This case history involves application of material which you have studied in the course. completed. The Case History is 5% of the grade.

**Proctored Objective Examinations:** Objective exams will consist of multiple-choice questions which will be available by logging into the website with your computer. Your proctor will be sent the passwords for each exam. **These exams are not open-book/open notes exams. They are intended to be taken in the same way as any normal "on-campus" exams in which your only resource is your personal learning.** The server will send the exam to your location for you to complete online and submit. It will grade the exam and allow you to view your score immediately. The three exams plus a comprehensive final will be available to you when you are ready for them, having submitted the prerequisite activities such as study guides, chapter mastery quizzes and lab reports or lab quizzes. The exam scores constitute 40% of your total grade.

A detailed list of assignments with the recommended due dates is available on the website at the Checklist link on the right side of the navigation bar. Please note that all class materials are available to you in sequence immediately, so that you may work as quickly as you wish. **You must, however, do the assignments in the listed sequences, with all assignments listed prior to the proctored completed first!**

Your goal should be to complete an average of one and a half chapters per week. This will mean completion of the study guides, labs associated with the chapters, and the appropriate exams and case history files. Some chapters are relatively short and can be mastered in a short time, while others will present some significant challenges. You'll also need to allow for review time prior to completing the examinations. It is important to work on the material for shorter periods on a daily basis rather than do a single "cramming" exercise once per week. You will retain much more of the material and do better on the exams.

## **II. Purpose of the Course:**

During this session, we will consider the increasing levels of complexity of the human body, beginning with the basic structure of atoms, and progressing to molecules and molecular processes; how the molecules are organized to form cellular organelles, how the organelles function together to form the smallest living unit – the cell; organization of cells into tissues which combine to form organs. We will begin our study of organ systems with the integumentary, skeletal, muscular, nervous and sensory systems.

**III. Goals and Objectives:** The topics covered by the course are listed below, along with the instructional tools which will be used to help you learn the material.

### **A. Course Content:**

#### **Ch 1 Introduction to Human Anatomy and Physiology**

- Introduction, Anatomy and Physiology, Levels of Organization, Characteristics of Life, Maintenance of Life, Organizations of the Human Body, Life-Span Changes, Anatomical Terminology
- Study Guide, Chapter Mastery Quiz, Regions, Structures and Terminology Lab Quiz, Dissection of White Rat Lab/Report, linked animations

#### **Ch 2 Chemical Basis of Life**

- Structure of Matter, Chemical Constituents of Cells

- Study Guide, Chapter Mastery Quiz , linked animations

### **Ch 3 Cells**

- A Composite Cell, Movements Into and Out of the Cell, The Cell Cycle, Control of Cell Division, Stem and Progenitor Cells
- Study Guide, Chapter Mastery Quiz, Cellular Structure Lab Quiz, Movement Through Cell Membranes Lab/Report, linked animations

### **First Exam Ch 1, 2, 3**

### **Ch 4 Cellular Metabolism**

- Metabolic Processes, Control of Metabolic Reactions, Cellular Respiration, Nucleic Acids and Protein Synthesis, Changes in Genetic Information
- Study Guide, Chapter Mastery Quiz, linked animations

### **Ch 5 Tissues**

- Epithelial Tissues, Connective Tissues, Muscle Tissues, Nervous Tissues, Types of Membranes
- Study Guide, Chapter Mastery Quiz, Tissues Lab/Report and Lab Quiz

### **Ch 6 Skin and the Integumentary System**

- Skin and Tissues, Accessory Organs of the Skin, Regulation of Body Temperature, Skin Color, Healing of Wounds and Burns, Life-Span Changes
- Study Guide, Chapter Mastery Quiz, Human Integument Lab/Quiz

### **Second Exam Ch 4, 5, 6**

### **Ch 7 Skeletal System**

- Bone Structure, Bone Development, Bone Function, Skeletal Organization, Skull, Vertebral Column, Thoracic Cage, Pectoral Girdle, Upper Limb, Pelvic Girdle, Lower Limb, Life-Span Changes
- Study Guide, Chapter Mastery Quiz, linked animations

### **Ch 8 Joints of the Skeletal System**

- Classification of Joints, General Structure of a Synovial Joint, Types of Synovial Joints, Types of Joint Movements, Examples of Synovial Joints, Life-Span Changes
- Study Guide, Chapter Mastery Quiz, Skeletal System and Joints Lab/Quiz, linked animations

### **Ch 9 Muscular System**

- Structure of a Skeletal Muscle, Skeletal Muscle Contraction, Muscular Responses, Smooth Muscles, Cardiac Muscle, Skeletal Muscle Actions, Major Skeletal Muscles, Life-Span Changes
- Study Guide, Chapter Mastery Quiz, Interactive Physiology CD, linked animations

### **Third Exam Ch 7, 8, 9**

### **Ch 10 Nervous System I**

- General Functions of the Nervous System, Classification of Neurons and Neuroglial Cells, Cell Membrane Potential, Synapses, Impulse Processing
- Study Guide, Chapter Mastery Quiz, Interactive Physiology CD, linked animations

### **Ch 11 Nervous System II**

- Meninges, Ventricles and Cerebral Spinal Fluid, Spinal Cord, Brain, Peripheral Nervous System, Autonomic Nervous System, Life Changes
- Study Guide, Chapter Mastery Quiz, Dissection of Sheep Brain Lab/Report, linked animations, Interactive Physiology CD.

### **Pufferfish Case History**

### **Ch 12 Somatic and Special Senses**

- Receptors and Sensations, Somatic Senses, Special Senses, Life-Span Changes

- Study Guide, Chapter Mastery Quiz, Vision and Dissection of Sheep Eye Lab/Quiz, linked animations

### Comprehensive Final Exam

**B. Instructional Strategies :** The following instructional strategies will be employed to help you learn the material.

- |                                |                         |
|--------------------------------|-------------------------|
| • Direct instruction           | • Application           |
| • Indirect instruction         | • Inquiry approach      |
| • Interactive instruction      | • Simulations           |
| • Experimental learning        | • Questioning skills    |
| • Guided and independent study | • Case Histories        |
| • Chapter Exams                | • Downloaded animations |

### C. Materials Required

**Text and Lab Manual:** Hole's Human Anatomy and Physiology 11<sup>th</sup> Ed.; Shier, Butler, & Lewis, McGraw-Hill Publishing

We will utilize the learning management system **Moodle**

(<http://ndus.mrooms2.net/course/view.php?id=263>) to distribute study guides, lab procedures and other printed materials. Moodle will also be used to administer exams and the lab quizzes. **There is no lab book required.**

A lab fee of \$15.00 has been assessed to partially defray the costs of some of the laboratory materials which are used during the course. Other lab materials are purchased as a **lab kit** through our bookstore. **You should order the lab kit, text, and any other materials needed as soon as you register for the course.**

**Lab Materials:** Specimens and other materials needed for lab activities will be shipped to you at the beginning of the semester along with the text book if you've purchased it from our bookstore. If you have the book from some other source, you will still need to contact the bookstore for the required lab materials. Lab procedures, which you will download from the Moodle website, have primarily been written using Microsoft Word.

(**Note:** If you have Word on your computer, you should be able to work on the documents with no difficulty. If you use another word-processing program which does not have the translator for Word documents, the instructor will attempt to provide you with the documents in a form which you can use. As a student, you are eligible to purchase the Microsoft Office Suite (Educational Version) for approximately \$150. It's REALLY worth the price!) We will utilize Moodle to electronically distribute study guides, laboratory procedures and other printed materials. One other option is to download the OpenOffice suite (<http://www.openoffice.org>), which is free and very similar to Office.

**Interactive physiology CD:** The A.D.A.M. 10-module interactive physiology CD is available from the University Bookstore ([www.mayvillestatebookstore.com](http://www.mayvillestatebookstore.com)), and will be shown in the Course Materials area. It is required, and will provide the basis for a number of questions in the examinations.

**Camera:** A camera (digital preferred) is needed to record lab activities including dissections. This documentation and illustration is required in order to receive credit for lab activities where photos are requested. A digital camera is best, but traditional photos may be taken and scanned for email or sent to the instructors' by regular mail. If taking traditional photographs, it is necessary that you complete the labs and send the photos in a timely manner to get credit for your work.

## D. Goals

**Unit 1 Levels of Organization Chapters 1-4:** Students who have completed this unit should be able to:

- understand the scope of studies in anatomy and physiology and be able to use and understand descriptive anatomical and directional terminology.
- explain the basic concept of homeostasis and how homeostatic mechanisms apply to body systems.
- describe the different molecules of which the body is composed, the processes which form those molecules, and the release and use of energy from nutrients.
- identify cellular structures and explain their respective function

**Unit 2 Support and Movement Chapters 5-8:** Students who have completed this unit should be able to

- describe the basic tissues of the body and their location and explain their functions.
- identify and describe the major gross and microscopic anatomical components of the integumentary system and describe the functions of the system.
- identify and describe the major gross and microscopic anatomical components of the skeletal system and explain their functional roles in osteogenesis, repair, and body movement.
- identify and describe the major gross and microscopic anatomical components of the muscular system and explain their functional roles in body movement, maintenance of posture, and heat production.

**Unit 3 Integration and Coordination Chapters 9-12:** Students who have completed this unit should be able to:

- identify and describe the major gross and microscopic anatomical components of the nervous system and explain their functional roles in communication, control, and integration.
- identify and describe the major gross and microscopic anatomical components of the eye and ear and explain their functional roles in vision, hearing and equilibrium. Students should also be able to identify and locate the receptors responsible for olfaction and gustation and briefly describe the physiology of smell and taste.

## IV. Evaluation/grading

1. **Study Guides and Chapter Mastery Quizzes:** Written study guides are distributed via the course website. These are to be completed and returned digitally in the drop-box. They will be examined and grades entered in the Study Guide portion of the grade book. The written study guides are the primary instrument which you will be using to learn the material. The questions are very basic, intended to help you acquire knowledge. When you've completed the study guide, you may then proceed to the chapter mastery quiz (CMQ). You may take the chapter mastery quiz up to three times, with the best score being recorded. It's a good idea to wait until we've checked the quiz "manually" for errors by the automatic correction system before you take it again. There will be a note in the initial "feedback" box when we have finished correcting it manually. You will be able to see your answers, and whether or not they're correct. The correct answers will not be given. These study guides and chapter mastery quizzes make up 30% of the grade.

2. **Labs, lab quizzes, and lab reports:** Labs will vary. Some will consist primarily of material intended to introduce you to structure and function of organs and/or organ systems. These will be written exercises, which you may use to complete online quiz-like activities that will be computer-graded. Lab reports, if required, must be completed and turned in to the digital drop box. Other labs may be completely online activities, or a combination of online and working with specimens. There may also be long-answer questions which you should complete at your convenience then copy-and-paste into the online report. Some labs will use materials found within the home, and there will be a white rat, cow's eye, and a sheep brain which will be dissected. For labs which normally would involve microscopy, the digital images will be provided, with procedures modified to concentrate on interpretation of the visual information. The labs and associated reports and quizzes constitute 25% of your grade, with individual labs varying in value on the basis of the amounts of material covered. If a lab quiz is part of the assignment, you may take it twice, with the highest score being recorded.

3. **Case History.** At the completion of the Chapter 11 requirements you will also be asked to complete a case history problem. You should also thoroughly review the materials on the interactive physiology CD pertaining to the nervous system and how nerves and muscles function. You will be provided with information about a subject's reaction to exposure to two toxins and to consider development of an antidote to such poisoning. You may use any resource- acquaintance, book, or internet- to develop

your answers to the questions. These are applications of material which you have studied in the chapters completed. The Case History is 5% of the grade.

**4. A. Exams** Four examinations will be given during the course. The first exam will be provided when you have completed the introductory material, an introduction to chemistry, and cell structure. The second exam will cover material associated with cellular metabolism, tissues, and the integumentary system. The third exam will cover the skeletal and joint system and the muscular system. The final, which is cumulative, is described below.

Objective exams will consist of multiple-choice questions, matching, or fill-in-the-blank questions which will be available through the Moodle website (<http://ndus.mrooms2.net/course/view.php?id=263>). The questions will be based upon material found within the text, within some lab materials, and on materials found in the practice exams. Passwords which will allow you access to the exams will be sent to the proctor. All exams may be cumulative, and will contain questions related to the material which you've covered. **In order for the exams or the final exam to be available, all assignments due prior to the exam must have been completed or attempted at least once.**

**B. Final Exam:** Approximately half of the material in the final will be devoted to topics related to the nervous system and the somatic and special senses. The remainder will be taken from all other materials examined during the course. The final exam will consist of questions covering all material studied during the semester. It will probably have 125-150 questions. Exams and the final exam make up 40% of your grade

**Note:** you will need to arrange a proctor for your exams. **Proctors must be present for the entire duration of all Exams.** Passwords will not be provided to a student outside of the monitored exam setting.

**5. Final Grade:** Your grades will be based upon the study guides and chapter mastery quizzes (30%), labs (25%), case history files (5%), and examinations (40%). The scores for each of the assignments has been individually weighted to correspond to their complexity and difficulty. Your individual scores will be visible in the grades area. In order to get an "A", you should achieve an overall percentage of 88%, and to get a "B", 75% overall. A grade of "C" requires 65%.

## VI. English Proficiency and other Academic Concerns

The State Board of Higher Education requires that all faculty members and teaching assistants in the NDUS have appropriate communications skills, including the ability to speak English clearly and with good pronunciation. Students who experience problems have the following obligation:

Discuss the situation with the instructor to see if resolution can be reached.

If the problem is still not resolved, contact the instructor's Division Chair for assistance.

Situations still not resolved should be brought to the attention of the Vice President for Academic Affairs.

Student → Instructor → → Chairperson → → → VPAA

In the unlikely event that a situation has not been resolved through this procedure, students may contact the President of the University for final resolution.

## VII. Students with Disabilities

If you need accommodations in this course because of a disability, need special arrangements in case the building must be evacuated, or if you have emergency medical information to share, please inform your instructor as soon as possible. Students needing disability accommodations must submit documentation of the disability to Greta Kylo, Coordinator of Academic Support, in CB109, 800-437-4104 ext 34720.

## VII. Academic Honesty *"Academic integrity is of the utmost importance."*

**Definitions:** Academic dishonesty consists of cheating on tests, quizzes, oral presentations, general coursework, fabrication of data, and plagiarism. Academic dishonesty also includes allowing someone else to copy your work (including computer programs, research data, or any other assignment) and

submit it as his or her own. Plagiarism is representing the words or ideas of another as one's own in any academic endeavor.

**Examples:** This includes, but is not limited to, the following:

Copying another student's assignment (**exams, mastery quizzes, study guides, case histories**, either as hard copy or electronic files),

Working with another person when both submit similar work to satisfy an individual, not group, assignment.

Using an author's writing without proper documentation or reference, whether intentional or unintentional, (**plagiarism**).

Copying any source, book, periodical, database, or computer program without proper credit, whether quoted, paraphrased, or summarized.

**Consequences:** When a student commits academic dishonesty, he/she may be answerable to one or more of the following consequences:

receive an "F" for the assignment with no opportunity to redo it,

receive an "F" for the course, and

referral to the Vice President for Academic Affairs for further disciplinary action.