



SHIRLEY M. HUFSTEDLER
SCHOOL OF EDUCATION
ALLIANT INTERNATIONAL UNIVERSITY

NSC 2205
Human Physiology
Fall 2012

Semester Hours:	Three (3)
Semester:	Fall 2012
Meeting Time/ Place:	On-ground at
Grading Type:	Letter grade
Professor/Instructor:	
Email:	
Office Phone:	
Office Hours:	

Hufstedler School of Education Mission Statement

The Hufstedler School of Education (HSOE) at Alliant International University prepares competent, confident, and conscientious educational leaders, who will promote and empower personal growth, academic success, and professional achievement for all in a global society. We accomplish this by offering our candidates exceptional preparation centered on multidisciplinary and holistic approaches to education.

Hufstedler School of Education Conceptual Framework

The Conceptual Framework for Alliant International University's Hufstedler School of Education Teaching Credential Program is grounded in three major theoretical and practical educational constructs. It is our shared belief that theory and practice are reflexive domains which intersect across the education continuum. The first tenant of our Conceptual Framework is constructivist theory, which views learners as conscious agents whose background and prior knowledge and dispositions greatly contribute to their participation in the learning process. The second major component is the affirmation of,

the commitment to, and the support for issues of diversity, inclusive of multiculturalism, cross-culturalism, and globalism. The third is grounded in neuropsychological research which addresses intelligences, problem solving and conceptualization, planning and organization, academic skills, memory and cognition, language, emotions, behavior and personality, perceptual motor abilities, and attention.

I. Introduction

Brief Definition:

Functions of the systems of the human body and their relation to homeostasis; includes disease prevention and cure, health and wellness, and nutrition. Basic body organization; functional biochemistry; cytology, histology, study of integumentary, skeletal, muscular, circulatory, and respiratory systems, and emphasis on the study of normal anatomy and physiology with clinical applications.

(This course should be taken by students who have taken and passed high school Biology, Chemistry. Students should also have some higher level science course, such as a high school Anatomy and Physiology).

Pre-requisite: Taken and passed college level composition/reading course (such as ENG 1106)

Anatomy

Anatomy is the study of the shape and structure of the body and all of its parts as well as their relationships to each other. The word anatomy is derived from the Greek words tomy, which means to cut, and ana, which means apart. Studying large body structures is referred to as gross anatomy, while the study of structures too small for the naked eye is microscopic anatomy.

Physiology

Physiology is the study of how the body and all its parts function. Physiology consists of the words physio, which means nature, and ology, which means the study of. Physiology has many subdivisions of study. These include cardiac physiology, known as the study of the heart, and neuro physiology, which is the study of the nervous system, among others.

II. Text

Principles of Anatomy and Physiology, 12th Ed. by Tortora & Derrickson, John Wiley & Sons, Inc., 2009. ISBN: 9780470084717

Anatomy and Physiology Laboratory Manual, 7th Ed. by Amitrano & Tortora, Thomson/Brooks/Cole, 2007. ISBN: 0495112178

The Purple Book: Lecture and Laboratory Guide for Anatomy and Physiology (Biology 121), 15th Ed. (w/DVD) by Jeffrey & Sundrud, 2007. ISBN: 1426626754

Supplemental Materials – Coloring Books (*Optional, but visual learners are strongly recommended to purchase one of the titles below*)

Visual Analogy Guide to Anatomy and Physiology by Paul A. Krieger, Morton, 2009. ISBN: 0895828014

Anatomy Coloring Workbook, 2nd Ed. by I. Edward Alcamo, Random House/Princeton Review, 2003. ISBN: 0375763422

Netter's Anatomy Coloring Book, 1st Ed. by John T. Hansen, Saunders, 2009. ISBN: 1416047026

The Anatomy Coloring Book, 3rd Ed. by Wynn Kapit & Lawrence M. Elson, Benjamin Cummings, 2001. ISBN: 0805350861

Supplemental Materials – Study guides and other references (*Optional*)

A Photographic Atlas of Histology by Michael J. Leboffe, Morton, 2003. ISBN: 0895826054

From Science to Life Anatomy & Physiology Companion DVD by Jenkins et al, Wiley, 2007. ISBN: 0470273845

Anatomy & Physiology Workbook for Dummies by Janet Rae-DuPree & Pat DuPree, Wiley, 2007. ISBN: 047016932X

The Complete Idiot's Guide to Anatomy Illustrated by Mark F. Seifert, Alpha Books, 2008. ISBN: 1592577601

Mosby's Dictionary of Medicine, Nursing, & Health Professions, 8th Ed. by Mosby, 2008. ISBN: 0323049370

III. Learning Outcomes

Upon successful completion of this course:

- The student will be able to recognize common technical combining roots, prefixes, & suffixes.
- The student will be able to explain the chemistry of cell activities, including chemical bonds and reactions, pH and buffers, qualities of water, and the major types of molecules: lipids, carbohydrates, proteins, and nucleic acids.
- The student will be able to list the organelles of the cell and their functions.
- The student will be able to describe the steps and significance of mitosis and meiosis.
- The student will be able to list the major tissues of the body and where they are found.
- The student will be able to describe the anatomy, physiology, & selected pathology of the skeletal system, circulatory system, lymphatic system, respiratory system, & integumentary system.

IV. Methods of Assessment

Lecture Exams (“Opportunities”)

You will take **3 Lecture Exams** that will assess your understanding of concepts discussed during the lecture portion of the course. The Exam format is multiple choice, with some matching, and 1-2 short answer bonus questions. **The lowest of your first two Lecture Exam grades will be dropped and will NOT count toward your overall course grade.** Your third Lecture Exam is the *non-cumulative* **Final Lecture Exam** scheduled during Finals Week. **Your Final Lecture Exam grade cannot be dropped.** Your Lecture Exam grades count for **60%** of your overall course grade.

Lab Exams

Lab is an engaging, interactive, and collaborative hands-on learning experience designed with the different learning styles of my students in mind. Our weekly labs involve direct study of anatomical structure and function through a variety of methods including microscope slides, models, active learning exercises, peer review, student-created study aids, online resources, charts, & diagrams. You will take **3 Lab Exams** that consist of timed 3-minute rotations through a series of stations featuring microscopes, models, and/or diagrams. The Lab Exams involve direct identification of anatomical structures and functions from diagrams and models, along with some multiple choice and/or short answer questions. **The lowest of your first two Lab Exam grades will be dropped and will NOT count toward your overall course grade.** Your third Lab Exam is the *non-cumulative* **Final Lab Exam** scheduled during Finals Week. **Your Final Lab Exam grade cannot be dropped.** Your Lab Exam grades count for **30%** of your overall course grade. You also have the option of preparing and bringing to each Lecture and Lab Exam **one 4 x 6-inch index card** that contains any information you feel would be helpful to you. *Loose-leaf paper is not an acceptable substitute for an index card.* All content on your card must be **hand-written** or **hand-drawn** directly on the card (nothing can be taped or stapled onto it). Computer print-outs and typing are NOT allowed on your cards. ***I will remove any card that violates these rules!***

Vocabulary Quizzes

There will be a brief 5-point **Vocabulary Quiz** at the beginning of most labs. Quiz format is multiple choice and covers vocab words and definitions from the current lecture chapter. **Your lowest Quiz grade will be dropped and will NOT count toward your overall course grade.** Your Quiz grades count for **5%** of your overall course grade. The following measures will be used to assess the extent to which students enrolled in the course have addressed or accomplished the goals and objectives of the course:

Learning Assessment

The **Learning Assessment** consists of a written reflective essay describing your learning style, exam preparation and results, study methods used throughout the semester, and your overall performance in the class. I will evaluate your assessments based upon individual effort, completion, association with learning style and course progress, organization, and thoughtfulness. You should work on this assignment regularly throughout the semester and are encouraged to meet with me during office hours for any

additional help. Your **learning style summaries** are due by (*Date ?*). **Your Learning Assessment is due anytime during the week before finals** and counts for **5%** of your overall course grade.

Grading System: 100 – 90 = **A** 89 – 80 = **B** 79 – 70 = **C** 69 – 60 = **D** 59 – 0 = **F**

Grades are calculated as a percentage of the total possible points.

Lecture Exams (best 1 out of 2, plus the Final Lecture Exam) **60%**

Lab Exams (best 1 out of 2, plus the Final Lab Exam) **30%**

Vocabulary Quizzes (best 9 out of 10) **5%**

Learning Assessment **5%**

TOTAL 100

V. Weekly Lecture Topics and Assignments

An Introduction to the Human Body (*Chapter 1*)

Levels of structural organization & basic life processes

Homeostasis: body fluids, control, imbalances, feedback systems

Basic anatomical terminology & medical imaging

The Chemical Level of Organization (*Chapter 2*)

Matter: elements, atoms, atomic number & mass, ions, molecules, & compounds

Chemical bonds: ionic, covalent, & hydrogen bonds

Chemical reactions: types, forms of energy, energy transfer, activation energy, catalysts

Inorganic compounds & solutions: water, solutions, colloids, suspensions

Acids, bases, & salts, pH, buffer systems

Organic compounds: carbon, functional groups

Macromolecules: carbohydrates, lipids, proteins, nucleic acids

The Cellular Level of Organization (*Chapter 3*)

Plasma membrane: structure & functions, membrane proteins, gradients

Transport across plasma membrane: passive & active transport processes

Cytoplasm: cytosol & organelle structure & function, nucleus

Protein synthesis: transcription & translation

Cell division: cell cycle, interphase, mitosis & meiosis, cancer

LECTURE EXAM 1: Chapters 1, 2, 3 (*Date ?*)

The Integumentary System (*Chapter 5*)

Structure and functions of skin: epidermis, keratinization & growth, dermis, skin color

Accessory structures of skin: hair, glands, nails; wound healing: epidermal & deep

The Skeletal System: Bone Tissue (*Chapter 6*)

Structure & functions of bone & the skeletal system

Histology of bone tissue: compact & spongy bone

Bone formation in embryo & fetus: intramembranous & endochondral ossification

Bone growth: length & thickness; remodeling; fracture & bone repair
Bone's role in calcium homeostasis

Muscular Tissue (Chapter 10)

Overview of muscular tissue: types, functions, & properties of muscular tissue
Skeletal muscle tissue: microscopic anatomy, muscle proteins
Contraction & relaxation of skeletal muscle fibers: sliding filament mechanism, NMJ
Muscle metabolism: ATP production, fatigue
Control of muscle tension: motor units & recruitment, muscle tone, contractions
Types of skeletal muscle fibers & distribution; cardiac & smooth muscle: structure & functions

The Cardiovascular System: Blood (Chapter 19)

Functions, properties, & components of blood; formation of blood cells
Structure and functions of red & white blood cells and platelets
Homeostasis: clotting; blood groups & types: ABO, Rh

LECTURE EXAM 2: Chapters 5, 6, 10, 19 (Date ?)

The Cardiovascular System: The Heart (Chapter 20)

Heart anatomy: location, layers, chambers, valves
Circulation of blood: systemic, pulmonary, & coronary circulation
Cardiac muscle tissue & conduction system: action potential & contraction, EKG
Cardiac cycle: pressure & volume changes, systole/diastole, heart sounds
Cardiac output: stroke volume, preload, contractility, afterload, heart rate

The Cardiovascular System: Blood Vessels & Hemodynamics (Chapter 21)

Structure & functions: arteries, arterioles, capillaries, venules, veins
Capillary exchange: diffusion, transcytosis, bulk flow
Hemodynamics: blood flow, pressure, vascular resistance, velocity
Control of blood pressure & blood flow: cardiovascular center & regulation
Checking circulation: pulse, measuring blood pressure
Shock and homeostasis: types, signs & symptoms, responses to shock

The Lymphatic System (Chapter 22, part 1)

Structure & functions: lymphatic vessels, lymph circulation, lymphatic organs & tissues

The Respiratory System (Chapter 23)

Anatomy: nose, pharynx, larynx, voice production, trachea, bronchi, lungs, alveoli
Pulmonary ventilation: pressure changes during inhalation & exhalation; lung volumes & capacities
Exchange & transport of gases: gas laws, hemoglobin, oxygen partial pressure, CO₂
Control of respiration: respiratory center & regulation

LECTURE EXAM 3 (Final): Chapters 20, 21, 22 (pt. 1), 23 (Date ?)

Laboratory Calendar (Schedule may be modified if necessary)

Week Date Topic(s) (TB = Textbook, LM = Lab Manual)

- 1 Use of Microscope; Histology, Part 1 (TB Chp 1 & 4, LM Exercises 1-4)
- 2 Histology, Part 2 (TB4, LM1-4); **Quiz-Chp 1**
- 3 Skeletal System: Axial (TB7, LM7); **Quiz-Chp 2**
- 4 Skeletal System: Axial, cont. & Appendicular (TB7-8, LM7); **Quiz-Chp 3, pt. 1**
- 5 Skeletal System: Appendicular, cont. & Review (TB7-8, LM7); **Quiz-Chp 3, pt. 2**
- 6 **LAB EXAM #1: Microscope, Histology, & Skeletal System**
- 7 Muscles (TB11, LM10); Integumentary System (TB5, LM5); **Quiz-Chp 6**
- 8 Muscles, cont. (TB11, LM10); Joints (TB9, LM8); **Quiz-Chp 10**
- 9 Muscles, cont. (TB11, LM10); Joints, cont. (TB9, LM8); **Quiz-Chp 19**
- 10 **LAB EXAM #2: Muscles, Integumentary System, & Joints**
- 11 Heart & Coronary Circulation (TB20, LM17-18); **Quiz-Chp 20, pt. 1**
- 12 Arteries (TB21, LM17-18); **Quiz-Chp 20, pt. 2**
- 13 Veins (TB21, LM17-18); Respiratory System (TB23, LM21); **Quiz-Chp 21**
- 14 **LAB EXAM #3: Heart, Arteries, Veins, & Respiratory System**

Policies and Procedures

Behavioral Expectations/Attendance: Policies Related To Class Attendance, Lateness, Missed Exams or Assignments, In-class Behavior: Alliant International University expects regular class attendance by all students. You are responsible for all academic work missed during absences. When an absence is necessary, contact me as courtesy and check for any missed assignments with a classmate. See the University Catalog for the complete policy on attendance. Excessive unexcused absences, lateness, leaving early will affect your final grade for the course. Grades for late work will be lowered by 10% of your earned grade for every 2 days late (includes weekend days).

My Assumptions: I teach this class with the full knowledge that despite the prerequisites your experience, comfort, and competence with written English may be varied. Usually, by the end of the first writing assignment, I will have an idea of your writing facility and will communicate to you the areas where you'll need to focus and pay more attention in order to improve your writing.

As instructor, I hope to function as a friendly “writing coach” and am committed to your improvement in writing. You can function as an “athlete writer” who will have to work out and train seriously in order to reach your prize. Within the parameters of the course, I will try to give you as much useful individual and collective feedback as I can.

Responsibility to Keep Copies: Remember, it is good practice to keep a couple of electronic Word document copies of ALL assignments you turn in. It's best to keep them in your computer and one other place (Another computer, or on a flash drive, for example). On rare occasions, work may be lost because of computer failure or other mishaps.

Respectful Speech and Actions (and Writing): Alliant International University, by mission and practice, is committed to fair and respectful consideration of all members of our community, and the greater communities surrounding us. All members of the University must treat one another as they would wish to be treated themselves, with dignity and concern.

As an institution of higher education, Alliant International University has the obligation to combat racism, sexism, and other forms of bias and to provide an equal educational opportunity. Professional codes of ethics (e.g., from the APA) and the Academic Code shall be the guiding principles in dealing with speech or actions that, when considered objectively, are abusive and insulting.

Academic Code of Conduct and Ethics: The University is committed to principles of scholastic honesty. Its members are expected to abide by ethical standards both in your conduct and in your exercise of responsibility towards other members of the community. Each student's conduct is expected to be in accordance with the standards of the University. *The complete Academic Code, which covers acts of misconduct including assistance during examination, fabrication of data, plagiarism, unauthorized collaboration, and assisting other you in acts of misconduct, among others, may be found in the University Catalog. The University reserves the right to use plagiarism detection software.*

Disability Accommodations Requests: If you need disability-related accommodations in this class, please communicate with me privately. All accommodations must be requested in a timely manner (at least 2 weeks ahead of time) with a letter of support from Alliant's Office of Disability Services. If you have questions about accommodations, please contact the Office of Disability Services.

Policy on Course Requirements During Religious Holidays: Alliant International University does not officially observe any religious holidays. However, in keeping with the institution's commitment to issues of cultural diversity as well as humanitarian considerations, faculty are encouraged to appreciate your religious observances by not penalizing you when you are absent from classes on holy days. Alliant International University faculty will be sensitive to these matters. You should be similarly respectful of faculty members' right to observe religious days. (This policy should not have to be used for an online course—i.e., if an assignment is due on a religious holiday that you observe, please make arrangements to turn it in early).

Resources for Obtaining Tutoring or Other Student Support Services: Tutors are available to help you with course-based or exam-based needs. Contact the Director of Student Support Services for information on obtaining tutoring – or other student support services – on your campus.

Problem Solving Resources: If problems arise with faculty, other students, staff, or student support services, you should use the University Problem Solving Procedures located on the web at [http://www.alliant.edu/academic/studentproblemsolving/Student Grievance Policy.pdf](http://www.alliant.edu/academic/studentproblemsolving/Student_Grievance_Policy.pdf)

Policy on Plagiarism and Screening for Plagiarism: An act of plagiarism (defined in the University catalog as “Any passing off of another’s ideas, words, or work as one’s own”) is considered to be a violation of the University’s Student Code of Conduct and Ethics: Academic and will be addressed using the Policies and Procedures outlined in the University’s 2011-2012 catalog. The instructor in this course reserves the right to use computerized detection systems to help prevent plagiarism. Material identified as plagiarized will be dealt with pursuant to University’s Student Code of Conduct and Ethics: Academic. Penalties for plagiarism can be severe, up to and including expulsion from the University.

Missed lectures and labs cannot be made up.

An excess number of *Excused Absences* may also be cause for assigning a **W** or **F** grade if, in my judgment, the student has missed so much of the course and coursework as to preclude the possibility of passing the course and would violate professional ethics and constitute fraud on the part of the College. In the case of absence from the first two class-hours of a term, a student will be withdrawn and allowed to enter the class only if space is available. (Instructors must withdraw students who have missed all of the first three weeks of a regular term).

Unexcused Absences: An absence that occurred for reasons that were: a) *within the student’s control to prevent*, and b) *not significant enough to prohibit attendance in class, even if uncontrollable*. An absence will be recorded as *Unexcused* if the student **does not contact me within 24 hours of the absence**. I will lower a student’s overall course grade by **one letter grade** if accumulated *Unexcused Absences* have totaled *10%* of the total class hours. Instructors have the right to recommend to the Division Administrator that a student be dropped for *Excessive Absences* that precludes the possibility of passing the class. A student will receive a grade of **W** or **F** if accumulated *Excused* and/or *Unexcused Absences* have totaled *more than 15%* of the total class hours. The College is required by law to make attendance reports to the relevant agencies of students who are funded by veterans’ benefits, social security programs, and various other state, federal, or private scholarship programs. Students in programs that are accredited or approved by external agencies must observe these special attendance policies delineated by the external agencies and contained in the printed course syllabus. Course attendance records will be made available to the Administration upon request.

Lecture Exam Make-Up Policy

- The student must contact me **within 24 hours** of a missed exam (in-person, email, or phone).
- The absence must be *Excused* in order to be eligible for a make-up exam. In some circumstances, I may require the student to provide documentation regarding the absence.
- If eligible, the student must schedule and complete their make-up exam **within one week** of the missed exam date. Extensions will not be provided. It is the student’s responsibility to contact the instructor to schedule their exam.
- **Index cards cannot be used during a make-up exam.**

- A grade of “0” will be assigned for the missed exam if any of the above policies are violated.
- The format and content of a make-up exam will differ from the regular exam.

Lab Exam Make-Up Policy

- Lab Exams involve significant instructor preparation & set-up time, therefore a **make-up will only be possible in extreme or unusual circumstance** (hospitalization, car accident, death in family, childbirth). The student must provide documentation regarding their absence.
- Any other absence on the day of a Lab Exam is considered *Unexcused* and will result in a grade of “0” for the missed exam.
- **Students who arrive late will NOT be permitted to take the Lab Exam** and will receive a grade of “0” for the missed exam.

Withdrawal

A student may drop a course at any time during the regularly scheduled classes up to the school’s official last day to drop a class by completing a Drop/Add Withdrawal form. After the refund period ends, the instructor’s signature is required and the student may receive a **W** or **F** grade depending upon the instructor’s assessment of the student’s performance. No credit is granted with a **W** grade. In order to earn a **W** grade, the student must be regularly attending both lecture and lab, putting forth a genuine effort in class, regularly communicating with the instructor about their grade and/or situation, and has not missed any Exams. **A student that stops attending class, but does not officially withdraw by completing a Drop/Add Withdrawal form, will earn an F grade.**

Instructor’s Academic Honesty Policy

- A. **Cheating:** giving or receiving answers on assigned material, using materials or aids forbidden by the instructor, unauthorized possession of examination
- B. **Plagiarism:** offering someone else’s work, words, or ideas as one’s own or using material from another source without acknowledgement
- C. **Interference:** interfering without permission with the work of another student, either by obtaining, changing, or destroying the work of another student
- D. **Buying or selling** of term papers, homework, examinations, laboratory assignments, computer programs, etc.
- E. **Falsifying** of one’s own or another’s records
- F. **Knowingly assisting** someone who engages in A-E above. A **first offense** will result in a grade of “0” for the exam or assignment and *possible* disciplinary action. A **second offense** will result in a grade of **F** for the course and disciplinary action.

Incomplete Grade Policy

A grade of **Incomplete (I)** may be assigned when a student is not able to complete the course requirements due to extenuating circumstances. The **Incomplete** grade will be assigned only after a conference with the instructor and after a serious need is determined. The **I** grade becomes an **F** if the work is not completed before the end of the following semester.

Technology and the Problem of Divided Attention

In recent years the saturation of cell phones and text messaging has produced something called “the problem of divided attention”. A March 25, 2008 article in the *New York Times* summarized recent studies of productivity in business settings. Researchers found that after responding to email or text messages, it took people *more than 15 minutes* to re-focus on the “serious mental tasks” they had been performing before the interruption. Other research has shown that when people attempt to perform two tasks at once, such as following what’s happening in class while checking text messages, the brain literally *cannot do it*. The brain has got to give up on one of the tasks in order to effectively accomplish the other. Hidden behind all the hype about multi-tasking is this sad truth: *it doesn’t work*. For this reason alone you should seek to avoid the problem of divided attention when you are in class. So, please turn off your cell phones or set them on silent mode when you arrive to class. Text messaging will not be tolerated. Laptops are permitted only for taking notes, accessing course materials under discussion, and other course-related activities.

Note: The professor retains the right to make changes, additions, or deletions to the syllabus during the course.