*NORTHERN ESSEX COMMUNITY COLLEGE*
*HAVERHILL, MASSACHUSETTS*

*COURSE OUTLINE*
*Summer 2009*

*COURSE:* *BIO121 LE (CRN 5036), Anatomy and Physiology I*

*INSTRUCTOR:* *Professor Noel Ways*

*TEXTS:* *Anatomy & Physiology 11th edition, by Shier, Butler, and Lewis; WCB McGraw-Hill Pub. Co., © 2007*

*The Anatomy Coloring Book, 3rd edition, by Kapit and Elson, Benjamin Cummings Pub. Co., © 2008*

*ADDITIONAL SUPPLIES: highlighters, tape recorder, 1.5" ring binder, safety eyewear*

*LOCATION and TIME:* *Lecture & Lab: L015* *Tues/Thurs* *6:00 – 10:30*

*BIO 121 – Anatomy & Physiology I*
*The basic principles of chemistry are reviewed and the basic principles of biology are introduced. These are followed by an introduction to the study of the structure and functioning of the human body. Systems covered are integumentary, skeletal, muscular and nervous. Emphasis will be placed on the interrelationships among the systems. Related topics such as diseases of the systems will be integrated where applicable. Laboratory work will include experiments, dissection, microscope work, and the study of charts and models. Please note: Prerequisites are BIO 115 Physiological Chemistry or CHM 111 Introduction to Chemistry or higher or high school chemistry in the past five years. 4.000 Credit Hours 3.000 Lecture hours 2.000 Lab hours*

*ABOUT A SUMMER COURSE IN HUMAN ANATOMY AND PHYSIOLOGY:*

*Anatomy and Physiology I is designed to for a typical semester, not a summer session. Therefore, students opting to take this course during the summer must understand that this unabridged course is accelerated; and that no part of the curricula is deleted. With this in mind, substantial study time must be budgeted on a daily basis toward the mastery of the material.*

*INSTRUCTIONAL OBJECTIVES:*

*The primary objective of Human Anatomy and Physiology I is to build a foundational understanding of the human body for students pursuing a career in the medical and paramedical curricula or other related fields. The following is a listing that describes many of the details of this objective. This listing is partial and provides a broad overview of the course.*

1. *Students will describe and use anatomical terminology applicable to writing of medical reports and reading of professional literature associated with their discipline.*
2. *Students will be able to identify all major body systems with their essential functions, particularly as they relate to homeostatic maintenance.*
3. *Students will be asked to describe the homeostatic paradigm, and provide and example of both positive and negative feedback systems.*
4. *Each student will be exposed to essential chemical principles necessary for further discussion of physiological concepts in both A&P I and A&P II.*
5. *Each student will recognize about twelve different tissues found in the body and equate to each appropriate function-location relationships.*
6. *The student will identify major components of the Integumentary System and their functions. The students will also explain the relationship of the integument to associated homeostatic control mechanisms. The student will explain in writing the process of deep wound healing, while taking into account the logical progression of healing events through time.*
7. *The student will be able to describe the structural makeup of osseous tissue and explain why the system exists. Key homeostatic mechanisms involved in the maintenance of normal blood calcium levels will be explained and illustrated. Lastly, the process of bone growth will be explained in writing, and how growth hormone affects the overall process.*
8. *The student will then be required to identify both name and function of most bones of the body as well as numerous processes, fosses, etc. of the same.*
9. *The student will then focus on articulations and be able to identify the various types of joints, identify essential range of movements, and lastly understand the basic anatomy of the synovial joint.*
10. *The next unit will revolve around muscle tissue and the muscular system. Here, the students will be able to recognize essential anatomy of muscle tissue and their associated physiology.*
11. *Following this the student will take a close look at how energy, in the form of ATP is produced in cellular respiration. The entire essential metabolic pathway will be examined and the student will be expected to identify all critical actions and processes for these metabolic pathways.*
12. *The student will be able to identify select muscle groups as well as their origins and insertions and the specific action of each muscle.*

13. *The final unit of study will be an examination of the nervous system. Here the student will recognize nervous tissue types and be able to identify their respective functions. The students will also demonstrate in writing his/her understanding and explanation of nerve impulse propagation.*
14. *Following nervous tissue, the students will look at the function of the spinal cord with particular emphasis on spinal reflexes. The student will be able to illustrate select reflexes and appropriately label them.*
15. *The student will then be required to identify the basic parts of the human brain and their respective functions. But beyond this, the student will be able to explain how the different parts work in a coordinated manor.*
16. *Lastly, the student will have a basic understanding of the autonomic nervous system and how each branch effects the viscera, with particular emphasis on the "fight and flight response" vs. maintenance of homeostasis.*

*TEACHING PROCEDURES:*

*The lecture sequence will be presented in a systematic fashion with accompanying overheads to facilitate organization and understanding of the lecture material. Lecture outlines and other course materials are provided on-line and are to be brought to each class to facilitate information integration.*

*The laboratory is designed to give the student a "hands on" appreciation for the anatomical considerations being discussed in lecture and to familiarize the student with some of the more basic physiological considerations as they relate to gross anatomy. The laboratory period will also be used for lecture purposes.*

*GRADING POLICY*

*The assignment of a final semester grade will be dependent upon the completion of: 5 lecture exams, a final exam, and three laboratory practicals. The first two practicals will be combined into one exam grade equivalent. The third practical will be the equivalent of one lecture exam. If all exams are taken, the lowest grade (or grade equivalent) may be dropped. The lecture exams will concentrate on material covered in lecture, and the nature of the exams is non-comprehensive and will only cover material from the previous exam. A semi-cumulative final exam is given at the end of the semester and will also be the equivalent of one major lecture exam. All exams must be taken.*

*To Summarize:*

| | | |
|---|---|---|
| *Five Lecture Exams* | = | *500 points* |
| *First Two Laboratory Practicals (50 points each)* | = | *100 points* |
| *Third Laboratory Practical (100 points)* | = | *100 points* |
| *Final Exam* | = | *100 points* |
| *Drop lowest Grade* | = | *-100 points* |
| | | *700 points* |

*Grading Policy: The assignment of grades is based upon an absolute scale.*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *A* | *4.0* | *93-100* | *B-* | *2.7* | *80-82* | *D+* | *1.3* | *67-69* |
| *A-* | *3.7* | *90-92* | *C+* | *2.3* | *77-79* | *D* | *1.0* | *60-66* |
| *B+* | *3.3* | *87-89* | *C* | *2.0* | *73-76* | *F* | *0.0* | *0-59* |
| *B* | *3.0* | *83-86* | *C-* | *1.7* | *70-72* | | | |

*ATTENDANCE POLICY:*

*Attending every lecture and every lab is strongly encouraged, as material will be presented that may not be otherwise covered in the text. A student will not be penalized for failure to attend a class; however, it should be noted that lecture exams and laboratory practicals will have strong representation from class instruction. A name call will be taken for registrar tracking purposes.*

*NOTES*

- ***Safety Issues*** *If you have a known disease condition or are pregnant, you must obtain written permission from your physician to participate in lab where chemicals, fixatives, or preservatives are used. A "Material Safety Data Sheet" (MSDS) for each chemical used will be provided to you for submission to your physician. No one is permitted in the lab who has a known medical condition and where chemical substances are present where permission has not been granted by a physician.*
- ***The Syllabus*** *Please keep a copy of this syllabus as a record of course content for future application purposes.*
- ***Recording of Lectures*** *Recording of the lectures is always permitted. The use of lap-top computers or word processors is encouraged if it helps the student integrate the material. Feel free to use a digital camera to photograph laboratory dissections, models, or any other supportive tool. You may videotape the lecture if you like. In short, you may do anything you deem necessary to master the subject matter as long as it is legal, ethical,*

*and non-disruptive.*

- ***Attendance*** *of every lecture and every lab is strongly encouraged, as material will be presented that may not be otherwise covered in the text.*
- ***Tardiness*** *Please be on time. Tardiness is disruptive to both the students and the instructor. If you are late, please make sure that you are marked down on the attendance sheet before you leave.*
- ***Cellular Phones*** *Unless you anticipate an emergency call, please turn your phones off.*
- ***Alternative Textbook*** *If the student chooses to use an alternative textbook, or an edition other than the one required for this course, it is the responsibility of the student to obtain information that is either not covered or otherwise not approached in similar manner as in the required text, as deemed necessary by the student.*
- ***Textbook Usage*** *The role of the textbook is to be a supportive tool to the lectures. The student is not expected to memorize the entire textbook, but to use it to reinforce concepts and material presented during lecture.*
- ***Web Site*** *The web site associated with this course can be found by doing a search on you browser for your instructor's name, or typing in the following address: http://faculty.necc.mass.edu/nways/index.html*
  *Once the site is accessed, select your course and there you will find your lecture outlines, handouts, and other support material. There is also an email button for correspondence with your instructor.*
- ***Lecture Outlines and Supplemental Materials*** *are to be found on the internet. Should you have difficulty downloading any of the material at home, then you are encouraged to do this task at the school. All materials should be downloaded and organized in a three ring binder by the first exam.*
- ***Computer Lab Access*** *may require a current student ID.*
- ***The Schedule*** *below is a tentative but probable schedule of topics and dates. The schedule will be modified according to the progress of the lectures. The exam dates are target dates and will represent only material actually covered in class. Specifics regarding content will be given as the exam date approaches.*
- ***Exam Dates*** *Please note exam dates on the schedule below.*
- ***Exam Filing*** *All exams are returned to the instructor and filed after being handed back for review.*
- ***Make-up Exams*** *are to be avoided! If a make-up exam is needed, fill out a make-up petition form (found on web) and provide requested documentation. If a doctor's note is submitted, then a make-up exam is permitted. If a doctor's note is not submitted, a penalty is applied at the discretion of the instructor, and the instructor reserves the right to refuse*

*the make-up. If there is to be a make-up, this task must be accomplished as soon as the student returns to school in good health, and within 5 school days. Lab practicals are very difficult to make up. Generally, if you miss a lab practical, this will be the exam grade you drop.*

- ***Exam Grades*** *are not given over the internet.*
- ***Final Grade*** *Your final course grade is typically determined the day of the final exam. Once the grades are submitted, confirm your grade with the college, and contact me if there are any issues. After four weeks of the grades being submitted, exams are recycled, and grades are final.*
- ***Tutoring*** *The college provides free tutoring services during Fall and Spring semesters. Contact the academic support center for the days and times. Tutoring is a free service of the college and designed to assist students who desire to excel in their mastery of the material as well as those struggling.*
- ***Identification*** *of all texts, recorders, and lab manuals is important. Please put you name and phone number on all personal belongings. If you leave something behind, you may be contacted as to where to pick it up.*
- ***Unscheduled School Cancellations*** *Should class be cancelled, the student is expected to master the material that is scheduled for that day on the downloadable outline. Should additional instructions be necessary, they can be found on the web site, under "announcements". During the subsequent class period, some topics may be reviewed, but responsibility for mastery of the material is upon the student.*
- ***Contact Information*** *See email address for contact link. When emailing, always identify yourself and the class that you are in. Always have the subject line appropriately filled in. I will not open mail that is not properly identified.*
- ***Recommendations*** *Should you seek a letter of recommendation to future programs, please provide the instructor with appropriate information and deadlines that you are facing and a stamped and addressed envelope. Finally, to assure that your application is complete, please contact the school after a reasonable period of time to assure their having received the letter. Contact me if there are any problems.*

*Laboratory*

- ***Clothing in Lab*** *Students are advised to never wear valuable clothing to lab as laboratory procedures may result in permanent damage to clothing.*
- ***Safety Eyewear*** *must be used during dissection exercises. Acceptable eyeware must have a rating of "Z87.1".*
- ***Eating*** *during laboratory time is prohibited.*
- ***Children*** *Due to safety concerns, children are never permitted in the lab.*

## *Summer, 2009 Schedule*

*This schedule is tentative and approximate and will be adjusted according to the progress of the lecture sequence. Please also be aware that this course is accelerated and unabridged, and therefore significant daily study time is mandatory for mastery of the material. Lastly, due to the accelerated nature of the course, exams are frequent.*

| *Day of* | *LECTURE* |
|---|---|
| *June 16* | *Organization of the Human Body* |
| *June 18* | *Chemistry of Life* |
| *June 23* | *Cytology* |
| *June 25* | *Histology* |
| *June 30* | *Histology, cont,. The Integumentary System* |
| *July 2* | *Skeletal Tissue, Axial Skeletal Sys.* |
| *July 7* | *Axial. & Appendicular Skeletal Sys.* |
| *July 9* | *Appendicular Skeletal Sys.* |
| *July 14* | *Appendicular Skeletal Sys., Energetics* |
| *July 16* | *Energetics, Cellular Respiration* |
| *July 21* | *Cellular Respiration, Myology* |
| *July 23* | *Articulations and Muscular System* |
| *July 28* | *Nervous Tissue* |
| *July 30* | *Spinal Cord, and Brain* |
| *August 4* | *Brain, Autonomic N.S.* |
| *August 6* | ***EXAM Day*** |

# Exam Contents and Records

Grade Calculation: Drop the lowest grade and take a simple average.

Exam #1: _____
- Introduction
- Chemistry

Exam #2: _____
- Cytology
- Histology
- Integument

Exam #3: _____
- Osseous Tissue
- Skeletal System

Lab Practical #1: _____
- Histology

Lab Practical #2: _____
- Bones

Average of Lab Practicals 1 and 2: _____

Lab Practical #3: _____
- Muscle Movements
- Cellular Respiration

Final Exam: _____

Exam #4: _____
- Myology
- Articulations

Exam #5: _____ (May be split)
- Nervous Tissue
- Nervous System

*Grading Policy:*

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
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| *A-* | *3.7* | *90-92* | *C+* | *2.3* | *77-79* | *D* | *1.0* | *60-66* |
| *B+* | *3.3* | *87-89* | *C* | *2.0* | *73-76* | *F* | *0.0* | *0-59* |
| B | 3.0 | 83-86 | C- | 1.7 | 70-72 | | | |