NORTHERN ESSEX COMMUNITY COLLEGE
HAVERHILL, MASSACHUSETTS

COURSE OUTLINE
Fall 2011

COURSE: *BIO 122 SI (CRN: 7693), Anatomy and Physiology I I*

INSTRUCTOR: *Professor Noel Ways*

TEXTS:
- *Anatomy & Physiology, 11th edition, by Hole, WCB McGraw-Hill, © 2011*
- *The Anatomy Coloring Book, 3erd edition, by Kapit and Elson, Benjamin Cummings, © 2011*

ADDITIONAL SUPPLIES: Recorder, 1 1/2" Binder, Safety Glasses, Colored Pencils

LOCATION and TIME: Lecture/Lab: Room: L015 Thursday 5:30 – 10:10

COLLEGE COURSE DESCRIPTION:

BIO122 – Anatomy & Physiology II

A continuation of BIO121 Anatomy & Physiology I. Systems covered are circulatory, endocrine, reproductive, urinary, digestive and respiratory.

4 Credit Hours, 3 lecture credits; 2 lab hours
Prerequisites: Course or Test: BIO121 Anatomy & Physiology I, minimum grade of D

Human Anatomy and Physiology II is designed to provide an anatomical and physiological foundation for students pursuing careers in the allied health fields. Human Anatomy and Physiology, as the name implies, is the study of the human body: how it is put together and how the various parts work together. This course is a continuation of Human Anatomy and Physiology I, and will proceed on a system-by-system basis.

The course will commence with a three-week study of the cardiovascular system, followed by an in-depth view of the respiratory system. Other organ systems such as the digestive system, urinary system, reproductive system will also be examined. Other subjects of particular relevance will be discussed at appropriate points in the lecture sequence.

The laboratory component of the course is designed to give the students 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.

<u>INSTRUCTIONAL OBJECTIVES:</u>

This course is given to provide a necessary background for students who will pursue a career in the medical and paramedical curricula or other related fields. It also provides answers to those keenly interested in the human body both in form and function. All topics discussed will provide an initial detailed description of anatomical considerations followed by essential physiological processes involved. Throughout this treatment, there will also be an aim to integrate the systems relative to their homeostatic functions. With these thoughts in mind, the following objectives will be covered:

1. *Students will be able to identify essential components of the blood and their respective functions. The student will be able to explain the general process by which blood cells are produced and the control mechanisms regulating these processes. The student will demonstrate an understanding of blood clotting, and it's relationship to the fighting of infection. The student will also be able to explain the mechanisms of gas transport by red blood cells.*
2. *The student will be able to identify the name and function of all essential anatomy as it relates to the cardiac cycle. This will be followed by a thorough examination of the cardiac cycle of which the student will demonstrate, in writing, his/her comprehension of this important topic. Finally, the regulatory mechanisms that control cardiac output will be identified.*
3. *The student will then be expected to demonstrate a broad understanding of the anatomical and physiological characteristics of the blood vessels; and how these vessels differ relative to their location to the heart and critical organs. The students will also identify major arteries and veins of the human body, and demonstrate a keen understanding of the hepatic portal system. Finally, the physiological mechanisms of fluid exchange and blood pressure will be examined.*
4. *The student will identify the various functions of the lymphatic system as they relate to the organs found in this system. An understanding of the importance of the lymphatic system relative to immune function will be examined and demonstrated.*
5. *The students will be able to explain the essential components of both non-specific and specific host immune responses. This will include the demonstration of*

interferon and the complement system. Finally, the student will be expected to explain, in essay form, the full functioning of both cellular and humeral immunity.

6. *The student will be able to identify the name and functions of all major components of the respiratory system. Critical physiological mechanisms relating to gas transport and exchange will likewise be examined. The student will also demonstrate an understanding of the anatomy of the larynx as well as it's function.*
7. *The next major topic is the digestive system. Here, the student will be able to sequentially follow the alimentary canal and discuss the various anatomical and physiological modifications to the overall digestive process. The function of accessory organs such as gall bladder, liver, pancreas, salivary glands, as well as human dentition and tooth anatomy will be examined; and the student will be expected to demonstrate his/her competency both in writing and by illustration. The student will also demonstrate in writing lipid transport and regulation.*
8. *The urinary system and nephron function will follow. Here the students will be able to identify all major anatomical parts of this system as well as it's functioning unit, the nephron. Following this, the student will be presented with his/her most challenging component of the course: a detailed understanding of nephron physiology expressed in essay form.*
9. *Discussion of the human reproductive systems will aim a providing essential anatomy and physiology as well as hormonal controls for these systems. Besides being able to identify major anatomical components and their respective functions, the student will be asked to illustrate both male and female hormonal regulation. Finally, the unique adaptations of the female body to the carry, support, and nurture a fetus/infant will be discussed.*
10. *The last lecture of the semester will cover the endocrine system but also serve as a synthesis of homeostatic themes presented throughout the course. In this respect, the student can anticipate some review of control mechanisms previously presented, but in a more focused context of the endocrine system. As such, the student will become familiar with the anatomy and location of endocrine organs and their specific roles in the maintenance of homeostasis. Several control systems will be presented and the student will illustrate several of these in illustration form.*

<u>TEACHING PROCEDURES</u>:

The lecture sequence will be presented in a systematic fashion with accompanying overheads to facilitate organization and understanding of the lecture material. Significant emphasis will be placed upon physiological processes where appropriate with an aim toward an appreciation for the integration of various physiological processes.

The laboratory is designed to give the students 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.

ATTENDANCE POLICY:

Attendance of 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.

GRADING POLICY

Five non-comprehensive lecture exams are given. Two laboratory practical exams will be administered; the grades of which will be combined and be equivalent to one lecture exam. A semi-cumulative final exam will be administered at the end of the semester and equivalent to one lecture exam; the topic for which will be provided toward the end of the semester. Grade assignment is based upon an absolute scale, see chart below. All exams must be taken. To summarize:

Five Lecture Exams (Drop lowest grade)	=	*500 points*
Two Laboratory Practicals (50 points each)	=	*100 points*
Final Exam	=	*100 points*
Drop lowest Grade	=	*-100 points*
		600 points

Grading Policy:

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*			

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 that has a known medical condition and where chemical substances are present where a physician has not granted permission.

- ***The Syllabus*** *is to be filed by the student 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 and Text Messaging*** *- Unless you anticipate an emergency call, please turn your phones off. Text messaging is prohibited during class.*
- ***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 students responsibility to obtain information that is either not covered or otherwise not approached in similar manner as in the required text.*
- ***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 Outlines, handouts, course information, and email can be found at: www.noelways.com*
- ***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 third week of classes.*
- ***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.*
- ***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 eyewear must have a rating of "Z87.1".*
- ***Eating*** *during laboratory time is prohibited.*
- ***Children*** *are never permitted in the lab due to safety concerns.*

SCHEDULE OF TOPICS AND DATES

Day:	*LECTURE*	
September 8	*Cardiovascular System: The Blood*	*Ch 14*
September 15	*Cardiovascular System: The Heart*	*Ch 15*
September 22	*Cardiovascular System: Vessels and Routes* ***(Exam)***	*Ch 15*
September 29	*The Lymphatic System and Non-specific Host Immunity*	*Ch 16*
October 6	*Specific Host Immunity* ***Lab Practical***	*Ch 16*
October 13	*The Respiratory System* ***(Exam)***	*Ch 19*
October 20	*The Respiratory System*	*Ch 19*
October 27	*The Digestive System*	*Ch 17*
November 3	*Digestive System* ***(Exam)***	*Ch 17*
November 10	*The Urinary System*	*Ch 20*
November 17	*Reproductive Systems* ***Lab Practical***	*Ch 22*
November 24	*Thanksgiving Break*	
December 1	*Endocrine System* ***(Exam)***	*Ch 13*
December 8	*Endocrine System*	*Ch 13*
December 15	*Lecture* ***Exam and Final Exam***	*--*

Exam Grades and Content Sheet

Exam #1: _____

Blood

Heart

Exam #2: _____

Blood Vessels

Lymphatic System

Immune System

Exam #3 (ave): _____

Respiratory system: Exam #3a: _____

Digestive System: Exam #3b: _____

Exam #4: _____

Urinary System

Male Reproductive System

Exam #5: _____

Female Reproductive System

Endocrine System

Lab #1: _____

Blood Vessels and Heart

Lab #2: _____

Body Organs and Systems

And Hepatic Portal System illustration

Average of Lab #1 and Lab #2: _____

Final Exam: _____

Calculation of your grade is simple. Drop your lowest grade, then do a simple average. This is your course grade to date. Note your grade in the numeric/letter equivalence chart below.

Grading Policy:

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