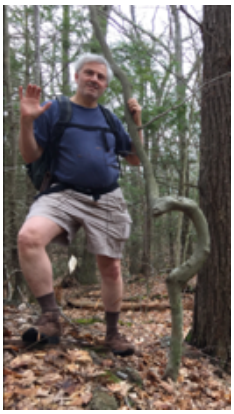
Northern Essex Community College
Department of Science, Technology, Engineering, and Mathematics
BIO 121 O2C – Anatomy and Physiology I
Fall 2020

Instructor Contact Information

Instructor: Noel Ways
Email: nways@necc.mass.edu
Virtual Office Hours: As our schedules vary dramatically from one person to another, specific "office hours" that work for all can be challenging. If you would like to meet, just email me and we can set up a timely meeting with Zoom. On Blackboard you will find a link, "Zoom, Let's Talk," where you will find an "office hours" link.



Welcome to Anatomy and Physiology I. My name is Noel Ways. I am a biologist by training, and over the past 35 years, I have had the privilege to teach this course hundreds of times. Oddly, it never gets old. The material is the same, but what breathes life into the classroom every semester is the student. We work together, and we learn together. As you begin your journey into this segment of your academic career, I am here to help guide and encourage you to be the best you can be. Welcome to the class.

Course Information

Credits: 4 Credit Hours. 3 Lecture hours, 2 Lab hours
Prerequisites: BIO 115 Physiological Chemistry or CHM 111 Introduction to Chemistry or higher or high school chemistry in the past five years.

General Course Description

Anatomy and Physiology I is intended to provide a foundational knowledge base for students preparing for a career in the allied health professions. Students taking this course frequently end up in our medical facilities with substantial responsibility for patient health and safety. This course is setting the stage for a successful and responsible life-long career.

Collage Course Description

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.

General Course Objectives

As we endeavor to prepare you for a career in the allied health professions, specific goals and benchmarks have been established towards this aim. Looking towards this end, general course objectives listed below expand on the overall course description. As the flow of the course ensues, you will find that the course topics and laboratory work will align with these objectives.

- Develop a working knowledge of anatomical terminology applicable to writing of medical reports and reading of professional literature associated with their discipline.
- Develop an understanding of how homeostasis is maintained through negative and positive feedback systems
- Distinguish between essential chemical processes and molecular classifications in preparation for further discussion of physiological concepts in both A&P I and A&P II, and clinical instruction.
- Compare and contrast the functional relationships of major cellular organelles.
- Compare and contrast transport mechanisms for substances entering and exiting through the cell membrane.
- Critique different tissues found in the body according to their function-location relationships.
- Differentiate between the regions of the Integumentary System and their functions.
- Write the process of deep wound healing while taking into account the logical progression of healing events through time.
- Relate the structural makeup of osseous tissue to healthy bone maintenance.
- Diagram the homeostatic mechanisms involved in the maintenance of normal blood calcium levels.
- Compare and contrast the stages in the process of healthy bone growth.
- Develop working knowledge of the major bones of the body as well as numerous processes, fosses, etc. of the same.
- Categorize the major articulations of the body, both structurally and functionally.
- Relate the anatomy of muscle tissue to how muscles contract.
- Predict the amount of ATP produced per one glucose molecule based upon an illustrated representation of both glycolysis and cellular respiration.
- Predict the actions of various muscle contractions based upon their location, origin, and insertion.
- Compare and contrast the major parts of the central nervous system according to their essential functions.
- Examine the process of nerve impulse propagation.
- Produce illustrated diagrams of select spinal reflexes.
- Distinguish between the different parts of the human brain and their respective functions.
- Compare and contrast how the different parts of the central nervous system works in a coordinated manner.
- Predict the levels of both sympathetic and parasympathetic nervous activity under various degrees of stress and rest.

Course Materials

- **Textbook (Required):** Human Anatomy & Physiology (LL)(w/ModMastering A&Petext Acc)

Note, The textbook can be obtained through the bookstore. Contained Within the package are online resources

- **Videos:** YouTube Lecture Videos with Closed Caption
- **Handouts:** Accessible and downloadable PDFs
- **Internet:** Web sites that feature animations explaining complex physiology

Aside from the required text, course material are linked on blackboard.

Course Requirements

Method of instruction

This course will be delivered online, utilizing resources available through Blackboard and the instructor's web site, to which Blackboard in linked. Each lecture/module will have a **Learning Guide** that will provide guidance to the student through the supportive readings, videos, animations, and other media under consideration for any particular lecture/module. Also available is a **Lecture Outline** that will guide the student through the course content in preparation for associated assessment exams. The videos of the lectures will follow a lecture outline closely. Both the lecture outlines and the video support page can be found online. Exams are given on a lecture by lecture basis and should be completed before beginning the next lecture sequence. These exams will cover material covered on the outlines, handouts, as well as on the videos. The exams are noncumulative, but any particular lecture topic assumes a working knowledge of previous lecture topics.

For additional details of the module week, see "Course Walkthrough (or Instructional Rhythm) in the Course Information folder on Blackboard.

Workload

We all come from different backgrounds, and varying employment obligations, and may have family relationships and responsibilities that need to be maintained. With all the various pulls on our time and resources, it can sometimes be difficult to schedule another major activity. Scheduling of several hours daily for study can be a daunting prospect for some. But this must be looked at immediately and requires a quality decision if success is to be assured.

Typically, 2-3 hours needs to be set aside daily for the mastery of the material. However, this is highly individualistic, and it is crucial to determine what your individual learning requirements are.

I also encourage you to talk to those people important in your life about your educational needs at this juncture in your developing career. I would encourage you to look carefully at all the time demanding activities in your life and make appropriate adjustments in light of your important career aspirations. The word "priorities" comes to mind here.

Assignments

Anatomy and Physiology is a content-heavy course, and your primary assignment for each lecture topic is to build for yourselves a foundation that will carry you through the rest of your developing career. So with

the beginning of a module/lecture topic, your assignment is to gain a working knowledge of the body of material being presented.

Also, as Anatomy and Physiology I is a laboratory course, some topics are presented and assessed more than once, once in a lecture context, and the other in a laboratory context. For example, we will discuss histology in a lecture context and have an appropriate assessment. We will also study actual histological samples, and these are assessed using another assessment format, the laboratory practical, where the material is presented entirely visually. Having alternative methods of studying the material and alternative forms of assessment, not only provides students with different ways to access the content and demonstrate mastery, but also reinforces important topics.

To begin the learning process, **start with the Learning Guides**. These documents will provide insight into approaching the material on a module by module bases and point out issues that require special attention or preparation. The lecture outline will then systematically guide you through the text and lecture content. If something is on the outline, you need to know it, if something is not on the outline, you are not responsible for it, even if it is in your text. Handouts and videos will supplement and reinforce key concepts. Regarding the video support, here I will talk through the lecture content following the outline closely, and with rare exceptions, if I do not talk about something, you do not need to know it. Nevertheless, it will require TIME to go over the outlines, view associated videos, and study the handouts to gain a working understanding of the material. Regarding laboratory material, mastery of the anatomical characteristics of tissue, bones, organs etc. will be important as well as associating appropriate functions with them.

Late Assignments and Make Up Work

All exams are to be completed by midnight on the day indicated on the syllabus. So, for example, if an exam is scheduled for September 16, it must be completed by midnight on September 16.

Make-up Exams are to be avoided! But if a make-up is needed, documentation is required to certify that the need is legitimate. If documentation is not presented, a make-up is still permitted, but an adjustment is to the grade is made at the discretion of the instructor. This adjustment is typically a reduction in extra points that would otherwise bolster your grade. You will never get a grade lower than your earned grade. But if there is to be a make-up, this task should be accomplished within a week that the student returns to their studies. Contact me so that a time and a date can be coordinated.

Communication and interaction:

Throughout the semester I will be contacting you on a weekly/biweekly basis to offer advice, provide comments, and give reminders. If you have questions that have class wide import, the questions may be answered and shared with the class on the Student Interaction Board (a Discussion Board). The other venue may be scheduling meetings using Zoom. Students will be encouraged to form online study groups. I have found that students who study together and talk through the material tend to excel. Details will be forthcoming on how to set this up.

Blackboard

Please make sure to log into the Blackboard site AT LEAST once a day. Announcements, class resources and all assessments will be handled through Blackboard. I will also regularly send broadcast emails to the class through Blackboard. In such cases, Blackboard will send the email to your NECC student account. If you wish, you can change which email account these messages are sent to in your Blackboard settings.

Email

Please check your student email daily. If you do not like the student email interface, it is easy to set up on your desktop client or mobile device. You can also forward your student mail to any other email account. Instructions can be found at: (link to instructions).

Email is the best way to contact me. The turnaround time is typically 24 hours, or less.

Email: nways@necc.mass.edu

When you send me an email, always include:

- Your name
- Your class (either course number or title, day, and time)
- A relevant subject

Basis for Grading

As mentioned above, this course aims to build a foundational knowledge base so that you may become a competent medical professional. A commitment of time and hard work goes a long way towards realizing your career goals. Further, when one receives good grades on exams it gives a certain satisfaction of a job well done.

Exams - Note, **Grading Criteria** is presented in the Learning Guides available on Blackboard. See the Learning Guides for specifics on the criteria for grading, suggestions on where to focus, and for special exam activities. Exams are given on a weekly basis.

Exam #1	Organization of the Human body	100 points
Exam #2	Chemistry of Life	100 points
Exam #3	Cytology	100 points
Exam #4	Histology	100 points
Exam #5	Integumentary system	100 points
Exam #6	Skeletal (Osseous) Tissue	100 points
Lab Exam #1	Histology Practical	100 points
Exam #7	Articulations	100 points
Exam #8	Glycolysis and Cellular Respiration	100 points

Lab Exam #2	Laboratory Practical on Skeletal System	100 points
Exam #9	Myology	100 points
Exam #10	Nervous Tissue	100 points
Exam #11	Spinal Cord, Brain, Autonomic Nervous System	100 points

All exams are weighed equally. Always record your grades!
You will want to do this not only to ascertain how you are doing in the class, but also to be alerted if there is ever (there rarely is) something that appears questionable. You can always email me if you have a question.

Grade Calculation - The assignment of a final semester grade will be dependent upon the completion of all lecture exams and lab practicals. All exams are weighted equally. Of all the exams given, the lowest grade may be dropped. Calculation of the grade is therefore simple: drop the lowest grade, do a simple average, and then use the Number/Grade Equivalency chart (below). You will know where you stand in the class regarding your grade at any particular point in time.

NECC Grading System

Grade	QP Value	Numeric Range/Comment
A	4.00	93-100
A-	3.70	90-92
B+	3.30	87-89
B	3.00	83-86
B-	2.70	80-82
C+	2.30	77-79
C	2.00	73-76
C-	1.70	70-72
D+	1.30	67-69
D	1.00	60-66
F	0.00	59 or less; failure; no credit earned
W	0.00	Withdrawal from course by student within withdrawal period
NW	0.00	Non-participation withdrawal grade assigned by instructor within withdrawal period

Accessibility/Learning Disabilities

Northern Essex Community College is committed to providing equal access to students with documented disabilities. To ensure equal access to this class (and your program) please contact the Learning Accommodations Center (LA Center) or Deaf and Hard of Hearing Services (DHHS) to engage in a confidential discussion about accommodations for the classroom and clinical/practicum settings. Accommodations are not provided retroactively. Students are encouraged to register with the LA Center at the start of their program.

As your instructor, I feel I have a responsibility to do everything within reason to actively support a wide

range of learning styles and abilities. As such, I have taken training and applied the principles of Universal Design for Learning (UDL) to this course. Feel free to discuss your progress in this course with me at any time. In addition, if you require any accommodations, submit your verified accommodations form to me during the first two weeks of the course.

Learning Accommodations Center:

Serving students with documented disabilities, such as learning disabilities, attention deficit disorders, autism spectrum disorders, brain injuries, chronic illness, low vision/blind, physical disabilities, psychiatric disabilities and seizure disorders.

Deaf and Hard of Hearing Services (DHHS):

Serving students who are Deaf or Hard of Hearing
Accommodations are not provided retroactively. Students are encouraged to register with the LA Center or DHHS at the start of their program.

Contact information during Co-Vid 19:

The Learning Accommodations Center is scheduling remote appointments from 9:00 am to 5:00 pm. There are no face to face appointments being scheduled at this time. Communications can be flexible based on student's needs and may consist of the following communication options: email, phone, Zoom, Skype, and text messaging. To get started, students may contact us as outlined below:

- Call the LA Center main number 978-556-3654 or email lacenter@necc.mass.edu
- DHHS call 978-241-7045 (VP/Voice) or email deafservices@necc.mass.edu
- To request an Interpreter or communication access email: interpret@necc.mass.edu

Statement on Plagiarism and Academic Integrity

As students pursuing a career in the medical sciences, you will someday be in a position with medical or other important responsibilities. The health and well-being of the people you work with and for is paramount in importance. To operate competently in such positions, a strong foundation in anatomy and physiology is essential. Towards this end, exams serve as weigh points along your road to success. They indicate that your progress is proceeding well, and you are succeeding in your career goals at this time. But to assure that this process proceeds well, academic integrity and ethical behavior are vital. To receive a grade that does not accurately reflect your knowledge and skill undermines your academic progress and puts you at risk of not fulfilling your goals or potentially harming others in your care. All future course work and clinical activity will stand squarely on the shoulders of the knowledge base that you are laying down now.

All work done on assessments and practicals must be your own. You are encouraged to work together, to prepare together, to collaborate, but when an exam is done, the work must be your own. Therefore, the following guidelines are established to help guide you in an ethical and legitimate approach to your assessments.

1. When exams are taken, no electronic devices may be on.
2. No web browsers or other sources of information may be used.
3. Violation of the above will result in one of the following
   - a "0" on the exam

- an "F" for the Course
- a meeting with the dean of students who would assess the infringement and follow college disciplinary procedures.

NECC Outcomes Assessments

NECC's commitment to student success involves the evaluation of student work at the program, department, and/or campus levels to help ensure that students are achieving the learning outcomes identified by our programs and the college. This process may include the collection of such evidence as student classroom products or classroom-associated reports of student knowledge or skill demonstrations. All collected products will have any identifying information removed before they are reviewed. Results from these reviews are then aggregated to provide an overall view of students' outcomes achievements. Assessments carried out at the program, department, and/or campus levels will not impact students' course grades. The process of assigning grades will continue to be the responsibility of the course instructors. Any student who does not wish to have their products collected for program, department, or campus-level assessment can opt out by notifying their instructor.

Getting Help

I am here to help you with this course and to make this an enjoyable and worthwhile experience. If you would like assistance outside of class, please send me an email to arrange an appointment on Zoom. Please do not wait until the last moment to ask for help. Remember, I am just an e-mail away.

Additional Educational Services

Tutoring: NECC also offers FREE tutoring and other services at:
https://www.necc.mass.edu/succeed/academic-support-services/tutoring-center/

Lecture Syllabus

Below is a tentative by probable schedule of topics and dates. The schedule could be adjusted should unforeseen circumstances occur. Note, the modules below always start on a Wednesday, and the assessment for that module can be anticipated the following Wednesday. It is best to take the assessment first before starting the new module.

Assignments

At the start of a Module Start Date, a particular Lecture Topic will be under consideration. Your assignment is to use the resources provided to you to begin mastering that topic in preparation for an exam on that topic. As mentioned above, read the Learning Guide found on Blackboard for particular guidance on how to approach the material. The Lecture Outline will provide structure and organization for the lecture content, and it provides room to take notes. And supplemental handouts will reinforce and expand on anatomical and physiological topics of particular importance or complexity. And in the lecture videos, I will walk you through all (with a few exceptions) the material.

For any particular Module start date, this will also serve as the date of assessment for material for a previous unit. So, before you start the new unit, take the required exam for that day first. For example:

On September 9 we will start the discussion on Chemistry of Life, but before you begin this unit, take Exam #1 on Organization of the Human body. Please have exams done by midnight.

On September 30, we will start the module on Histology, but before you begin this unit, take Exam #3 on Cytology. Please have exams done by midnight.

Module Start Date	Lecture Topic	Notes
September 9	→ Start Module #1 - Organization of the Human Body	
September 16	Exam #1 - Organization of the Human → Start Module #2 - Body Chemistry of Life	Exam to be completed by 11:59 pm
September 23	Exam #2 – Chemistry of Life → Start Module #3 - Cytology	Exam to be completed by 11:59 pm
September 30	Exam #3 - Cytology → Start Module #4 - Histology	Exam to be completed by 11:59 pm
October 7	Exam #4 - Histology → Start Module #5 - The Integumentary System	Exam to be completed by 11:59 pm
October 14	Exam #5 – The Integumentary System → Start Module #6 - Skeletal Tissue	Exam to be completed by 11:59 pm
October 21	Exam #6 – Skeletal Tissue → Start Module #7a - Axial Skeletal System	Exam to be completed by 11:59 pm
October 28	Lab Practical #1 – The Histology Practical → Start Module #7b - Appendicular Skeletal System	Exam to be completed by 11:59 pm
November 4	No Exam → Start Module #8 - Articulations	
November 11	Exam #7 – Articulations	Exam to be completed

	→ Start Module #9 - Glycolysis & Cellular Respiration	by 11:59 pm
November 18	Exam #8 – Glycolysis and Cellular Respiration → Start Module #10 - Myology	Exam to be completed by 11:59 pm
November 25	No Exam → Thanksgiving Break	
December 2	Lab Practical #2 – The Bone Practical → Start Module #11 - Nervous Tissue	Exam to be completed by 11:59 pm
December 9	Exam #9 – Myology → Start Module #12a - Spinal Cord	Exam to be completed by 11:59 pm
December 16	Exam #10 – Nervous Tissue → Start Module #12b - Brain, & Autonomic Nerv. Sys.	Exam to be completed by 11:59 pm
December 23	Exam #11 – Spinal Cord, Brain, and Autonomic Nervous System → No Lecture	Exam to be completed by 11:59 pm

Distance Education Course Interaction Plan (Form DE-2)

This form is to be completed by the faculty of record. Students enrolled in this distance education course shall receive a copy of this completed form.

Course Title: *Anatomy and Physiology I*
Faculty: *Noel Ways*
Email: *nways@necc.mass.edu*

√ Asynchronous Course ☐ Synchronous Course

Asynchronous: This form of distance education is characterized by an emphasis on "learning on demand" or "as needed communication" between students and faculty from multiple locations at times convenient to participants.

Synchronous: This form of distance education entails the use of live, two-way communication among and/or between students and faculty in a scheduled or "fixed" point(s) of time(s), much like classroom-based instruction.

This course may include, but not be restricted to, the following interactions:

	YES	NO
1. in person meetings	☐	√
2. telephone interactions	☐	√
3. electronic interactions (email, internet …)	√	☐

If yes, dates, times, places are to be specified.

Students are required to engage in the following interaction(s) for successful completion of this course:

Discussion board promotes student-student and student-instructor interactions.

Student study groups will be organized the first week of the semester and are designed to foster group learning. Students will be contacted the first week of classes regarding study group participation and organization.

Interactions between student-instructor interactions occur biweekly via email and announcements. Should a follow-up meeting be necessary, an online zoom meeting will be scheduled at a mutually acceptable time.