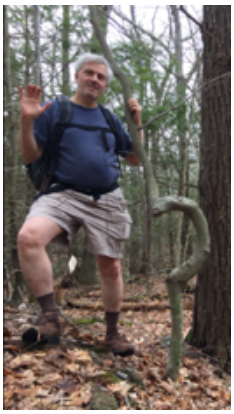
Northern Essex Community College
Department of Science, Technology, Engineering, and Mathematics
BIO 121 B2B – Anatomy and Physiology I
Spring 2022

Welcome

Welcome to Anatomy and Physiology I. My name is Noel Ways. I am a biologist by training, and over the past 30 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

BIO 121 B2B – Anatomy and Physiology I **CRN:** 1417
Campus/Room: L015
Class Meeting Time: Wednesday 6 – 8 pm
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.

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, immediately after class always works. Alternatively, a Zoom video teleconference can be scheduled at a mutually acceptable time. On Blackboard, you will find a "Zoom Office Hours" link.

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. This course is a hybrid presentation of the curricula. As such, we will be meeting weekly, face-to-face for the purposes of module introduction, assessment, and laboratory work. Concurrently, an online component will walk the students through course content on a module by module basis.

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, the 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 medical reports and reading 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 a working knowledge of the body's major bones and the 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 • 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 work 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):** Anatomy & Physiology, by OER Commons
- Note, the textbook is obtained as a free online resource, and can be accessed at: https://www.oercommons.org/courses/anatomy-and-physiology-4/view
- **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, other course material resources are linked on blackboard.

Zoom Links – "Office Hours Link"

Office Hours

Join Zoom Meeting
https://zoom.us/j/97324652145

Meeting ID: 973 2465 2145
One tap mobile
+13017158592,,97324652145# US (Washington DC)
+13126266799,,97324652145# US (Chicago)

Dial by your location
+1 301 715 8592 US (Washington DC)
+1 312 626 6799 US (Chicago)
+1 929 205 6099 US (New York)
+1 253 215 8782 US (Tacoma)
+1 346 248 7799 US (Houston)
+1 669 900 6833 US (San Jose)
Meeting ID: 973 2465 2145
Find your local number: https://zoom.us/u/aywfgaH2l

Join by SIP
97324652145@zoomcrc.com

Join by H.323
162.255.37.11 (US West)
162.255.36.11 (US East)
115.114.131.7 (India Mumbai)
115.114.115.7 (India Hyderabad)
213.19.144.110 (Amsterdam Netherlands)
213.244.140.110 (Germany)
103.122.166.55 (Australia Sydney)
103.122.167.55 (Australia Melbourne)
149.137.40.110 (Singapore)
64.211.144.160 (Brazil)
149.137.68.253 (Mexico)
69.174.57.160 (Canada Toronto)
65.39.152.160 (Canada Vancouver)
207.226.132.110 (Japan Tokyo)
149.137.24.110 (Japan Osaka)

Meeting ID: 973 2465 2145

Join by Skype for Business
https://zoom.us/skype/97324652145

Course Requirements

Method of instruction

This course will be delivered in a hybrid format where there will be both an online component and an in-class component. The online component will utilize resources available through Blackboard and the instructor's website, to which Blackboard is linked and will be aimed at the delivery of course curricular content. The In-class component will involve weekly meetings on campus for module introduction, laboratory work, and assessment. Each lecture/module will have a ***Learning Guide*** that will guide 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 will be administered on campus during regularly scheduled class time. 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" in the Getting Started folder on Blackboard.

Workload

We all come from different backgrounds, varying employment obligations, 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 into one's daily routine. And scheduling 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, but it is crucial to determine your individual learning requirements.

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 I is a content-heavy course. Your primary assignment for each lecture topic is to build for yourself 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 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 provides students with different ways to access the content, demonstrate mastery, and reinforce 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 basis 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. Note, if something is on the outline you are responsible for it, even if I do not talk about 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.

Exams and Make Up Work

Exams are taken in class on the day designated on the course schedule. Exams are designed to demonstrate your mastery of the material presented and therefore are to be done individually and without the support of notes, text, or other resources.

Exams consist of a variety of question types listed below. For details, see the "Assessments" document online.

- True and False
- Matching
- Fill in the Blanks
- Illustrations
- Guided Essays
- Short Answers

Makeup Exams are to be avoided! But if a makeup is needed, ***documentation*** is required to certify that the need is legitimate. If documentation is not presented, a makeup 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. If there is to be a makeup, this task should be accomplished within a week that the student returns to school. Contact me so that a time and a date can be coordinated.

Communication and interaction:

Weekly scheduled class times provide opportunity to provide guidance, answer questions, and interact in a classroom setting. Beyond this, email and blackboard announcement will be provide a platform for the

answering of questions. Another venue may be scheduling a meeting using Zoom. Students are also encouraged to form online study groups. I have found that students who study together and talk through the material tend to excel.

Blackboard

Please make sure to log in to the Blackboard site daily. Announcements, class resources and all assessments will be handled through Blackboard. I will also regularly 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. 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** are 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 in class.

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 weighted equally. Always record your grades! You will want to do this to ascertain how you are doing in the class and 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 except for the last unit. To calculate your grade: 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 Center for Accessibility Resources & Services or Deaf and Hard of Hearing Services (DHHS) to engage in a confidential discussion about accommodations for the classroom and clinical/practicum settings.

Center for Accessibility Resources & Services (formerly 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: Serving students who are Deaf or Hard of Hearing.
Accommodations are not provided retroactively. Students are encouraged to register with the Center for Accessibility Resources & Services at the start of their program.

The Center for Accessibility Resources & Services is scheduling appointments Mondays through Fridays. Communications/meetings can be flexible based on student's needs and may consist of the following options: Zoom, Phone, In-Person or Email.

Following CDC guidelines, individuals who are not vaccinated should always wear masks while on campus to mitigate their risk of catching and spreading COVID-19.

To get started, students may contact the Center for Accessibility Resources & Services as outlined below:
Call Center for Accessibility Resources & Services main number 978-556-3654 or email centerforaccess@necc.mass.edu.
Deaf and Hard of Hearing Services call 978-241-7045 (VP/Voice) or email or email deafservices@necc.mass.edu.
To request an Interpreter or communication access email: interpret@necc.mass.edu
Individual staff members can be contacted via email

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 allied health professions, 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 you are lying down now.

All work done on assessments and practicals must be your own. You are encouraged to work together, prepare together, and collaborate, but the work must be your own when an exam is done. 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 but 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.

Assignments

On 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 a previous module. So, before we start a new unit, the assessment of the previous module will be administered. For example:

On January 26 we will start the discussion on Chemistry of Life, but we will do the Exam on Organization of the Human body before you begin this unit.

On February 2, we will start the module on Cytology, but we will do the Exam on the Chemistry of Life before we begin this unit.

SCHEDULE - Spring 2022 - Bio 121 B2B

New Module
START DATES

January 19 — Due to Covid related issues, Jan 19 is no longer the start date
- ❊ *No Class*

January 26
- → Start Module #1 - Organization of the Human Body
  - ❊ In Class – Discuss select issues in Module #1

February 2 — Exam #1 – Organization of the Human Body
- → Start Module #3** – Cytology *(**Note: due to a delayed college opening Module #2 is no longer on the syllabus)*
  - ❊ In Class – Use of Microscope, Introduction to Cytology

February 9 — Exam #3 – Cytology
- → Start Module #4 - Histology
  - ❊ In Class – Histology Lab: Epithelia

February 16 — Exam #4 – Histology
- → Start Module #5 - The Integumentary System
  - ❊ In Class – Histology Lab: Connective Tissues

February 23 — Exam #5 – The Integumentary System
- → Start Module #6 - Skeletal Tissue
  - ❊ In Class – Histology Lab Continued

March 2 — Exam #6 – Skeletal Tissue
- → Start Module #7a - Axial Skeletal System
  - ❊ In Class – Axial Skeletal System Laboratory

March 9 Lab Practical #1 – The Histology Practical
- → Start Module #7b - Appendicular Skeletal System
- → Start Module on Articulations (Start over Spring Break, if you like)
  - ❊ In Class – Appendicular Skeletal System Laboratory

March 16 No Exam – Spring Break
- → Continue review of Skeletal System
  - • No Class – continue review of skeletal system

March 23 Exam #7 – Articulations
- → Continue Skeletal System / Review
  - ❊ In Class – Skeletal System Review

March 30 Lab Practical #2 – The Bone Practical
- → Start Module #9 - Glycolysis and Cellular Respiration
  - ❊ In Class – Introduction to Cellular Energetics

April 6 Exam #8 – Glycolysis and Cellular Respiration
- → Start Module #10 - Myology
  - ❊ In Class – Sliding Filament Theory

April 13 Exam #9 – Myology
- → Start Module #11 - Nervous Tissue
  - ❊ In Class – Impulse Propagation

April 20 No Exam
- → Start Module #12a - Spinal Cord
  - ❊ In Class – Spinal Cord Anatomy

April 27 Exam #10 – Nervous Tissue
- → Start Module #12b - Brain, and Autonomic Nervous System
  - ❊ In Class – Brain Dissection

May 4 Exam #11 – Spinal Cord, Brain, and Autonomic Nervous System

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*

In-class Meetings: Yes Asynchronous Course: Yes Synchronous Course: No

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.

In-class: This form of education does not involve distance learning. Students and instructors meet in class on campus on fixed days and times and locations.

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

	YES	NO
1. in person meetings on campus	√	☐
2. in person meetings (via Zoom)	√	☐
3. telephone interactions	☐	√
4. 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:

In person meetings on campus will be held on Wednesday evenings from 6:00 pm – 8:00 pm where we meet and interact with course content, laboratory exercise, and assessment purposes.

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

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