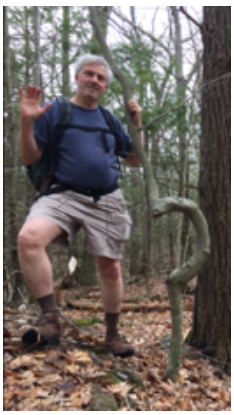
Northern Essex Community College
Department of Science, Technology, Engineering, and Mathematics
BIO 121 B2B (CRN: 1362) – Anatomy and Physiology I
Fall 2023

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, email me, and we will schedule meeting using Zoom video teleconferencing software program during a mutually acceptable time. On Blackboard, you will find a "Zoom Office Hours" link.

Welcome

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.
Credits: 4
Class: Wednesday from 6:00 – 8:00, Lawrence Campus, Room L-015

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 class has both a online and in-class components. For the in-class component we meet on Wednesday from 6:00 – 8:00, Lawrence Campus, Room L-015.

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 done either in class or on Blackboard. The course schedule below will indicate when and how exams are given. It is important you refer to the schedule weekly as to not miss any exams. 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. So, there is an honor system here. The exams are also timed. You will have enough time to read the question, pause, and put down an answer.
So, in order to make sure that this process goes well, master the material well before the exam date.
Also, there is no backtracking, and the exams must be done in one sitting.

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. But 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:

Throughout the semester, I will be contacting you on a weekly basis to offer you advice, provide comments, and give reminders. If your questions have class-wide import, the questions may be answered and shared with the class. The best place to ask questions is the "Student Interaction Board" on the blackboard; therefore, all students will profit from the questions and the answers.
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 AT LEAST once a day. 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. On the day of an exam, the exam will be found in the appropriate folder at the bottom of the list (i.e., Exam #1 will be in the "Organization of the Human Body" folder; Exam #2 will be in the "Chemistry of Life" folder).

Exam #1	Organization of the Human body	100 points
Exam #2	Chemistry of Life, part #1	100 points
Exam #3	Chemistry of Life, part #2	100 points
Exam #4	Cytology	100 points

Exam #5	Histology	100 points
Exam #6	Integumentary system	100 points
Exam #7	Skeletal (Osseous) Tissue	100 points
Lab Exam #1	Histology Practical	100 points
Exam #8	Articulations	100 points
Exam #9	Glycolysis and Cellular Respiration	100 points
Lab Exam #2	Laboratory Practical on Skeletal System	100 points
Exam #10	Myology	100 points
Exam #11	Nervous Tissue	100 points
Exam #12	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 (CARS) 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: 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 CARS or DHHS 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 communication options: Zoom, Phone, In-Person or Email.
To get started students may contact us as outlined below:

- **Call** the **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 deafservices@necc.mass.edu.**
- **To request an Interpreter or communication access email: interpret@necc.mass.edu**
- **Individual staff members can be contacted via email**

COVID vaccinations are required to be on campus. NECC is a mask optional campus, however, please consider wearing a mask on campus to mitigate the risk o catching and spreading COVID-19. For current information please visit: Coronavirus Information and Updates and Student COVID-19 Vaccination Requirement.

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. It is best to take the assessment first before starting the new module.

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.

Because this particular course has a significant online component, dates and exams are staggered throughout the week. Therefore, it is imperative that you look closely at the schedule weekly. The reason for such staggering is to optimize our in-class time.

SCHEDULE - Spring 2023 - Bio 121 B2B

New Module
START DATES

Exams on Blackboard must be completed between 8 am and 12 midnight on the day

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January 18 (Wed) → Start Module #1 – Introduction to the Human Body
- ❊ *In Class* – Homeostasis

January 25 (Wed) Exam - Introduction to the Human Body
→ Start Module #2 - Chemistry of Life
- ❊ *In Class* – Buffer Systems and Emulsification

February 1 (Wed) Exam – Chemistry of Life, Part 1
- ❊ Continue Chemistry of Life

February 8 (Monday) Exam – Chemistry of Life, Part 2 on Blackboard
→ Start Module #3 – Cytology
(Review all videos before class, Wed, Feb 8)

February 8 (Wed)
- ❊ Continue Cytology
- ❊ How to use a microscope

February 15 (Wed) Exam – Cytology
→ Start Module #4 - Histology
- ❊ *Histological examination of Tissues in Lab*

February 22 (Wed) Exam – Histology
→ Start Module #5 - The Integumentary System
- ❊ *Histological examination of Tissues in Lab*

March 1 (Wed) → Start Module #7a - Axial Skeletal System

March 2 (Thursday) Exam – Integumentary System on Blackboard

March 8 (Wed) → Start Module #7b - Appendicular Skeletal System

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March 10 (FRIDAY) Lab Practical #1 – The Histology Practical on Blackboard

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March 12-19 Spring Recess, No day nor evening Classes
- ❊ Continue review of both Axial and Appendicular SS

→ Start Module #8 - Articulations

March 20 (Monday)	Exam – Articulations on Blackboard
March 22 (Wed)	Lab Practical #2 – The Bone Practical (Axial and Appendicular) ➔ Start Module – Osseous Tissue ❊ *In Class* – Introduce Glycolysis and Cellular Resp.
March 29 (Wed)	Exam – Osseous Tissue ➔ Start Module #9 - Glycolysis and Cellular Respiration
April 4 (Tuesday)	Exam – Glycolysis and Cellular Respiration on Blackboard
April 5 (Wed)	➔ Start Module #10 - Myology
April 12 (Wed)	Exam – Myology ➔ Start Module #11 - Nervous Tissue ❊ *In Class* – Introduce Nervous Tissue
April 19 (Wed)	Exam – Nervous Tissue ➔ Start Module - Spinal Cord ❊ *In Class* – Spinal Reflexes
April 26 (Wed)	➔ Start Module #12b - Brain, and Autonomic Nervous System ❊ *In Class* – Brain Dissection (Bring Goggles and Gloves to Class)
May 3 (Wed)	*No Class, Formal Classes end May 1 @ NECC* ❊ *Continue mastery of CNS*
May 8 (Monday)	*Final Exam (Non-cumulative) on Blackboard* – Nervous System

Spring, 2023 – Academic Calendar, partial

This partial calendar is redacted from the official NECC academic calendar, which can be found at the link below. Dates and events having little relevance to this course have been removed. Dates *of particular importance are in BOLD.*

https://necc.smartcatalogiq.com/en/2022-2023-Updated/Catalog/Academic-Calendar

Martin Luther King Day (College closed)	January 16
Winter Convocation	January 17
Classes begin	**January 18**
ADD/DROP PERIOD for Full Semester and Session I classes Adding, Dropping or Withdrawing from a Course	January 18-24
Last day to add ONLINE classes if there is space available	January 20
To receive a full refund for Full Semester and Session I, classes must be dropped by the close of business See Student Affairs Hours and Refund Policy	January 25
Withdrawal period begins for Full Semester and Session I classes	January 26
No Show (NS) roster due by noon for Full Semester and Session I classes	February 3
President's Day (College closed)	**February 20**
Spring Break (No classes)	**March 12-19**
No Show (NS) rosters due for Session II classes	March 31
NECC Professional Day (No Day classes, Evening classes will meet)	March 31
Summer and Fall Advising and Registration begins	April 3
Last day to withdraw with "W" for Full Semester classes	**April 14**
Patriot's Day (College closed)	**April 17**
Last day of classes before Final Exams	**May 1**
Finals Exam Period (See Final Exam Schedule)	**May 2-8**
Spring Semester officially ends for students	May 8
Makeup day for Final Exams (Day classes)	May 10
Grades due by noon	May 10
61st Annual Commencement	May 13
Grades/GPA/Academic Status posted	May 15

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 (via Zoom)	√	☐
2. telephone interactions	☐	√
3. electronic interactions (email, internet …)	√	☐

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

Synchronous Zoom meeting will be held on **Thursdays evenings from 6:00 – 8:20**

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.

Weekly synchronous class meeting will occur where we meet and interact with course content, particular with material that could be more challenging.

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.