

Northern Essex Community College
Department of Science, Technology, Engineering, and Mathematics
BIO 121 O1A (CRN: 1464) – Anatomy and Physiology I
Spring 2024

Instructor Contact Information

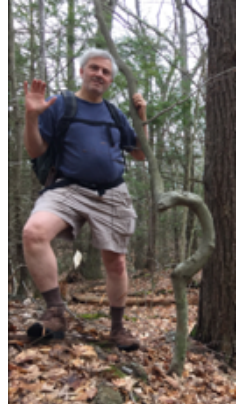
Instructor: Noel Ways

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 a meeting using the 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

Name: Anatomy and Physiology I

Course Number: Bio 121 O1A **CRN:** 1464

Presentation Modality: Fully online (Asynchronous)

Dates: January 22 – May 11 (~16 weeks)

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. This an online asynchronous class where students work independently of classroom instruction.

Collage Course Description

The basic principles of chemistry are reviewed, and the basic principles of biology are introduced. An introduction to the study of the structure and functioning of the human body follows these. The 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 toward this aim. Looking toward this end, the general course objectives listed below expand on the overall course description. As the course flow ensues, you will find that the course topics and laboratory work will align with these objectives.

- Develop a working knowledge of anatomical terminology applicable for 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 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 considering 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 maintaining normal blood calcium levels.
- Compare and contrast the stages in the process of healthy bone growth.
- Develop a working knowledge of the body's bones and the numerous processes, fosses, etc.
- 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 sympathetic and parasympathetic nervous activity under various degrees of stress and rest.

Course Materials

- **Textbook (Required):** Anatomy & Physiology, by OER Commons. Note, that 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:** Websites 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 online, utilizing resources available through Blackboard and the instructor's website, to which Blackboard is linked. Each lecture/module will have a **Learning Guide** to 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 should be completed before beginning the next lecture sequence. These exams will cover material covered in the outlines, handouts, and videos. The exams are noncumulative, but any 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 and have varying employment obligations, family relationships, and responsibilities that we must maintain. With the various pulls on our time and resources, scheduling another major activity into one's daily routine can sometimes be difficult. 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 to ensure success.

Typically, 2-3 hours must be set aside daily to master the material. However, this is highly individualistic, but it is crucial to determine your unique learning requirements.

I also encourage you to talk to those important in your life about your educational needs at this juncture in your 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 essential 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 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 histological samples, which 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 assessment forms provides students with different avenues 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 it is not, 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**, I will talk through the lecture content closely following the outline. Note, if something is on the outline you are responsible for it, even if I do not discuss it. Nevertheless, it will require TIME to review the outlines, view associated videos, and study the handouts to understand the material. Regarding laboratory material, mastery of the anatomical characteristics of tissue, bones, organs, etc., and associating appropriate functions with them will be necessary.

Exams and Make-Up Work

Exams will be taken on Blackboard on the day designated on the course schedule. Exams are designed to demonstrate 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, to ensure 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 to the grade is made at the instructor's discretion. This adjustment typically reduces 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 of the student's return to school. Contact me so that a time and a date can be coordinated.

Communication and Interactions

Weekly scheduled class times provide an opportunity to provide guidance, answer questions, and interact. Beyond this, email and blackboard announcements will provide a platform for answering 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. Committing 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 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, 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 #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 something is ever (there rarely is) questionable. You can always email me if you have a question.

Grade Calculation - The assignment of a final semester grade will depend upon completing all lecture exams and lab practicals. All exams are weighted equally. The lowest grade may be dropped except for the last unit of all the exams given. 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 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 of 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 essential responsibilities. The health and well-being of the people you work with and for are paramount. 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 you are progressing well and succeeding in your career goals. But to ensure 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 coursework 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 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

A particular Lecture Topic will be considered on a module start date. 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 on Blackboard for particular guidance on approaching the material. The Lecture Outline will provide structure and organization for the lecture content, and it provides room to take notes. 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 typically serve as the assessment date for a previous module. So, before we start a new unit, the assessment of the previous module will be administered. For Spring 2024 – Noel Ways

example:

On February 5 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.

SCHEDULE - Spring 2024 - Bio 121 O1A

Lecture: Presented Asynchronously Online

Lab: Presented Asynchronously Online

Below is a tentative but probable schedule of topics and dates. The schedule may be modified due to unforeseen circumstances.

NOTE: the lowest exam grade may be dropped with the exception of the last unit:

- Nervous System Exams (covers 2 exams)

→ **Exam Administration** - exams administered on **BLACKBOARD** will open at 8 am and must be completed by 11:59 pm. Please plan accordingly.

→ **Unexpected College Closures or Interruptions** - Should there be an unforeseen college closure or interruption of college online services, revised scheduling will be announced and posted as soon as possible.

January 22 (**Mon**) → Start Module #1 - Organization of the Human Body

January 29 (**Mon**) Exam #1 - Organization of the Human Body
→ Start Module #2 - Body Chemistry of Life

February 5 (**Mon**) Exam #2 – Chemistry of Life, Part #1
→ Continue the Chemistry of Life

February 7 (**Wed**) Exam #2 – Chemistry of Life, Part #2
→ Start Module #3 – Cytology

February 13 (**Tues**) Exam #3 - Cytology
→ Start Module #4 – Histology

February 21 (**Wed**) Exam #4 - Histology
→ Start Module #5 - The Integumentary System

February 28 (**Wed**) Exam #5 – The Integumentary System
→ Start Module #7a - Axial Skeletal System

| | |
|-----------------|--|
| March 7 (Thurs) | Lab Practical #1 – The Histology Practical → Start Module #7b - Appendicular Skeletal System → Start Module #8 – Articulations |
| March 10-17 | Spring Break → Continue mastery of Skeletal System in preparation for Bone Laboratory Practical |
| March 20 (Wed) | Exam #7 – Articulations → Start Module – Osseous Tissue |
| March 27 (Wed) | Exam #8 – Osseous Tissue → Start Module #9 - Glycolysis & Cellular Respiration |
| April 3 (Wed) | Exam #8 – Glycolysis and Cellular Respiration → Start Module #10 – Myology |
| April 10 (Wed) | Exam #9 – Myology → Start Module #11 - Nervous Tissue |
| April 17 (Wed) | Lab Practical #2 – The Bone Practical |
| April 24 (Wed) | Exam #10 – Nervous Tissue → Start Module #12a - Spinal Cord |
| May 1 (Wed) | → Start Module #12b - Brain, & Autonomic Nerv. Sys. |
| May 10 (FRIDAY) | Exam #11 – Spinal Cord, Brain, and Autonomic Nervous System → No Lecture |

NORTHERN ESSEX COMMUNITY COLLEGE

ACADEMIC CALENDAR, ABRIDGED

Spring 2024

- Official NECC [Academic Calendar](#)

Below is an *abridged* rendition of the Academic Calendar.
Click the link above for the official NECC Academic Calendar.

| | | |
|---|---------------|------------|
| Martin Luther King Day (College closed) | January 15 | (Monday) |
| Classes begin | January 22 | |
| ADD/DROP PERIOD for Full Semester and Session I classes | January 22-29 | |
| Withdrawal period begins for the Full Semester and Session I classes | January 30 | |
| To receive full refund for Full Semester or Session I, classes must be dropped by the close of business. See Student Affairs Hours and Refund Policy | March 25 | |
| Last day for change of major non-criteria programs | February 2 | |
| Course audit forms due to Enrollment Services | February 5 | |
| President's Day (College closed) | February 19 | (Monday) |
| Last day to withdraw with "W" for Session I classes | February 23 | |
| To receive full refund for Session II, classes must be dropped by the close of business. See Student Affairs Hours and Refund Policy | March 25 | |
| Spring Break (No classes) | March 10-17 | |
| Web registration ends at midnight for Session II classes | March 17 | |
| Session II classes begin | March 18 | (Monday) |
| ADD/DROP PERIOD for Session II classes Adding, Dropping or Withdrawing from a Course | March 18-25 | |
| To receive full refund for Session II, classes must be dropped by the close of business. See Student Affairs Hours and Refund Policy | March 25 | |
| NECC Professional Day (No Day classes, Evening classes will meet) | March 29 | (Friday) |
| No Show (NS) rosters due for Session II classes | April 12 | |
| Last day to withdraw with "W" for Full Semester classes | April 12 | (Friday) |
| Patriot's Day (College closed) | April 15 | (Monday) |
| Last day to withdraw with "W" for Session II classes | April 19 | |
| Last day of classes before Final Exams | May 4 | (Saturday) |
| Finals Exam Period (See Final Exam Schedule) | May 6-11 | |
| Spring Semester officially ends for students | May 11 | |
| Makeup day for Final Exams (Day classes) | May tba | (TBA) |
| Grades due by noon | May 14 | (Tuesday) |
| Grades/GPA/Academic Status posted | May 16 | (Thursday) |

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: No

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 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, times, and locations.

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

| | YES | NO |
|--|--------------------------|--------------------------|
| 1. in-person meetings on campus | <input type="checkbox"/> | ✓ |
| 2. In-person meetings (via Zoom), by appointment | ✓ | <input type="checkbox"/> |
| 3. telephone interactions | <input type="checkbox"/> | ✓ |
| 4. electronic interactions (email, internet ...) | ✓ | <input type="checkbox"/> |

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

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

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.