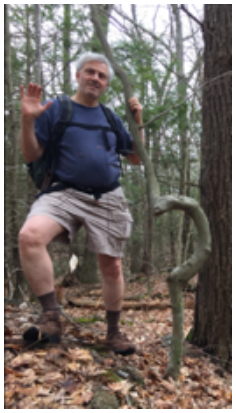
Northern Essex Community College
Department of Science, Technology, Engineering, and Mathematics
BIO 122 O1A – Anatomy and Physiology II
Summer II, 2024

Welcome



Welcome to Anatomy and Physiology II. My name is Noel Ways. I am a biologist by training, and for over 30 years, I have had the privilege to teach both A&P I and A&P II hundreds of times. Oddly, the content 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 II
Course Number: Bio 122 O2A **CRN:** 5125
Presentation Modality: Fully online (Asynchronous and Accelerated)
Dates: July 1 – August 8 (~6 weeks)
Credits: 4 Credit Hours. 3 Lecture hours, 2 Lab hours
Prerequisites: BIO 121 Anatomy and Physiology I

Instructor Contact Information

Instructor: Noel Ways
Email: nways@necc.mass.edu
Virtual Office Hours: As our schedules vary dramatically, specific "office hours" that works 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. You will find a "Zoom Office Hours" link on Blackboard.

College Course Description

A continuation of BIO121 Anatomy & Physiology I. Systems covered are circulatory, endocrine, reproductive, urinary, digestive and respiratory. (3 hours of lecture and 2 hours of lab per week.)

General Course Description

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

basis.

The course will commence with a three-week study of the cardiovascular system, followed by an in-depth view of the lymphatic system and aspects of the immune system. Following this, the other organ systems to be examined are the digestive, urinary, and reproductive systems. Other subjects of particular relevance may be discussed at appropriate points in the lecture sequence.

The course's laboratory component is designed to give the students a "hands-on" appreciation of the anatomical considerations discussed in the lecture and to familiarize the student with some of the more basic physiological concerns related to gross anatomy. This course component will be delivered online using online and video resources.

General Course Objectives

As we endeavor to prepare you for a career in the allied health professions, specific goals and benchmarks have been established for 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.

Module - Blood

- Distinguish between the formed elements of the blood by name and function.
- Describe erythrocyte production and regulation.
- Describe hemostasis and the control of blood clotting.
- Illustrate the CO_2 gas transport as it involved erythrocytes.
- Compare and contrast leukocyte functions in fighting infection.

Module - Heart

- Identify the name and functions of the structures of the heart.
- Explain the cardiac cycle, integrating electrical activity, pressure issues, EKG, heart sounds, and blood flow.
- Describe how cardiac output is controlled.

Module – Vessels and Routes

- Compare and contrast how the tissues of blood vessels and how tissue differences affect the specific functions of various vessel types.
- Identify specific major blood vessels in the body.
- Describe the vessels of and function of the hepatic portal system and the hypothalamic hypophyseal portal system.
- Describe the fluid exchange of capillaries and fluid return to the heart.
- Illustrate blood pressure regulation.

Module – Lymphatic System

- Identify the name and functions of lymphatic organs.
- Describe the relationship of various organs to the particular functions in the immune response and other blood maintenance activities.

Modules – Nonspecific Host Immunity *and* Adaptive Immunity

- Explain the essential components of both nonspecific and specific host immune responses.
- Critique the complement system and place of interferon in the immune system.

Module – Respiratory System

- Identify the major organs of the respiratory system and their functions.
- Explain the mechanism of gas transport.
- Describe the anatomy and physiology of the larynx and sound production.
- Explain how lungs are "inflated" and what happens in pneumothorax.
- Explain the mechanisms that affect the oxygen-carrying capacity of hemoglobin.

Module – Digestive System

- Identify the major organs of the digestive system and their functions.
- Describe gastric regulation
- Describe the process of lipid digestion and transport

  Describe the process of deglutition

Module – Urinary System

- Identify the major organs of the urinary system and their functions.
- Compare and contrast nephron components in terms of their anatomy and physiology

Modules – Male Reproductive System *and* Female Reproductive System

- Identify the structures and functions of major organs of the reproductive system
- Describe the hormonal regulation of spermatogenesis
- Describe and integrate the physiology of both the uterine cycle and the ovarian cycle
- Illustration of several examples of hormonal regulation in the body

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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 Link - "Office Hours Link"

Office Hours

Join Zoom Meeting
https://zoom.us/j/96233097264

Meeting ID: 962 3309 7264
One tap mobile
+13017158592,,96233097264# US (Washington DC)
+13126266799,,96233097264# 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: 962 3309 7264
Find your local number: https://zoom.us/u/adSc6HD29O

Join by SIP
96233097264@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: 962 3309 7264

Join by Skype for Business
https://zoom.us/skype/96233097264

Course Presentation – 6 weeks, Asynchronous/Online Modality

This course is delivered Asynchronously online, where the students where students work independently outside a traditional classroom and laboratory setting.

The course content is organized into modular components to facilitate accessibility, clarity, and organization to this process. Each module will have the following components:

- **Learning Guide** - A Learning Guide will guide the student through the supportive readings, videos, animations, and other media under consideration for any particular lecture/module. This document provides tips on approaching the material and issues of specific concern relating to the associated exam.
- **Lecture Outline** - A lecture outline organizes the course content and guides the student through the material in preparation for associated assessments. In addition, the outline is designed for student note-taking.
- **Handouts** – Handouts highlight points in the lecture sequence requiring special attention, comment, or visual support. These tend to revolve around more complex physiological topics.
- **Videos Support** - Videos of the lectures will follow a lecture outline closely. The goal of this media is to cover all content, both in the lecture setting as well as in the laboratory.
- **Laboratory** - In a traditional educational setting, the laboratory lends itself to a "hands-on" approach to understanding course content. As this course has a laboratory component but is entirely online, rich image banks compensate for this aspect with rich image banks and accompanying video support.
- **Exams** are usually given on a module-by-module basis and are administrated on Blackboard. The exams cover material on 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 for a 6-week Accelerated Online Course

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.

As this course endeavors to cover a typical 16-week semester course in 6 weeks, the course is accelerated, and therefore students must anticipate 4-6 hours 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 II 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 II 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 the heart in a lecture context and have an appropriate assessment. We will also study a heart dissection and models of the heart. This laboratory component will be assessed using another assessment format, the laboratory practical, where the material is visually presented. 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 provide insight into approaching the material on a module-by-module basis and point out matters 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 following the outline

closely. Note, if something is on the outline you are responsible for it, even if I do not discuss it. With this in mind, 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

The assignment of a final semester grade will depend upon completing all exams listed on the syllabus below, of which the lowest grade may be dropped (except for the last unit). These exams will cover material from online assignments, handouts, and video presentations. The nature of each exam is non-comprehensive. However, any particular unit will assume a working knowledge of previous units.

The exams are also timed. You will have enough time to read the question, pause, and put down an answer. 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. For details, see the "Assessments" document online.

Exams consist of a variety of question types listed below. The

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

Makeup Exams and Documentation - 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 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 of the student's return to school. Contact me by email so that a time and a date can be coordinated.

Throughout the semester, I will be contacting you on a weekly/biweekly 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. Another avenue for communication is the "Student Interaction Board" on Blackboard. By using this, 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.

Communication and Interactions

Throughout the course, I will be contacting you on a biweekly basis to offer advice, provide comments, and give reminders. If you have questions with a class-wide import, the questions may be answered and shared with the class on the Student Interaction Board (a Discussion Board).

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.

If you find that you are having difficulty with Blackboard, contact the college "helpdesk."

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

Grading Criteria

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 go a long way toward 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 bi-weekly. Exams will be found in the appropriate Blackboard folder at the bottom of the list.

Exam #1	Blood	100 points
Exam #2	Heart	100 points
Exam #3	Vessels and Routes	100 points
Exam #4	Lymphatic and Non-specific Host Immunity	100 points
Exam #5	Non-specific Host Immunity	100 points
Lab Exam #1	Lab Practical #1 (Heart and Vessels)	100 points
Exam #6	Respiratory System, Part #1 and Part 2	100 points
Exam #7	Digestive System, Part #1	100 points
Exam #8	Digestive System, Part #2	100 points
Lab Exam #2	Lab Practical #2 (Lymph, Resp, Dig, Uri. Sys)	100 points
Exam #9	Male Reproductive System	100 points
Exam #10	Female Reproductive 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 something that appears questionable (there rarely is). Of course, you can always email me if you have a question.

Grade Calculation - The assignment of a final semester grade will depend upon the completion of all lecture exams and lab practicals. All exams are weighted equally. The lowest grade may be dropped except for the last unit(s) of all the exams given. Calculating your current standing in the class is 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 time.

NECC Grading System

A link to the College Grading System can be found at: NECC Grading System

A	4.00	93-100	C	2.00	73-76
A-	3.70	90-92	C-	1.70	70-72
B+	3.30	87-89	D+	1.30	67-69
B	3.00	83-86	D	1.00	60-66
B-	2.70	80-82	F	0.00	59 or less; failure;
C+	2.30	77-79			no credit earned
W	0.00	Withdrawal from the course by the student within the withdrawal period			
NP	0.00	Non-participation withdrawal grade assigned by the instructor due to evidence of non-participation			
IP (or I)		In progress. Extension granted due to extenuating circumstances			

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 your patients are paramount. And to achieve this level of competency a strong foundation in anatomy and physiology is essential. To monitor this goal, exams serve as weigh-points along your road to success. They indicate that your progress is progressing well and you are now 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, 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 Assessment (a College Statement)

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 successful experience. Please email me if you would like assistance regarding study tips, progress, or other issues. Do not wait until the last moment to ask for help. Remember, I am just an email away.

Additional Educational Services

Tutoring: NECC also offers FREE tutoring and other services at:
https://www.northshore.edu/support/tutoring/index.html

Lecture Syllabus

Below is a tentative but probable schedule of topics and dates. The schedule may be adjusted according to the progress of the lecture sequence or should unforeseen circumstances occur.

Assignments

A particular Lecture Topic will be considered on a module start date. Your assignment is to use the resources provided to master the topic under consideration in preparation for an assessment (exam) on that topic. As mentioned above, read the Learning Guide found on Blackboard for guidance on how to approach the material. In addition, the Lecture Outline will provide structure and organization for the lecture content and provide room for note taking. Supplemental handouts will reinforce and expand on anatomical and physiological topics of particular importance or complexity. In the lecture videos, I will walk you through all (with a few exceptions) of the material.

Anatomy and Physiology II

SCHEDULE - 2024, Summer II - Bio 122-O1A

Below is a tentative but probable schedule of topics and dates. The schedule may be modified according to the progress of the lecture or unforeseen circumstances.

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

- Final Exam (Lab Practical #2)
- Reproductive Exams (male and female)

Exams are administered on Blackboard and are open at 7 am. Exams are to be completed by 11:59 pm.

Module and Exam
DATES

July 1 (Mon) → **Formal Start – Module: Blood**

July 5 **(Fri)** *Exam – Blood*
→ **Module: Heart, Cardiac Cycle, & Dissection**

July 8 (Mon) *Exam – Heart*
→ **Module: Vessels and Routes**

July 11 **(Thurs)** *Exam – Vessels and Routes*
→ **Modules: Lymphatic**

July 15 (Mon) *Exam – Lymphatic*
→ **Module: Non-specific Host Immunity**

July 18 **(Thurs)** *Exam –Non-specific Host Immunity*
→ **Module: Respiratory System, Part #1**

July 20 **(SAT)** ***Lab Practical #1 (Heart and Vessels)***
→ **Continue: Respiratory System, Part #1**

July 22 (Mon) *Exam – Respiratory System, Part #1*
→ **Module: Respiratory System, Part #2**

July 25 **(Thurs)** *Exam – Respiratory System, Part #2*

→ **Module: Digestive System, Part #1**

July 29 (**Mon**) *Exam – Digestive System, Part #1*

→ **Module: Digestive System, Part #2**

Aug 1 **(Thurs)** *Exam – Digestive System, Part #2*

→ **Module: Male Reproductive System**

NOTE: The exams that follow are non-droppable

August 5 (**Mon**) *Exam – Male Reproductive System*

→ **Module: Female Reproductive System**

August 8 **(Thurs)** *Exam – Female Reproductive System*

→ **Brief Primer on Urinary System, and Lab Review Time**

August 9 **(Fri)** ***Lab Practical #2***

Academic Calendar

NORTHERN ESSEX COMMUNITY COLLEGE
ACADEMIC CALENDAR, ABRIDGED

Summer 2024

- Official NECC Academic Calendar

Below is an *abridged* rendition of the Academic Calendar highlighting dates of particular importance for your course.

Click the above link for the official NECC Academic Calendar.

Summer Session II 2024

Classes meet for 6 weeks Monday, July 1 - Friday, August 9

Book Voucher Period	June 24-July 12	
Session II classes begin	July 1	(Monday)
Independence Day Holiday (College closed)	July 4	(Thursday)
To receive a full refund for Session II, classes must be dropped by the close of business See Student Affairs Hours and Refund Policy	July 5	
No Show (NS) Roster due by noon for Summer Session II classes	July 12	
Last Day to Withdraw with "W"	July 24	(Wednesday)
Finals Period for Day and Evening Classes	August 3-9	(Monday - Friday)
Grades due by noon	August 13	

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 II*
Faculty: *Noel Ways*
Email: *nways@necc.mass.edu*

Online √ Asynchronous Component

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, 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.