

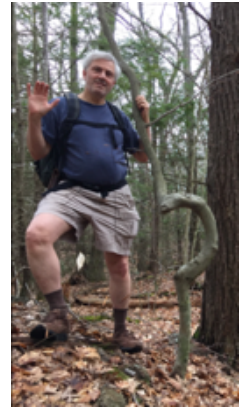
**Northern Essex Community College**  
**Department of Science, Technology, Engineering, and Mathematics**  
**BIO 122 O1B – Anatomy and Physiology II**  
**Summer I, 2023**

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## Welcome

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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

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**BIO 122 O1B - Anatomy and Physiology II**                      **CRN: 5179**

**Credits:** 4 Credit Hours. 3 Lecture hours, 2 Lab hours

**Prerequisites:** BIO 121 Anatomy and Physiology I

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## Instructor Contact Information

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**Instructor:** Noel Ways

**Email:** [nways@necc.mass.edu](mailto:nways@necc.mass.edu)

**Virtual Office Hours:** As our schedules vary dramatically from one person to another, 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 Zoom video conferencing software program during a mutually acceptable time. On Blackboard, you will find a “Zoom Office Hours” link.

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## College Course Description

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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 respiratory system. Other organ systems, such as the digestive, urinary, and reproductive systems, will also be examined. Other subjects of particular relevance will 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 them with some of the more basic physiological concerns related to gross anatomy. This course component will be delivered online using online and video resources.

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## General Course Objectives

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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<sub>2</sub> 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

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- **Textbook (Required):** *Anatomy and Physiology* an Open Educational Resource (OER).

<https://openstax.org/details/books/anatomy-and-physiology>

- **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 materials are linked on blackboard.

## Zoom Link - “Office Hours Link”

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### 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/adSc6HD290>

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>

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## Course Requirements

### Method of Instruction

This course is delivered asynchronously online and will be utilizing resources available through Blackboard and the instructor’s website, to which Blackboard is linked. The course curricula are divided up into modules. With few exceptions, each lecture/module has a:

- **Learning Guide** that will guide the student through the lecture, videos, animations, and other media under consideration.
- **Lecture Outline** that provides structure to the course content focuses on preparing the student for assessment exams and includes space for note-taking. In addition,
- Handouts – Additional handouts are provided as needed where support may be needed
- **Video Support** - Archived Videos of the lectures/modules provide instructional delivery in an online lecture setting. Both the lecture outlines, and the video support page can be found online. In the videos, I will walk you through everything!
- **Image Bank** – each module has an image bank with photos, illustrations, and PowerPoint files that may be used as needed by the student.
- **Laboratory** – As Anatomy and Physiology is a laboratory course, special links are provided to laboratory material, videos, photographs, and guides.
- **Exams** are given on a lecture-by-lecture basis and are to be completed by the dates on the schedule below. Exams will be administered through the college testing center. These exams will cover the material 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 (or Instructional Rhythm) in the Getting Started folder on Blackboard.

## Workload

We all come from different backgrounds and varying employment obligations and may have family relationships and responsibilities that must be maintained. With the various pulls on our time and resources, scheduling another major activity can sometimes be challenging. For example, planning and scheduling several hours daily for study can be daunting for some. But this must be looked at immediately and requires a quality decision to ensure success in the course.

Typically, on the first day of a module, 3 hours must be set aside to review content and for note taking. Once the content is carefully reviewed, 3-4 hours must be set aside daily for the mastery of modular content. However, this time suggestion is highly individualistic, and it is crucial to determine your unique learning requirements.

I also encourage you to talk to those people important in your life about your educational needs at this juncture in your career. You will want their support. Then, look carefully at your life's time-demanding activities and make appropriate adjustments in light of your important career aspirations. The word "priorities" comes to mind here.

## Assignments

Anatomy and Physiology is a content-heavy course. And your primary assignment for each lecture topic is to build a foundation that will carry you through the rest of your developing career. So, with the beginning of a module/lecture topic, your assignment is to gain a working knowledge of the body of material being presented.

Also, as Anatomy and Physiology II is a laboratory course, many topics are presented and assessed 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 forms of assessment not only provides students with different ways to access the content and demonstrate mastery but also reinforces essential 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. Next, the lecture outline will guide you systematically 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. Finally, handouts and videos will supplement and reinforce key concepts. Regarding the Video Support, I will closely discuss the lecture content following the outline. Again, if something is on the outline, you are responsible for it, even if I do not talk about it.

Needless to say, 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., will be important, as well as associating appropriate functions with them.

## **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 the exams is non-comprehensive. However, any particular unit will assume a working knowledge of previous units.

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 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 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 that the student returns to school.

Contact me 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. The best place to ask questions is the "Student Interaction Board" on 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.

## **Communication and interaction:**

Email and blackboard announcements 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. There is also a discussion board available on Blackboard.



### **Blackboard**

Blackboard

Please 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. 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.

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

Email: [nways@necc.mass.edu](mailto:nways@necc.mass.edu)

When you send me an email, always include the following:

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



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## Criteria for Grading

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As mentioned above, this course aims to build a foundation 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 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 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. 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.



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## NECC Grading System

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

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## Accessibility/Learning Disabilities

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“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](mailto:centerforaccess@necc.mass.edu).**

- **Deaf and Hard of Hearing Services call 978-241-7045 (VP/Voice) or email [deafservices@necc.mass.edu](mailto:deafservices@necc.mass.edu).**
- **To request an Interpreter or communication access email: [interpret@necc.mass.edu](mailto: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](#).

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## Statement on Plagiarism and Academic Integrity

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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 are paramount. A strong foundation in anatomy and physiology is essential to operate competently in such positions. Towards this end, 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 “o” 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.

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## NECC Outcomes Assessment (a College Statement)

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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.

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## Getting Help

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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. We can also collaborate through an appointment on Zoom. So please 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>

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## Lecture Syllabus

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Below is a tentative but probable schedule of topics and dates. The schedule could 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 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. In addition, the Lecture Outline will provide structure and organization for the lecture content and provide 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) of the material.

*Anatomy and Physiology II*  
*SCHEDULE – Summer I, 2023 - Bio 221 O1B*

New Module  
START DATES

Exams open at 8 am. Exam are to be completed by 11:59 pm

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)

May 22 (Mon)      →    **Formal Start – Module: Blood**

May 25 (Thur)    *Exam – Blood Exam on Blackboard*  
                         →    **Module: Heart, Cardiac Cycle, & Dissection**

May 29 (Mon)    *Exam – Heart*  
                         →    **Module: Vessels and Routes**

June 1 (Thur)    *Exam – Vessels and Routes on Blackboard*  
                         →    **Modules: Lymphatic & Non-specific Host Immunity**

June 5 (Mon)    *Exam – Lymphatic and Non-specific Host Immunity*  
                         →    **Module: Respiratory System, Part #1**

June 8 (Thur)    *Lab Practical #1 (Heart and Vessels)*  
                         →    **Module: Respiratory System, Part #2**

June 12 (Mon)    *Exam – Respiratory System (Both Parts #1 and #2)*  
                         →    **Module: Digestive System, Part #1**

June 15 (Thur)    *Exam – Digestive System, Part #1*  
                         →    **Module: Digestive System, Part #2**

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NOTE: Note carefully the dates that follow.  
Dates will vary from the pattern above due to a holiday  
and end-of-semester scheduling issues.  
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- June 19-20      *Exam – Digestive System, Part #2*  
(**Mon - Tues**)      →    **Module: Male Reproductive System**
- June 21 (**Wed**)    *Exam – Male Reproductive System on Blackboard*  
                         →    **Module: Female Reproductive System**
- June 24 (**Sat**)      *Exam – Female Reproductive System*  
                         →    **Brief Primer on Urinary System, and Lab Review Time**
- July 30 (**Friday**) *Lab Practical #2 on Blackboard*

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## Academic Calendar

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Select Dates from Academic Calendar are below.

Press [Academic Calendar](#) for the complete College Academic Calendar

### Summer Session I 2023

Classes meet for 6 weeks Monday, May 22 - Friday, June 30

Book Voucher Period

May 15-June 2

Session I classes begin

May 22

To receive a full refund for Session I,

May 26

classes must be dropped by the close of business

See Student Affairs Hours and Refund Policy

Memorial Day (College closed)

May 29

Last Day to Withdraw with "W"

June 12

Juneteenth holiday (no classes)

June 19

Finals Period Day and Evening Classes

June 24-30

Grades due by noon

July 5

### Summer Session II 2023

Classes meet for 6 weeks Monday, July 3 - Friday, August 11

Book Voucher Period

June 26-July 14

Session II classes begin

July 3

Independence Day Holiday (College closed)

July 4

To receive a full refund for Session II,

July 7

classes must be dropped by the close of business

See Student Affairs Hours and Refund Policy

Last Day to Withdraw with "W"

July 26

Finals Period for Day and Evening Classes

August 5-11

Grades due by noon

August 14

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## Distance Education Course Interaction Plan (Form DE-2)

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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	<input type="checkbox"/>	✓
2. telephone interactions	<input type="checkbox"/>	✓
3. electronic interactions (email, internet ...)	✓	<input type="checkbox"/>

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

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

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

Student-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.