Bio Sci 203: Anatomy and Physiology II
Section 401 Fall 2021

Course description: Anatomy and physiology of the human body including cardiovascular, respiratory, digestive, excretory, endocrine, and reproductive systems. 3 hours lecture, 3 hours lab. Cannot be combined with Bio Sci 150 & 202 for more than a total of 9 credits toward bio sci major. Cell & Molec Bio. Prereq: C or better in either Bio Sci 202(P) or 315(P).

Time: M/W 2-3:15 PM

Place: Engelmann Hall 105

Credit hours: 4

Lab: see your course schedule

Instructor: Ann Raddant, Ph.D (she/her/hers)

Office: Lapham N201

Office Phone: 414-229-4889

E-mail: raddant@uwm.edu

Office Hours: Monday 12-1 PM, Wednesday 10-11 AM or by appointment. I prefer to meet via Zoom but will be available in my office during these times.

Course website: Canvas and your official UWM email address will be used to distribute some handouts, announcements, and additional course information. You are expected to check this site and your email regularly.

Required course materials – available for purchase via https://uwm.ecampus.com/

1. This course will utilize an online program called Connect. A SmartBook is embedded within this software. If you used this software in Bio Sci 202, you **do not need to re-purchase**. ISBN: 9781260399042. A loose leaf version of the text is available to purchase through the website. If you prefer a hardcover book, you may purchase any recent (9-11th) edition of *Seeley's Anatomy & Physiology* by Vanputte, Regan, and Russo.
2. Lab coat – required for all lab sessions.

Course objectives: through this course, students will develop the ability to describe biological information and concepts, specifically:

- Explain how human cells use oxygen to generate ATP.
- Explain basic anatomical and physiological concepts and integrate these into a working model of the human body.
- Discuss the structure and function of the endocrine and reproductive systems and relate these functions to actual or hypothetical disease states.
- Acquire an understanding of the components and functions of blood and of the steps necessary in hemostasis.
- Develop an understanding of the structure and function of the heart and of cardiac muscle and explain how the heart, vessels, and blood work together to transport gases, nutrients, and wastes throughout the body.
- Describe the components of the respiratory system and explain ventilation, gas transport and exchange, and neural regulation of respiration.
- Develop an understanding of the structure and function of the immune system including the types of specific and non-specific mechanisms the body uses to protect itself.
- Describe how the digestive system works to provide nutrients to cells of the body.
- Examine the anatomy of the urinary system. Describe how the kidneys filter blood and participate in the regulation of blood volume and pH.

Course format – it's flipping awesome!
Learning A&P (especially complex physiology concepts) is **not** simply the acquisition of correct information. Learning requires integrating new information with existing knowledge gained in A&P I or Cell Bio and other related courses. Therefore, you will have to take an active role in the learning process in order to comprehend and apply these concepts. This course will be taught in a **flipped format.** That means that instead of listening to me lecture during class and then studying on your own in between classes, you will prepare for class by viewing video lectures and then do activities in class that replace a portion of your typical study time.

You will earn credit for correctly answering quiz questions embedded in the video lectures, and there will also be points available for in-class assignments. If a situation arises that prevents you from coming to class, there will be an alternative assignment that can be completed. **Please do not come to class if you are sick!**

Grading
Your overall grade for Bio Sci 203 will be a combination of lecture (60%) and lab (40%) assignments, exams, and participation. An overview of the portion of your grade derived from each of the lecture components is given below. **A passing grade (60%) in both lecture and lab is necessary to pass the course**. No extra credit is available in this course. See your lab syllabus for lab grading information and assignment due dates. Final letter grades will be calculated using a weighted average of each component of the course. Letter grades will be assigned as shown below.

Assessment		% of grade	Final letter grades	
Progressive Quizzes	PQ1	4%	A: 93-100	C: 73-76.99
	PQ2	5%	A-: 90-92.99	C-: 70-72.99
	PQ3	6%	B+: 87-89.99	D+: 67-69.99
	PQ4	7%	B: 83-86.99	D: 63-66.99
	PQ5	8%	B-: 80-82.99	D-: 60-62.99
Video lecture quizzes		5%	C+ 77-79.99	F: <60
In class assignments		10%		
Online assignments		15%		
Lab		40%		

Video lecture quizzes (5% course grade)
Videos lectures will be used to provide most of the content in the course, similar to what you have experienced in face-to-face classes. The content for each week will be broken down into multiple, short (8-15 minutes) segments that you can watch on your own schedule. There will be multiple choice or true/false questions embedded in these videos. The **purpose** of these assignments is to **deliver course content** and **assess your understanding of the content**. You will have unlimited attempts on each quiz and only your high score will be counted. You can complete these assignments after the due date for full credit. Quizzes will be worth between 1-3 points which contributes between 0.05-0.2% of your course grade.

The number of videos and questions per video will vary throughout the semester.

Online assignments (15% course grade)
Pre-quizzes: making predictions about topics that you are unfamiliar with helps improve long term retention of the content once you learn it. Pre-quizzes are ungraded but required to unlock subsequent materials within each module.

SmartBook assignments: these assignments are associated with textbook content and require you to complete a specific number of learning items related to the reading. The **purpose** of these assignments is to provide you with a **review** and **practice** of ideas and terminology that we covered in lecture videos. These assignments are graded for completeness at the time they are due. Each SmartBook assignment is worth 5 points, which contributes approximately 0.5% of your course grade. If you would like to submit these assignments late, you must contact me via email (raddant@uwm.edu) for an extension.

Interactive animations and questions: these assignments will contain an interactive animation and associated question bank questions. The **purpose** of these assignments is to **deepen your understanding** of especially tricky topics and to help you **make connections** between the different levels of organization (molecule vs. cell vs. organ and organ system) that we will see in the body. You will have multiple attempts on these assignments and your best score will be counted. Interactive animation assignments will be worth a variable amount of points (2-5), which contributes approximately 0.2-0.5% of your course grade. These assignments can be completed late without penalty.

APR assignments: these assignments will guide you through animations or dissections in Anatomy and Physiology Revealed. The **purpose** of these assignments is to **guide you to additional resources** to increase your understanding. Each APR assignment is worth 1 point, which contributes approximately 0.1% of your course grade. If you would like to submit these assignments late, you must contact me via email (raddant@uwm.edu) for an extension.

Review assignments: these assignments use question banks to help you **practice** content recently covered in class. Each assignment is worth 3 points, which contributes approximately 0.3% of your course grade. These assignments can be completed late without penalty.

Progressive quizzes (30% course grade)
The way that we interact with information is rapidly evolving: facts about pretty much any field can be accessed almost instantly using just a smartphone. Since you can look up facts, the summative assessments in this course is designed to test your understanding and ability to apply facts, not memorize them. Even though there is a huge volume of content in this course, quizzes will focus primarily on ideas that it is absolutely critical you take from this class into your other course work and careers. The **purpose** of these quizzes is to **assess your understanding** of course content.

Progressive Quiz Logistics and Format
Progressive quizzes will be completed on Canvas outside of class time. The primary format of questions will be multiple choice, but there will be occasional matching, ordering, and true/false questions. You will have a single attempt and quizzes will be timed with 1.5 minutes per question. You may use any resources you find useful (notes, ebook, internet), but I expect you to be working on your own. Question banks will be used. All quizzes will contain new and cumulative content; specific learning objectives will be provided on Canvas.

Progressive quiz schedule

Progressive Quiz #	Due date	Points (%) of final grade
1	9/22, 2 PM	40 (4%)
2	10/13, 2 PM	50 (5%)
3	11/3, 2 PM	60 (6%)
4	11/24, 2 PM	70 (7%)
5	12/20, 5 PM (Finals week)	80 (8%)

In-class assignments (10% of course grade)
During class time, you will be working on a variety of tasks to help you assess and improve your understanding of course content. Your participation will be assessed in a variety of ways, including Canvas assignments or hard copy submission. The **purpose** of these assignments is to **hold you accountable** to attending and participating in class activities.

During the class meetings after each progressive quiz is due, there will be an opportunity to work through concepts that you struggled with on the quiz and earn some points back.

Cell phone/tablet/computer policy
During some portion of this course, the use of electronic resources in the classroom can enable learning. In these cases, please stay on task and do not interact with social media or email accounts. I recommend taking notes by hand.

Unauthorized use of cell phones/laptops/tablets is not permitted. Please silence all devices before entering the classroom. Any student that disrupts class with noise from anything with a battery may be asked to leave lecture with an unexcused absence.

Time commitment
For each credit hour earned in the course, students are expected to invest at least 3 hours of work per week in addition to their time in lecture and laboratory courses. For this 4-credit course (lecture and lab), students are expected to complete *at least* 12 hours of study time *per week* to meet the learning goals of this course. A suggested breakdown of this time is provided below.

Course component	Activity	Time
Lecture	Viewing video lectures	1.5 hours
	Completing online assignments	1.5 hours
	Writing out and reviewing answers to learning objectives	6 hours
Lab	Preparing, completing assignments, studying	3 hours

University policies
Students with disabilities
The University of Wisconsin Milwaukee supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform me of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Please contact me in person or via email. I will work either directly with the you or in coordination with the Accessibility Resource Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.

Academic misconduct
My goal for you in this this course is for you develop an understanding of how the different organ systems within the human body function together to keep us alive. The only way for you to achieve that goal is to put in the necessary work to figure it out. If you do the work with the intention of learning, I am certain that you will achieve that goal. If you click mindlessly or Google until you find an answer, you will likely feel frustrated and unsuccessful. Collaborating with peers to reach a deeper understanding is expected, as is the utilization of appropriate resources throughout the course. Cheating on exams looks different in an open resource environment. Actions such as having a different person complete your quiz or answer specific questions are both cheating, as well as posting

exam materials for other students to utilize. Plagiarism in this course includes submitting any work completed by another individual, such as projects from previous semesters or text copied and pasted from any source. Cheating on exams and plagiarism are violations of the academic honor code and carry severe sanctions, including failing a course or even suspension or dismissal from the University. Specific UWM policies can be viewed at http://uwm.edu/academicaffairs/facultystaff/policies/academic-misconduct/.

COVID-19
Panther Community Health and Safety Standards: UWM has implemented reasonable health and safety protocols, taking into account recommendations by local, state and national public health authorities, in response to the COVID-19 pandemic. As a member of our campus community, you are expected to abide by the Panther Interim COVID-Related Health & Safety Rules, which were developed in accordance with public health guidelines. These standards apply to anyone who is physically present on campus, UWM grounds, or participating in a UWM-sponsored activity:

- All individuals visiting UWM facilities must wear face coverings while indoors
- Unvaccinated students coming to campus are required to test weekly for COVID-19
- You should check daily for COVID-19 symptoms and not come to campus if you are feeling sick.

Additional details about student and staff expectations can be found on the UWM COVID-19 webpage, https://uwm.edu/cetl/covid-19-syllabus-statements/

GER Credit
The general education requirement (GER) is met by providing 1) a basic knowledge of human physiology from which students can interpret the anatomy and functions of their bodily systems, such as cardiovascular, pulmonary, gastrointestinal, renal, endocrine and reproductive systems; and learn of the latest advances in biomedicine. 2) Some specific goals which serve as a basis for classroom assessment are to increase the student's comprehension of the interactions of bodily systems with the external environment; analyze and interpret their daily diets; be exposed to the latest developments in assisted reproduction, HIV/AIDS, etc.; to read critically and compare lay-oriented news coverage of biomedicine with actual peer-reviewed publications; and to satisfy their natural curiosity about their bodies and bodily functions. The laboratory portion of the course then allows the student to extrapolate practical application from the lecture material and learn how to perform and interpret EKGs, assess lung function, perform animal dissections, etc. These goals are evaluated in both lecture and laboratory throughout the semester via three examinations; weekly laboratory quizzes; 3) demonstration to the laboratory instructor of student learning by mastery of the dissected material, for example; and laboratory homework assignments such as 4) creating a written, software-guided Nutrition Project to evaluate personal dietary intake and compare with an "ideal" diet.

Additional university policies regarding religious observances, students called to active military duty, incomplete grades, discriminatory conduct, complaint and grade appeal procedures, and LGBT+ resources can be found at http://uwm.edu/secu/syllabus-links/.

Disclaimer
Policies and schedules contained within this syllabus are subject to change due to unforeseen circumstances. I reserve the right to make these changes and communicate them to the class via the course Canvas site and/or email. There is also a potential for us to move fully online at some point during this semester. If that occurs, both lecture and lab will be conducted asynchronously.

Course Schedule
This schedule provides a general schedule with corresponding textbook information. The Canvas

sites for lecture and lab will contain weekly modules with individual assignments.

Date	Day	Topics	Pages	Lab
Unit 1: Cell biology, metabolism, and endocrine system				
9/8	W	Course introduction		No Lab
9/13	M	Cell biology and metabolism	63-94, 931-955	Graphs, Directional terms
9/15	W	Pancreas, chemical nature of hormones	629-637, 579-599	
9/20	M	Hypothalamus and pituitary gland	604-627	Endocrine system
9/22	W	Review Progressive Quiz 1		
Unit 2: Blood and heart				
9/27	M	Blood composition	648-666	Blood
9/29	W	Blood diagnostic tests	667-673	
10/4	M	Heart and vessel anatomy	678-691, 722-728	Heart and blood vessels
10/6	W	Conducting system and cardiac cycle	690-691, 698-703	
10/11	M	Electrical properties of the heart	691-698	Pig dissection 1
10/13	W	Review Progressive Quiz 2		
Unit 3: Vessels, lymphatic system, and respiratory system				
10/18	M	Blood flow and pressure	750-758, 762-765	Cardiac physiology
10/20	W	Mean arterial pressure	703-711, 765-776	
10/25	M	Capillary exchange	758-760	Respiratory system
10/27	W	Ventilation and pulmonary gas exchange	827-854	
11/1	M	Gas transport and systemic gas exchange	854-865	Digestive system anatomy
11/3	W	Review Progressive Quiz 3		
Unit 4: Immunity and digestion				
11/8	M	Digestive system anatomy and functions	876-898	Digestive enzymes
11/10	W	Digestion and absorption of nutrients	898-921	
11/15	M	Lymphatic system and innate immunity	783-797	Reproductive system
11/17	W	Adaptive immunity	798-820	
11/22	M	Review Progressive Quiz 4		No Lab
11/24	W	No Class - Thanksgiving		

Unit 5: Urinary and reproductive systems				
11/29	M	Urine production	965-983, 996	Urinary system
12/1	W	Hormonal control of urine volume	983-995	
12/6	M	pH regulation and waste removal	1026-1033, 658-659	Pig dissection 2
12/8	W	Sperm and testosterone	1037-1056	
12/13	M	Menstrual cycle, pregnancy and lactation	1056-1119	No Lab
12/20	M	Progressive Quiz 5 due 5 PM		