

BIO 245: Introduction to Human Anatomy and Physiology

Spring 2021 Syllabus for Lecture Section 014

Lecture Meeting Location: Online until March 1; Mt. Evans Ballroom afterward

Lecture Meeting Time: MWF 2:30PM-3:20PM

Professor: Dr. Nicholas Pullen

Office Location: Ross Hall 2536 (Research Lab: 1631)

Office Phone: 970-351-1843

email: nicholas.pullen@unco.edu

Drop-in Hours for Tutoring and Other Class Questions

Mondays & Tuesdays 8-9:30am

Can be in person at my office (Ross 2536) or over Zoom (go to Canvas for link)

In-Class Teaching Assistant: Janae Mudge (janae.mudge@unco.edu); Ross Hall 2556

Janae's Office Hours: Wednesdays 3:30-5pm (Ross 2556 or Zoom)

Final Exam: Monday, May 3rd 1:30PM-4PM ([link](#))

Welcome

My name is Dr. Nicholas Pullen, and I'm happy to join you in BIO 245 – the reason I got into teaching at the college level was precisely because of my experiences with anatomy & physiology (A&P). You're probably here because of an interest in a health profession and/or because this class is a major requirement. You might be anxious because this is your first biology class in a while. Please know that my goal is to foster an inclusive, positive learning environment where everyone can take away useful information about the human body and apply it to whatever interests brought you here. There are a variety of A&P support resources I hope you will use to your advantage, these include: the online LearnSmart activities (and eBook), the Tutoring Center, your lab TAs, the in-class TA, Supplemental Instruction (SI), and of course me! **Until March 1** we are going to be **completely online and synchronous on Zoom**. Starting March 1, assuming predicted good progress fighting COVID, we will all meet in-person through the end of the semester.

More about me: I have a Ph.D. in Anatomy & Neurobiology, and I've been teaching some form of A&P content for over 10 years, for undergraduates (you!), graduate students, and health professions programs like medicine, dentistry, and physical therapy. In addition to teaching, I run an active biomedical research lab where we study immunology in the context of cancer, wound healing, allergy, and in response to exercise. I also do a lot of scientific writing and editing, and I am currently Editor-in-Chief of a major data access journal. You can read more about my work at my [faculty](#) and [research lab](#) webpages.

More about our in-class TA: Janae is a recent alumna of the UNC Dietetics program. Several years ago as an undergraduate, she took this very course with Dr. Pullen. Since then she has also done research in Dr. Pullen's lab, and in August 2020 she started working toward her M.S. degree in biology. She has experience teaching A&P and microbiology. In the future she aims to earn a Ph.D. in nutritional biochemistry.

Finally, please make sure to thoroughly review this syllabus, and consider it our contract for learning in this class. Make sure to always keep the [schedule](#) handy. Below is a table of contents for quick navigation.

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Course Vitals

Prerequisite: None

Course Description from the [2020-2021 UNC Catalog](#). Stress regulatory mechanisms that maintain normal body function and broad general biological principles as they apply to structure and function. Course fee required.

Course Purpose and Objectives. This is an entry-level course about the human body and how it survives from day-to-day. The lecture portion will mostly focus on physiological principles, especially systems interactions maintaining homeostasis, while the lab will focus on enhancing anatomical knowledge. There are no prerequisites for this course, so the first couple of weeks will involve some fundamental chemistry, physics, and biology. This course is designed for undergraduate health science majors, such as pre-nursing, sport & exercise science, dietetics, audiology, among others. This course is the prerequisite for BIO 246, which is a more in-depth examination of human physiology. ***BIO 245 does not count toward a biology basic science degree.*** For successful completion of BIO 245, students will be able to:

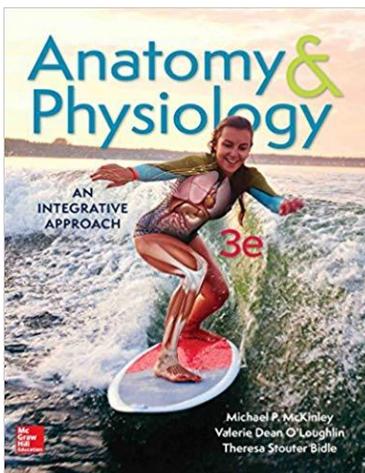
- Define homeostasis and describe how it is different from the concept of chemical equilibrium.
- Describe the major organizational levels of the human body.
- Identify gross anatomical and histological structures of the integumentary, musculoskeletal, nervous, endocrine, cardiovascular, digestive, renal, urogenital, respiratory, and immune systems.
- Use foundational chemical and physical principles to explain processes in cellular physiology.
- Demonstrate and model the roles of feedback mechanisms in physiology by using cellular and gross anatomic examples.
- Integrate the studied functions of the various systems to model the maintenance of homeostasis, and to interpret physiological data.

Required Text and Materials

Required Text: *Anatomy & Physiology: An Integrative Approach, 3rd ed.* by McKinley, O'Loughlin, and Bidle. (2018) with *Connect*. Ways to get your materials, do **one** of the following:

1. Buy directly from McGraw-Hill by starting the registration process at this [link](#). There is a two-week free trial option available during registration. ***This is the way I recommend.***
2. Buy one of the options from the UNC bookstore. They also offer a loose-leaf bundle, but that is your preference, you really only need to buy *Connect* access (includes the eBook and APR programs).

CAUTION: rental and used book vendors do NOT include *Connect* access codes. I strongly discourage these vendors. They are infamous for duping customers into buying misrepresented materials. It will end up costing you more money in the end because you will have to refund your used/rented book.



 **LEARNSMART**[®]

LEARNSMART is the *Connect* homework system. It is bundled with your eBook. To register for homework online, go to the web address below and click the “**register now**” button. This is the same link as option 1 above to buy directly from McGraw-Hill; you still go here and eventually use your access code during registration if you purchased it separately.

<https://connect.mheducation.com/class/n-pullen-spring-2021-mwf-dr-pullen>

Required Technology: A stable internet connection and device with webcam, microphone, and ability to type.

NOTE: iClicker REEF is **not required** for Spring 2021, because we won't use it for the first half. When we are in-person we will have clicker questions as a value-added, but they are not part of your participation grade.

Supplemental Material. In the Canvas Units (Modules) I post videos, essays, news, and other resources of interest that are related to the topics we cover but are **NOT** required reading for BIO 245. These are just for your information and consideration if you are interested and have the spare time, and so they are always marked “FYI:” in their page names. Additionally, on Saturday mornings I send a Canvas Announcement with a list of what I considered “Interesting Biomedical Side Reading, Watching, and Listening” for the previous week. I send these to you to demonstrate how the topics we talk about in class relate to everyday life. Again, you are not required to open any of these resources (I will never ask you a question about them on an exam), but I have gotten a lot of feedback from students that looking over these interesting media helps bring together and apply all the class material after they've studied it. Plus, a lot of it is entertaining!

What should I do to be successful in this course?

- Study often. I recommend studying/reading in time increments that don't cause mental overload, and on average you should be working on BIO 245 at least an hour every day (including weekends!), some days you might need more. You can break up this time if it works for you – reward yourself for a good study period, and then get back to it. If you wait until a few days before the exam to start studying, you will be overwhelmed by the amount of material and less likely to be successful.
- Work individually and in groups. It's an excellent idea to study in groups, since it helps bring together information from different perspectives. The UNC Libraries, Tutoring Center, and even the School of Biological Sciences have resources and spaces built to support studying. It's just as important to have some solo study time too. I especially recommend checking out some of the study spaces we have in Ross Hall since you can be nearby your GTAs and professors if you have a pressing question.
- Be engaged and ask questions. I want you to ask questions in class if something is not clear or you want to know more. I will often ask questions of the class, and I want you to feel free to answer. Don't worry about being right! And, **if you're uncomfortable asking questions in class, that's okay!** Always feel free to ask me in person away from the crowd and through email.

What should I do if I need help?

- I have open office hours set aside in my week that are dedicated to tutoring BIO 245 students on a walk-in basis. If those times don't work for you, we can setup an alternate appointment.
- Talk with your lab GTA and the in-class GTA. Remember that they are also part of the BIO 245 teaching team!
- Take advantage of the tutoring center and SI, both described under **Tutorial Services** below.

Course Conduct

General Technology Expectations. Messages sent to your Bears email account or posted through Canvas are considered official communication. ***I strive to respond to questions within 24-hours, and I expect the same of you.*** I usually do not respond to messages from outside these official channels (such as yahoo or gmail), because they are quarantined as spam. I expect you to check Canvas and email at least once per day. Additionally, everyone is expected to have access to Zoom, Canvas, and *Connect* as these are all necessary for completing coursework. If you cannot reliably access these platforms, then you should delay taking BIO 245 until Fall 2021.

Canvas. Access your course materials through Canvas by going to canvas.unco.edu. Zoom, lecture notes, links of interest (helpful videos, relevant medical news, etc.), quizzes, homework, grades, and official class-wide announcements are all done through Canvas. Course material is organized into modules that follow the schedule on the [last page of this syllabus](#).

Make sure your Canvas **Announcements** and **Conversations** are set to “Notify me right away”. This is an account-wide setting accessed by clicking on your account portrait → notifications.

Lecture Conduct. For about the first half of the semester, lecture will be synchronous through Zoom; you can access the link in the Canvas pages. This means your participation grade depends on you showing up on time. When you have a question, make sure to click “raise hand”, unmute yourself, and type it in the chat. You are expected to complete online quizzes independently. Any public posting of exam or quiz questions is considered cheating and will be investigated. I expect everyone to work hard, ask questions, and discuss relevant information. Everyone should be respectful of others’ civil and sincere participation. Disruptive individuals will be directed to leave the classroom – disruption includes off-task behavior such as texting.

My lecture slides are posted to Canvas ahead of time. I expect you to come to class with these for notetaking.

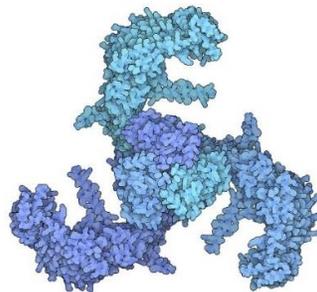
All lectures will be recorded for your studying later. These recordings are available through Canvas by clicking the Zoom link on the left menu of course page. Note that lectures (including slides) are my intellectual property, and I allow you to use them as a limited license for your personal use. Recordings, or my slides, posted publicly (*e.g.*, the Internet) is considered academic misconduct.

Attendance. All students are expected to attend all class periods. **There are no make-up participation points.**
There are no make-up exams.

If you come to realize that you will need to be absent from classes for a lengthy period of time, for example for medical reasons, then you should communicate with the offices of the Dean of Students and Registrar regarding options for withdrawal, particularly if it is a sensitive reason. I generally do not offer incompletes (“I”) for BIO 245.

Out-of-Class Time Commitment. Per the federal credit hour definition ([click here](#)), each week students are expected to do two hours of out-of-class work per credit-hour. Since this course is worth four-credit hours, that means you should expect to spend at least eight-hours per week working on BIO 245 in addition to lecture time. *Translation:* you should expect that studying for BIO 245 will occupy a significant amount of your time, it’s more than just showing up to class, it’s also: reading, homework, quizzes, labwork, independent studying.

Academic Integrity. You are expected to practice academic honesty in every aspect of this course. Upon matriculation at UNC, all students contractually agreed to principles of integrity (the BEAR Code; [link](#)). Those who engage in academic misconduct are subject to grading consequences and university disciplinary procedures through the Office of Community Standards and Conflict Resolution. Academic misconduct includes, but is not limited to, copying someone else’s work, using banned material while taking exams, and posting or using other’s intellectual property (lecture notes, recordings) without permission or in ways that are not explicitly allowed. The grade penalty for academic misconduct is a zero for the course.



Recently characterized Piezo1, a membrane protein channel responsible for initiating mechanical sensations like touch and hearing.

Disability Resources. It is the policy and practice of the University of Northern Colorado to create inclusive learning environments. If there are aspects of the instruction or design of this course that present barriers to your inclusion or to an accurate assessment of your achievement (*e.g.*, time-limited exams, inaccessible web content, use of videos without captions), please communicate this with me and contact Disability Resource Center (DRC) to request accommodations.

Office: (970) 351-2289, Michener Library L-80.

Students can learn more here: www.unco.edu/disability-resource-center

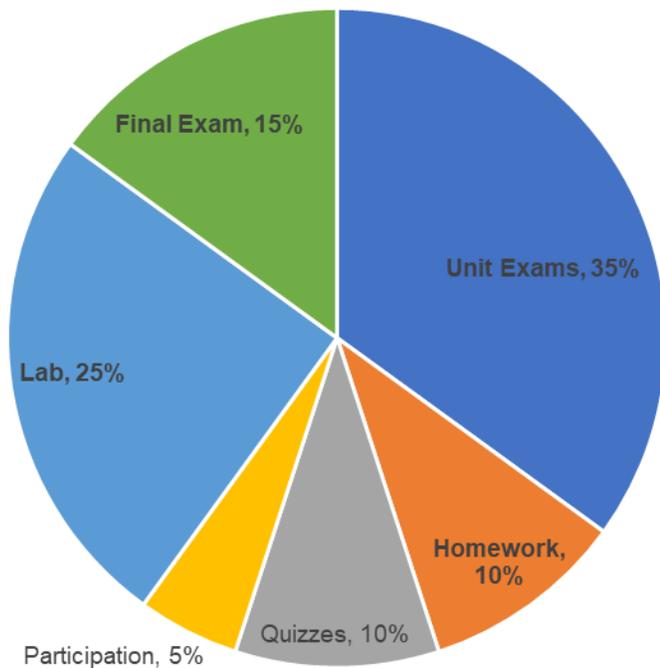
Tutorial Services. UNC maintains a [substantial tutoring center](#) offering a variety of FREE support formats including scheduled one-on-one tutoring, group tutoring, drop-in tutoring, Supplemental Instruction, evening hours, Sunday hours, and occasional late night gatherings where snacks are provided! BIO 245 gets a lot of support from the UNC tutoring center with several trained, qualified tutors who were very recently students in this class. Their main office is Michener Library L149. Phone: (970) 351-1904.

Assessment

Determining Your Letter Grade

The pie chart below shows how each assignment category is weighted. The Overall % that you earn from those assignments is used to assign a Letter Grade. The table below shows the ranges for each letter. BIO 245 follows a basic 10% range for each letter. There are no +/- letter grades.

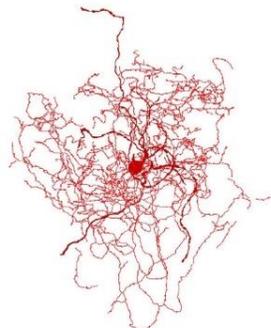
Assignment Category Weights



Overall % Range	Assigned Letter Grade
≥90%	A
≥80%, <90%	B
≥70%, <80%	C
≥60%, <70%	D
< 60%	F

Important Grading Policies

- +/- grades are not assigned for BIO 245.
- I do not curve individual assignments/exams, but I reserve the right to curve whole final percentages at the end of the semester if necessary.
- I do not round percentages for this course. For example, if your final percentage is 89.9%, then you will be assigned a "B" if the "A" cutoff is 90%.



Rosehip neuron – recently discovered and thought to be unique to humans

Graded Assignments (% weight of overall)

Unit Exams (35%). There will be four unit exams. The first three will take place during normal class time (dates on [schedule](#)), and the last one will be given alongside the final exam. Unit exams are multiple choice, matching, and occasionally some identification. The questions are based on the lectures since the last exam. The exams will be administered online through *Connect*; you are required to have a stable internet connection, a device with a functional webcam, and to have downloaded the proctoring software. Practice exams will be offered to allow you to situate yourself with these requirements. Laptops can be checked out from the library for 24-hour periods. **I will DROP your lowest unit exam grade** to accommodate unforeseen absences for other reasons. But you should always try to make it you all your exams!

*There are only four very specific reasons for a make-up exam; proof and arrangement of make-up ahead of time are required:

- Military duty (official orders as proof)
- NCAA athletic participation (official communication from athletics as proof) **NOTE:** club sports are not excused
- Jury duty (notice of call with specified dates of attendance)
- Death/ emergency of an immediate family member or guardian

Final Exam (15%). The types of questions on this exam are like unit exams. However, the final exam is comprehensive – it covers lecture material for the entire semester. There is no make-up final exam. If you do not take the final exam you are automatically assigned an F grade for the entire course, regardless of Overall Course %. The final exam is [Monday, May 3rd 1:30PM-4PM](#).

Homework (10%). This is where *Connect* comes in: regular homework called LearnSmart will be assigned. Occasionally we may also assign an *Anatomy and Physiology Revealed (APR)* activity to help reinforce some anatomical topics. Each assignment will be due **BEFORE** the scheduled lecture on that topic and cannot be made-up once the assignment closes. LearnSmart uses the eBook version of the text to guide your progress, it helps you read ahead. I expect that a lot of the content will be new to you, so you can repeat questions, and then only your best score is recorded. Some of the questions will go much farther in-depth, and that's okay because that helps you apply some of the information we discuss in class to more complex problems. Additionally, each question will ask you to rate your confidence in your answer – please respond to this thoughtfully and honestly.

Quizzes (10%). Between exams there will be 1-3 quizzes to help you practice. These are also assigned in *Connect*.

Participation (5%). Student engagement and formative assessment are measured with polling questions every day. You will also be asked to do independent and group work. **You are not graded for correctness, unless it is obvious that no reasonable attempt was made to answer the question.** Since these things happen during class there is **no way to make-up these points.** Some days you might also be required to do an attendance quiz that is only available during class time. Finally, some participation points are earned through practice exam questions.

Laboratory (25%). This course has a laboratory component, which you should be registered for with a graduate teaching assistant (GTA) as your lab instructor. The lab focuses on anatomy and histology content relevant to the physiology we cover in lecture. Since you do not receive a separate letter grade for lab, the director of BIO 245 labs reports your percentage to me at the end of the semester, and I include it as a part of your Overall Course %. All questions about lab (content, grades, syllabus, expectations, etc.) should be directed to your lab GTA first, and then the head lab TA if necessary, Amanda Bevan (amanda.bevan@unco.edu).

Tentative Course Schedule

Exam dates will not change, topics may be adjusted and will be announced if so.

Week ¹	Day		Topic	Chapter	Lab
1	M	11-Jan	Intro to A&P	1	Introduction, Syllabus, Anatomical Terms, Microscope, Cells, Body movements
	W	13-Jan	Fundamental chemistry & physics	2	
	F	15-Jan	Basic cell biology	4	
2	M	18-Jan	MLK day-NO CLASS		NO LABS
	W	20-Jan	Transport across cell membranes	4	
	F	22-Jan	Tissue organization	5	
3	M	25-Jan	Integumentary system	6	Tissue and Integumentary system
	W	27-Jan	Integumentary system	6	
	F	29-Jan	Bone & cartilage physiology	7	
4	M	1-Feb	Bone & cartilage physiology	7	Skull and Axial Skeleton
	W	3-Feb	Review and/or case study		
	F	5-Feb	Unit Exam 1: Chapters 1,2,4,5,6,7		
5	M	8-Feb	Muscle tissue	10	PRACTICAL 1 Appendicular skeleton and Joints
	W	10-Feb	Muscle tissue	10	
	F	12-Feb	Muscle tissue	10	
6	M	15-Feb	Nervous tissue	12	Muscle Tissue, Muscles of the head and neck
	W	17-Feb	Nervous tissue	12	
	F	19-Feb	CNS structure & function	13	
7	M	22-Feb	CNS structure & function	13	Muscles of the trunk, upper and lower limbs
	W	24-Feb	Review and/or case study		
	F	26-Feb	Unit Exam 2: Chapter 10,12,13		
8	M	1-Mar	Spinal cord and nerves	14	PRACTICAL 2 Special senses
	W	3-Mar	Autonomic nervous system	15	
	F	5-Mar	Senses: general and special	16	
9	M	8-Mar	Senses: general and special	16	Cranial Nerves, Nervous tissue, nervous system
	W	10-Mar	Endocrine system	17	
	F	12-Mar	Endocrine system	17	
10	M	15-Mar	Spring Break		NO LABS
	W	17-Mar			
	F	19-Mar			
11	M	22-Mar	Heart	19	Heart, Pulse, Blood, blood vessels and circulatory system
	W	24-Mar	Heart	19	
	F	26-Mar	Blood and vessels	18,20	
12	M	29-Mar	Vessels and lymphatic system	21	PRACTICAL 3 Respiration
	W	31-Mar	Lymphatic system	21	
	F	2-Apr	Review and/or case study		
13	M	5-Apr	Unit Exam 3: Chapter 14-21		NO LABS
	W	7-Apr	Immune system	22	
	F	9-Apr	Immune system	22	
14	M	12-Apr	Immune system	22	Renal and Digestive Systems
	W	14-Apr	Respiratory system	23	
	F	16-Apr	Respiratory system	23	
15	M	19-Apr	Urinary system	24	Reproductive Systems
	W	21-Apr	Urinary system	24	
	F	23-Apr	Review and/or case study		
16	M	26-Apr	Digestive System	26	PRACTICAL 4
	W	28-Apr	Digestive System	26	
	F	30-Apr	Review		
17	M	3-May	² 1:30PM-4pm Unit Exam 4 and Final Exam		FINALS WEEK (NO LABS)

¹Weeks 1-7 will be online synchronous meetings; weeks 8-17 will be at the University Center Mt. Evans Ballroom

²There will be TWO different exam assignments (parts) on this day, which will be graded differently:

Part 1: questions from Chapters 22, 23, 24, and 26; counts as Unit Exam 4

Part 2: questions from previous Chapters from Units 1-3; this is the cumulative part that counts as your final exam grade