

Biology 1030: Human Anatomy and Physiology 1
section 1
3 units
Bio 1030L: Human Anatomy and Physiology 1 lab
sections 1a, 1b, 1c
1 unit
Point Loma Nazarene University
Fall 2021

instructor:	Dr. Rebecca J. Flietstra
office:	182 Rohr Science
phone:	x2718 [619.849.2718]
e-mail:	RebeccaFlietstra@pointloma.edu
lecture time/location:	Latter 101 MWF: 11:00 a.m.—11:55 p.m.
laboratory time/location:	Sator Hall 117 section 1a: Tu, 7:45 a.m.—10:45 a.m. section 1b: Tu, 10:55 a.m.—1:55 p.m. section 1c: Tu, 2:05 p.m.—5:05 p.m.
office hours:	MWF: 1:00—2:30 p.m.

I want you to do well in this course. Towards that goal, I encourage questions during lectures and labs. If you have questions outside of class, feel free to email me. I can email an answer or set up a zoom meeting. I prefer to meet during office hours, but can meet at other times, depending on my schedule.

Foundational Explorations Mission

PLNU provides a foundational course of study in the liberal arts informed by the life, death, and resurrection of Jesus Christ. In keeping with the Wesleyan tradition, the curriculum equips students with a broad range of knowledge and skills within and across disciplines to enrich major study, lifelong learning, and vocational service as Christ-like participants in the world's diverse societies and culture.

Course Description: Bio 1030

The first course of a two-semester sequence which examines the human body from an integrated perspective. Topics include an introduction to chemistry and cell function, tissue types, skeletal system, muscular system, and nervous system. 3 units

Co-requisite: Bio 1030L

This anatomy and physiology laboratory is a co-requisite for Bio 1030. Students enrolled in Bio 1030 must be enrolled in Bio 1030L, and vice versa. If Bio 1030 is dropped, Bio 1030L must also be dropped. Offered every year. Letter graded. Your grade for Bio 1030 and Bio 1030L will be calculated together and the same grade applied to both. 1 unit

Pre-requisite or Co-requisite: Che 1003 or Che 1052

The college catalog specifically states that a **pre-** or **co-requisite** for this course is one semester of college level chemistry (such as **Che 1003** or **Che 1052**). If you are in doubt about whether you meet this requirement, please talk to me. Students who do not have evidence of prior completion or current enrollment in an appropriate chemistry class will be de-enrolled from this course.

Student Learning Outcomes:

1. You will be able to describe cell structure and function, and explain the underlying chemical principles that determine cellular anatomy and physiology.
2. You will be able to identify body tissues, their functions, and common locations.
3. You will be able to identify the bones of the human body and their major structures.
4. You will be able to identify key muscles of the human and of the cat; and the attachments, innervation, and associated movements of the human muscles.

5. You will understand the basic anatomy and physiology of bones, skeletal muscle, and the central nervous system.
6. You will be able to describe the symptoms and mechanisms of representative diseases and injuries, and explain how such pathophysiology relates to normal anatomy and physiology.

Required Texts and Materials:

For each lecture there is an assigned reading. It is recommended that you read through these pages both prior to and following the related lecture. The textbook for this class will be used both semesters of the Human Anatomy and Physiology sequence (Bio 1030 & Bio 1040); the dissection kit is also used both semesters.

- Amerman, *Human Anatomy and Physiology* (2nd ed.), Pearson, 2019.
Bundled with *Mastering A&P*

The following materials are required for work in various laboratories:

- Dissecting kit (available at bookstore)
- Old shirt or coat for dissecting work

For this course you will need to access two websites:

- Canvas.pointloma.edu
This website will be your source for all lecture and laboratory handouts.
- www.masteringaandp.com
This website is available through your textbook—either included in the price of a new textbook, or a separate purchase with a used textbook. This website will serve as a resource for images and study guides, as well as the site you will use to access on-line quizzes.

Recommended Materials

These two items are for sale at the bookstore and may be helpful for learning the anatomical material this semester and next semester.

- Krieger, *A Visual Analogy Guide to Human Anatomy & Physiology*, Morton, 2013
- Hansen, *Netter's Anatomy Coloring Book*, Elsevier, 2010.

Evaluation:

Based on an expected 1225+ total points

Your grade for Bio 1030 and Bio 1030L will be calculated together and the same grade applied to both.

Lecture points: 840+ points

- 1) 5 non-cumulative exams (100 points/exam) = 500 points
- 2) 6 quizzes (15 points/quiz) = 90 points
- 3) 20-25 on-line quizzes on MAP (5 points/quiz) = 100-125 points
- 4) one final, cumulative exam = 150 points
- 5) up to 100 points possible from additional assignments or quizzes

Laboratory points: 385 points

- 1) 10 lab quizzes (10 points/quiz + 10 points) = 110 points
- 2) 4 lab exercises (25 points/exercise) = 100 points
- 3) skeleton practical exam = 75 points
- 4) muscle practical exam = 100 points

Your letter grade will be determined from your cumulative percent score as follows:

A: 93.0—100%	B-: 80.0—82.99	D+: 67.0—69.99
A-: 90.0—92.99	C+: 77.0—79.99	D: 63.0—66.99
B+: 87.0—89.99	C: 73.0—76.99	D-: 60.0—62.99
B: 83.0—86.99	C-: 70.0—72.99	F: ≤ 59.99

Extra Credit:

Although you only need to take six quizzes for class credit, up to nine quizzes (each worth 15 points) will be administered during the semester. When calculating your grades, every third quiz will be considered “extra credit”, as reflected in your cumulative score. By taking all of the quizzes (and doing well), you could potentially earn 135 points out of 90 points. This is the only extra credit offered during the semester.

Lecture Participation:

Taking Notes:

For each topical section I will make an outline available on Canvas (canvas.pointloma.edu) at least two days prior to the first lecture for that topic. If possible, save a tree by printing these outlines as double-sided copies.

Studying:

It is highly recommended that you study at least 2-3 hours for every credit hour. Since Bio 1030 + Bio 1030L are worth four credits, **you should be studying 8—12 hours every single week**—and not just the week prior to an exam or practical. This studying should also be spread out during each week, not simply occurring before Friday’s quiz. While studying includes reading the assigned text, you should concentrate on the lecture material presented in class. Make sure that you not only **memorize** the information, but that you also **understand** the material.

State Authorization:

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student’s responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

Tutoring:

Tutors have been assigned to this class and they are available for individual and group tutoring.

On-Line Quizzes:

Unless you’ve purchased a different edition, your textbook comes with a free, 2-year access to Mastering A&P. If you are using a different version of the text, you will need to purchase this separately (MasteringAandP.com; choose Amerman, Human Anatomy & Physiology, 2e). This website will be used both semesters in all sections of Bio 1030/Bio 1040.

Most Mondays and Wednesdays of this semester you will need to take a simple 5-point on-line quiz. This quiz is intended to help you keep up with all the material we are covering in class. Each quiz may cover material from the day’s lecture, previous material, and even some textbook material that will not be covered in class (but may be covered on quizzes and exams).

Each quiz will be available from noon of Monday or Wednesday to 7:59 a.m. the next morning.

For this semester, use the following to identify and correctly log-in to the site:

textbook	Amerman, Human Anatomy @ Physiology, 2e
course name	Bio1030 sec 1 PLNU 2021
course ID	flietstra70704

Although each quiz is open-book, it is highly recommended that you read the chapter associated with the day’s lecture ahead of time. Indeed, you will be better able to learn the material if these quizzes you first study the material, then try to take the quiz without referring to your notes or textbook.

Feel free to take notes while you take these quizzes, but please DO NOT copy down questions and their answers, and DO NOT share answers with other members of the class. These quizzes are intended to help you and your classmates learn the material, so please do not undermine this goal by cheating.

In-Class Quizzes:

On the Fridays that do not have an exam, a **15-point quiz** will be administered at the start of class. These quizzes will consist of short answer and essay questions. The material to be covered by each quiz will be announced on the previous Wednesday. For each quiz, **10-12 points** will cover new material and **3-5 points** will cover previously studied material. These quizzes have a time limit, so if you are late for class, you will have less time. These quizzes are **not** intended to give you “easy points”, but are designed to help **focus your studying**. In general, these quizzes will be returned and discussed on the following Monday.

Exams:

The dates on which exams will be administered are indicated in the lecture schedule below. Exams can only be rescheduled with advance notice and with a valid reason, such as illness (requiring a signed statement from a physician) or a school-related activity (requiring prior notification from the administration and the student).

The final cannot be rescheduled.

- Lecture exams will cover the material given in class as indicated in the syllabus.
- Each exam will be composed of 40 multiple-choice questions (80 pts total) and 20 points of short answer/essay questions.

Exams will be administered on Canvas, using Honorlock. You will need to take your laptop to class for each exam. Unless given special permission (such as taking the exam through the EAC), you will not receive credit for an exam taken remotely. If you do not have a laptop, notify Dr. Flietstra as soon as possible so you can borrow a department laptop.

Laptop Policy:

On occasion, we will use laptop computers in the lab. In the classroom, however, laptops tend to interfere with your education and can serve as a distraction for your neighbors. Numerous studies (some highlighted here) have confirmed that classroom laptop use can be detrimental to learning. For this reason, I do not allow the use of laptops or other electronic devices in the classroom, with the exception of exams.

1. Laptops and other electronic devices enable more than just note-taking, introducing numerous distractions (web-surfing, homework for other classes, social media, etc.) for you and your neighbors. You may think that you can multitask, but studies show you can't.
http://www.slate.com/articles/health_and_science/science/2013/05/multitasking_while_studying_divided_attention_and_technological_gadgets.html
2. As already mentioned, using your laptop in class can be less than neighborly. Your classmates' grades can also suffer due to the distracting pull of the laptop.
<https://www.sciencedirect.com/science/article/pii/S0360131512002254>
3. Writing is a more effective way of learning material than is typing. With typing, each letter is pretty much the same thing for the brain. Writing, however, uses different muscle groups with each word and encourages the brain to integrate material during the writing process. Typing may be easy and fast, but by making the brain passive, it discourages learning.
<https://www.npr.org/2016/04/17/474525392/attention-students-put-your-laptops-away>
4. Using electronic devices in class also impairs long-term retention, with one study suggesting that cellphone use in class can lower one's grade by half a letter grade.
<https://www.insidehighered.com/news/2018/07/27/class-cellphone-and-laptop-use-lowers-exam-scores-new-study-shows>

Laboratory Participation:

Attendance:

Attendance is mandatory. You are expected to stay for the **entire scheduled laboratory period** unless dismissed by the instructor. If you do not attend or fail to complete the scheduled laboratory, you will not receive any credit for that particular lab. This penalty also applies to the dissection labs. Individuals who do not fully participate in the dissection labs will have 25 points subtracted from their lab practical score for each laboratory dissection period missed. If participation in a school-sponsored activity or illness prevents you from attending your scheduled lab section during a particular week you *might* be able to attend another lab section during that same week. Such a switch requires the **prior** permission of the lab instructor and should not be viewed as an automatic privilege.

Laboratory Handouts:

Prepare for the laboratory exercise by reading the materials supplied ahead of time. Laboratory exercises will be posted on Canvas (canvas.pointloma.edu) at least one week prior to the lab. When downloading documents from Canvas it often works better to use *Chrome* rather than *Internet Explorer*. You must submit all your answers for laboratory exercises on a full size printed handout, not on separate sheets.

Textbook and Lecture Notes:

The lab exercises and write-up often refer to material found in your textbook and in the lecture notes. Both sources, therefore, should be brought to lab each week.

Laboratory Quizzes:

As indicated on the lab schedule, quizzes will be administered at the start of most laboratory sections. The topic of the quiz is indicated in the schedule. If you are late for lab, you will not be given the opportunity to take any missed quiz.

Muscle Practical:

The muscle laboratory practical is scheduled for all laboratory sections (regardless of normally scheduled day and time) on **Tuesday, November 16**. The laboratory practical will be administered in the one-hour blocks during normal school hours. Prior to the exam, you will be asked to indicate which time(s) are amenable to your schedule. If you anticipate conflicts, please do your best to clear them prior to the muscle labs. The muscle laboratory practical will be worth **100 points**.

Laboratory Assignments:

Laboratory assignments will be due at the end of the lab period. You **cannot** hand in a laboratory write-up for a lab you did not attend. It is important that you recognize that these laboratory write-ups must **reflect your own work**, and not someone else's. You can—and should—discuss the assignment with your classmates, but that you cannot copy their answers. Students who hand in identical assignments will not be given any credit for that particular assignment.

Laboratory Safety and Clean-Up:

No food (including gum) or water in the laboratory.

Keep all backpacks and other personal materials either on the lab bench (if there is room) or completely under the lab bench, such that no one could possibly trip over these items.

Enclosed shoes are mandatory. Open-toed shoes, clogs, or sandals are not permitted. You also cannot wear shoes that expose the top of the foot.

At the end of each laboratory period make sure that your table, and the equipment you've used, has been **cleaned and returned** to its appropriate place. Points are deducted for messes not cleaned up.

Other Academic Issues:

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

The laboratory portion of the course has two practical exams. Since these exams are administered in the lab, they cannot be given to the entire class at once, but must instead be given to smaller groups of students at separate times. Any discussion of the content of the exam between a student who has taken the practical exam with another student who has yet to take the exam will be considered to be cheating on the part of both students, and dealt with as described above.

PLNU ACADEMIC ACCOMMODATIONS POLICY

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course and/or if they do not wish to utilize some or all of the elements of their AP in that course.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation.

SPIRITUAL CARE

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith. If students have questions, a desire to meet with the chaplain or have prayer requests you can contact the [Office of Spiritual Development](#).

To Teach ~ To Shape ~ To Send Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Topic 1	Chemistry and Cell Biology
Topic 2	Histology
Topic 3	Skeletal Anatomy and Physiology
Topic 4	Muscular Anatomy and Physiology
Topic 5	Nervous System

Tentative Lecture Schedule

Aug 31 (Tu)	Introduction to Anatomy and Physiology Elements and Atoms	chp. 1 pp. 7-27 chp. 2 pp. 31-34
On Your Own	Anatomical Terms	
Sept 1 (W)	Chemical Bonds and Reactions; pH	chp. 2 pp. 34-50
Sept 3 (F)	Solutions, Cytoplasm, Diffusion & Osmosis	chp. 2 pp. 34-35 chp. 3 pp. 69, 74-82, 96-100

Sept 6 (M)	LABOR DAY	
Sept 8 (W)	Organic Chemistry; Membrane Proteins	chp. 2 pp. 50-64 chp. 3 pp. 72-74
Sept 10 (F)	Cell Membranes, Vesicles; Organelles	chp. 3 pp. 70-74, 83-96 chp. 4 pp. 126-127

Sept 13 (M)	Nucleus and DNA; Transcription and Translation	chp. 3 pp. 100-117
Sept 15 (W)	Genetic Inheritance	chp. 27 pp. 1093-1097
Sept 17 (F)	Exam 1 <i>Covers lecture & on your own material 8/31—9/13</i>	

Sept 20 (M)	Genetic Inheritance	chp. 27 pp. 1093-1097
Sept 22 (W)	Histology; Epithelial Tissue	chp. 4 pp. 123-137
Sept 24 (F)	Connective Tissue	chp. 4 pp. 137-147

Sept 27 (M)	Integumentary System	chp. 5 pp. 160-174
Sept 29 (W)	Integumentary System	chp. 5 pp. 174-181
Oct 1 (F)	Exam 2 <i>Covers lecture & on your own material 9/15—9/27</i>	

Oct 4 (M)	Bone Classifications & Histology	chp. 6 pp. 184-194
Oct 6 (W)	Bone Development and Homeostasis	chp. 6 pp. 194-207
Oct 8 (F)	Articulations	chp. 8 pp. 257-270

Oct 11 (M)	Synovial Joints	chp. 8 pp. 261-264, 270-273
Oct 13 (W)	Specific Synovial Joints; Joint Disorders	chp. 8 pp. 264, 274-280
Oct 15 (F)	Gross Muscle Anatomy	chp. 9 pp. 283-289
On Your Own	Gluteal Muscles	

Oct 18 (M)	Motor Units and Muscle Contractions	chp. 10 pp. 364-371
On Your Own	Anterior Thigh Muscles; Posterior Thigh Muscles	
Oct 20 (W)	Exam 3 <i>Covers lecture & on your own material 9/29—10/15</i>	
Oct 22 (F)	HOLIDAY: FALL BREAK	

Oct 25 (M)	Muscle Histology and Cytology	chp. 10 pp. 337-347
On Your Own	Medial Thigh Muscles	
Oct 27 (W)	Sliding Filament Model of Contraction	chp. 10 pp. 355-360, 365-366
On Your Own	Posterior Leg Muscles Anterolateral Leg Muscles	
Oct 29 (F)	Walking	chp. 9 pp. 332-335
On Your Own	Posterior Shoulder Girdle Muscles Anterior Shoulder Girdle Muscles	

Nov 1 (M)	Neuromuscular Junction; Excitation	chp. 10 pp. 347-355
On Your Own	Intrinsic Shoulder Muscles	
Nov 3 (W)	Muscle Metabolism	chp. 10 pp. 360-363 chp. 23 pp. 902-914
On Your Own	Anterior Arm Muscles; Posterior Arm Muscles	
Nov 5 (F)	Exam 4 <i>Covers lecture & on your own material 10/18—11/1</i>	

Nov 8 (M)	Skeletal Muscle Performance; Muscle Fiber Types	chp. 10 pp. 367-368, 371-374
On Your Own	Anterior Forearm Muscles; Posterior Forearm Muscles	
Nov 10 (W)	Scapular Movement Shoulder (Arm) Movement Elbow (Forearm) Movement Wrist Movement	chp. 9 pp. 312-321
On Your Own	Anterolateral Abdominal Muscles; Neck Muscles	
Nov 12 (F)	Spinal Nerves	chp. 7 pp. 230-231 chp. 13 pp. 475-479, 488-489

Nov 15 (M)	FREE DAY	
Nov 16 (Tu)	Laboratory Exam 2: Muscle Practical—all sections	
Nov 17 (W)	Neurohistology and Neurophysiology	chp. 11 pp. 384-397
Nov 19 (F)	Resting, Graded, and Action Potentials	chp. 11 pp. 393-405

Nov 22(M)	Synapses and Neurotransmitters	chp. 11 pp. 406-417
Nov 24-26	HOLIDAY: THANKSGIVING BREAK	

Nov 29 (M)	Central Nervous System: Brain	chp. 12 pp. 425-442
Dec 1 (W)	Cranial Nerves	chp. 13 pp. 481-489
Dec 3 (F)	Exam 5 <i>Covers lecture & on your own material 11/3—11/29</i>	

Dec 6 (M)	CNS: Spinal Cord and Protection of the CNS	chp. 12 pp. 443-452
Dec 8 (W)	Central Nervous System Disorders	chp. 12 pp. 424-471
Dec 10 (F)	quiz only	

Dec 13 (M)	FINAL EXAM, 10:30a.m.—1:00p.m.	
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Laboratory Schedule for Bio 1030, Fall 2021

Week of:	Lab Exercise	Quiz
Aug. 31	NO LAB	
Sept. 6	Skeletal System: Appendicular Skeleton	<i>bone terminology</i>
Sept. 13	Basic Chemical Principles	<i>appendicular skeleton</i>
Sept. 20	Skeletal System: Axial Skeleton	<i>basic chemical principles</i>
Sept. 27	Skeleton—Review	<i>axial skeleton</i>
Oct. 4	<u>Laboratory Exam 1: Skeleton Practical</u> Cat Dissection: Muscles: Lower Extremity	
Oct. 11	Cat Dissection: Muscles: Lower Extremity 2	<i>no quiz</i>
Oct. 18	Muscle Function	<i>muscles of cat lower extremity</i>
Oct. 25	Cat Dissection: Muscles: Upper Extremity 1 Cadaver Examination: Muscles: Lower Extremity	<i>muscle function</i>
Nov. 1	Cat Dissection: Muscles: Upper Extremity 2 Cadaver Examination: Muscles: Upper Extremity	14 pt quiz: <i>cat muscles—upper body</i> <i>human muscles—lower body</i> <i>review</i>
Nov. 8	Cat Dissection: Muscles—Review Cadaver Examination: Muscles—Review	16 pt quiz: <i>cat muscles—upper body</i> <i>human muscles—upper body</i> <i>review</i>
Nov. 15	<u>Laboratory Exam 2: Muscle Practical</u> <u>Tuesday, November 16 for all sections</u> No Regularly Scheduled Laboratory Sections	
Nov. 22	NO LAB—THANKSGIVING BREAK	
Nov. 29	Muscle Physiology	<i>muscle physiology</i>
Dec. 6	Brain and Cranial Nerves	<i>muscle physiology</i>