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 2019

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lecture time/location:	Latter 1 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.

If you have any questions about the material in this course, feel free to stop by during my office hours as listed above. Either set up an appointment or simply drop by. I may also be in my office at other, unscheduled times. If my office hours don't work for your schedule, e-mail or stop by and we can try to find a workable time to talk.

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 130 & Bio 140); 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 <u>1225+ total points</u>

Following each exam, I will provide an update on the total points you have earned up until that point, along with the total possible points. I will not post your grades on Canvas. Instead, I expect that you can calculate your own grade based on the quizzes, exams, and assignments that have been returned. Quizzes, tests and class assignments will be returned to you via a folder binder that is passed around the classroom. Occasionally lab material may be returned this way as well. Please only remove your own materials from this folder.

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 (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.

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	Bio1300 Flietstra 2019
course ID	MAP8642736

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.
- Answers to the multiple-choice questions will be made available in lab after the tests have been returned. If you do not take time to look at the multiple choice questions at this time you will not be given another opportunity to review the answer key. **Do not to copy down the exam questions and answers**. Instead, use this opportunity to find out what areas you do not understand and need to further study. Remember, the final is cumulative.

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 devises in the classroom.

1. Laptops and other electronic devises 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 devises 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*. If possible, save a tree by printing these lab hand-outs as double-sided copies.

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. 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 19**. 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

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in 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. See Academic Policies in the Undergraduate Academic Catalog.

LAPTOP COMPUTERS:

I recognize that portable computers may be the preferred method for students to take notes in this class and I support those students who choose this method. Computers, however, can become a distraction as they also can enable activities other than note-taking. These activities are not only a distraction to you, but they are also a distraction to the students around you. Thus I am placing a ban on all computer activities that are not directly related to this class during the course of the lecture and lab periods. Failure to comply with this restriction will result in the loss of your privilege to use computer during class and may result in the loss of this privilege by all of the students in this class.

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			
Sept 4 (W)	Introduction to Anatomy and Physiology Elements and Atoms	chp. 1 chp. 2	pp. 7-27 pp. 31-34
On Your Own	Anatomical Terms		
Sept 6 (F)	Chemical Bonds and Reactions; pH	chp. 2	pp. 34-50

Sept 9 (M)	Solutions, Cytoplasm, Diffusion & Osmosis	chp. 2 chp. 3	pp. 34-35 pp. 69, 74-82, 96-100
Sept 11 (W)	Organic Chemistry; Membrane Proteins	chp. 2 chp. 3	pp. 50-64 pp. 72-74
Sept 13 (F)	Cell Membranes, Vesicles; Organelles	chp. 3 chp. 4	pp. 70-74, 83-96 pp. 126-127

Sept 16 (M)	Nucleus and DNA; Transcription and Translation	chp. 3	pp. 100-117
Sept 18 (W)	Genetic Inheritance	chp. 27	pp. 1093-1097
Sept 20 (F)	**Exam 1** *Covers lecture & on your own material 9/4—9/16*		

Sept 23 (M)	Genetic Inheritance	chp. 27	pp. 1093-1097
Sept 25 (W)	Histology; Epithelial Tissue	chp. 4	pp. 123-137
Sept 27 (F)	Connective Tissue	chp. 4	pp. 137-147

Sept 30 (M)	Integumentary System	chp. 5	pp. 160-174
Oct 2 (W)	Integumentary System	chp. 5	pp. 174-181
Oct 4 (F)	**Exam 2** *Covers lecture & on your own material 9/18—9/30*		

Oct 7 (M)	Bone Classifications & Histology	chp. 6	pp. 184-194
Oct 9 (W)	Bone Development and Homeostasis	chp. 6	pp. 194-207
Oct 11 (F)	Articulations	chp. 8	pp. 257-270

Oct 14 (M)	Synovial Joints	chp. 8	pp. 261-264, 270-273
Oct 16 (W)	Specific Synovial Joints; Joint Disorders	chp. 8	pp. 264, 274-280
Oct 18 (F)	Gross Muscle Anatomy	chp. 9	pp. 283-289
On Your Own	Gluteal Muscles		

Oct 21 (M)	Motor Units and Muscle Contractions	chp. 10	pp. 364-371
On Your Own	Anterior Thigh Muscles; Posterior Thigh Muscles		
Oct 23 (W)	**Exam 3** *Covers lecture & on your own material 10/2—10/18*		
Oct 25 (F)	**HOLIDAY: FALL BREAK**		

Oct 28 (M)	Muscle Histology and Cytology	chp. 10	pp. 337-347
On Your Own	Medial Thigh Muscles		
Oct 30 (W)	Sliding Filament Model of Contraction	chp. 10	pp. 355-360, 365-366
On Your Own	Posterior Leg Muscles Anterolateral Leg Muscles		
Nov 1 (F)	Walking	chp. 9	pp. 332-335
On Your Own	Posterior Shoulder Girdle Muscles Anterior Shoulder Girdle Muscles		

Nov 4 (M)	Neuromuscular Junction; Excitation	chp. 10	pp. 347-355
On Your Own	Intrinsic Shoulder Muscles		
Nov 6 (W)	Muscle Metabolism	chp. 10 chp. 23	pp. 360-363 pp. 902-914
On Your Own	Anterior Arm Muscles; Posterior Arm Muscles		
Nov 8 (F)	**Exam 4** *Covers lecture & on your own material 10/21—11/4*		

Nov 11 (M)	Skeletal Muscle Performance; Muscle Fiber Types	chp. 10	pp. 367-368, 371-374
On Your Own	Anterior Forearm Muscles; Posterior Forearm Muscles		
Nov 13 (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 15 (F)	Spinal Nerves	chp. 7 chp. 13	pp. 230-231 pp. 475-479, 488-489

Nov 18 (M)	**FREE DAY**		
Nov 19 (Tu)	***Laboratory Exam 2: Muscle Practical—all sections***		
Nov 20 (W)	Neurohistology and Neurophysiology	chp. 11	pp. 384-397
Nov 22 (F)	Resting, Graded, and Action Potentials	chp. 11	pp. 393-405

Nov 25 (M)	Synapses and Neurotransmitters	chp. 11	pp. 406-417
Nov 27-29	**HOLIDAY: THANKSGIVING BREAK**		

Dec 2 (M)	Central Nervous System: Brain	chp. 12	pp. 425-442
Dec 4 (W)	Cranial Nerves	chp. 13	pp. 481-489
Dec 6 (F)	**Exam 5** *Covers lecture & on your own material 11/6—12/2*		

Dec 9 (M)	CNS: Spinal Cord and Protection of the CNS	chp. 12	pp. 443-452
Dec 11 (W)	Central Nervous System Disorders	chp. 12	pp. 424-471
Dec 13 (F)	quiz only		

Dec 18 (W)	**FINAL EXAM, 10:30a.m.—1:00p.m.**		

Laboratory Schedule for Bio 1030, Fall 2019

Week of:	***Lab Exercise***	***Quiz***
Sept. 2	NO LAB	
Sept. 9	Skeletal System: Appendicular Skeleton	*bone terminology*
Sept. 16	Basic Chemical Principles	*appendicular skeleton*
Sept. 23	Skeletal System: Axial Skeleton	*basic chemical principles*
Sept. 30	Skeleton—Review	*axial skeleton*
Oct. 7	**Laboratory Exam 1: Skeleton Practical** Cat Dissection: Muscles: Lower Extremity	
Oct. 14	Cat Dissection: Muscles: Lower Extremity 2	*no quiz*
Oct. 21	Muscle Function	*muscles of cat lower extremity*
Oct. 28	Cat Dissection: Muscles: Upper Extremity 1 Cadaver Examination: Muscles: Lower Extremity	*muscle function*
Nov. 4	Cat Dissection: Muscles: Upper Extremity 2 Cadaver Examination: Muscles: Upper Extremity	***14 pt** quiz:* *cat muscles—upper body* *human muscles—lower body* *review*
Nov. 11	Cat Dissection: Muscles—Review Cadaver Examination: Muscles—Review	***16 pt** quiz:* *cat muscles—upper body* *human muscles—upper body* *review*
Nov. 18	**Laboratory Exam 2: Muscle Practical** **Tuesday, November 19 for all sections** No Regularly Scheduled Laboratory Sections	
Nov. 25	NO LAB—THANKSGIVING BREAK	
Dec. 2	Muscle Physiology	*muscle physiology*
Dec. 9	Brain and Cranial Nerves	*muscle physiology*