

BIOL 2124

HUMAN PHYSIOLOGY LAB,

SPRING 2022



*Instructor: _____

*ASU Email: _____

*Phone: _____

*Office: _____

*Office Hours: _____

Note: The above information can be found on the Lab Blackboard page.

Course Information

Course Description

Welcome to Human Physiology! In the lab section of this course, you will explore topics concerning the normal functions of the human body's cells, tissues, organs, and organ systems (see Course Schedule) by participating in a variety of lab activities. The physiology lab exercises that you will participate in this semester have been designed to offer you the opportunity to gain practical experience with the topics being discussed in the lecture component of the course (BIOL 2324), in a "hands-on" way. Generally, you can expect to receive your first exposure to most of the course content by way of your experiences preparing for your lab work each week.

Labs in this course, are designed to give each student the opportunity to participate with their lab partners in the class by completing specific activities which give them the opportunity to observe and "experience" the physiological concepts being addressed every week. So, your opportunity to learn and understand human physiology will be enhanced by your attention and active participation in the lab experience. You will see in this course, how the knowledge of human anatomy you have built, is applied to an understanding of human body functions beginning at the cellular level and expanding to

how the various organ systems interact with one another to maintain homeostasis... otherwise known as Human Physiology!

Prerequisite and Co-requisite Courses

BIOL 2323 and 2321 are prerequisites for this course. PLEASE NOTE: BIOL 2124, Human Physiology Lab is a co-requisite to BIOL 2324 Human Physiology Lecture, which you are required to also be enrolled in this semester. To earn course credit, enrollment in both classes this semester is required.

Prerequisite Skills

Accessing Internet websites (such as Top Hat and Mastering A and P), using ASU Library resources, and proficiency with Microsoft Word and/or PowerPoint are expectations of the BIOL 2324/2124. Other expectations include the ability to create and upload Word/PDF documents to Blackboard. Other formats like JPG's, Links to Google Docs, etc. will not be accepted.

Student Learning Outcomes

A successful student in Human Physiology should be able to achieve the course and state core related learning outcomes listed below. Upon completion of this course, students will be able to:

- locate, identify, and functionally describe the structures of the human body at all levels of organization (i.e. recall content) = CT1, EQS1, EQS2 – Assessment = In class activities, lecture exams, embedded test questions, lab practical exams, and lab activities/reports
- develop understanding of the functional relationships of anatomical structures to one another (at all levels of organization) in health and communicate the acquired knowledge in written form. (i.e. comprehend the material). CS1 – Assessment = In class activities, lecture exams, embedded test questions, lab practical exams, and lab activities/reports
- perform laboratory investigations in which numerical physical and chemical physiological data pertaining to tissue function are collected, classified, and analyzed in order to reach an informed conclusive interpretation about relevant clinical scenarios and “real-world” applications. EQS1 – Assessment = In class activities, lecture exams, embedded test questions, lab practical exams, and lab activities/reports work effectively with others to support and accomplish a shared goal = CS1, TW2 – Assessment = In class activities, lecture exams, embedded test questions, lab practical exams, and lab activities/reports
- connect what she/he is learning to her/his own field (i.e. to make physiology relevant to your own academic endeavors).

Assessment = In class activities, lecture exams, embedded test questions, lab practical exams, and lab activities/reports

For State and Accreditation purposes this course will assess your ability to:

- CT1: Gather, analyze, evaluate, and synthesize information relevant to a question or issue
- CS1: Develop, interpret, and express ideas through effective written communication.
- EQS1: Manipulate and analyze numerical data and arrive at an informed conclusion.
- EQS2: Manipulate and analyze observable facts and arrive at an informed conclusion.
- TW2: Work effectively with others to support and accomplish a shared goal.

Course Delivery

Biology 2324 and 2124 are face-to-face courses with online components that students are expected to access in ¹ [Blackboard](#). Students will also be required to purchase and be able to access both Top Hat and Mastering A and P via the internet. In other words, we will be meeting physically on campus AND will be completing much of the course work online (see the Required Course Materials section of your syllabus for the necessary technology).

Required Texts and Materials

- **Required** - Lab Protocols which are located on the Lab Blackboard Course Page.
- **Required** - An inexpensive calculator that does basic math functions. Cell phone calculator use will not be permitted during lab exams.
- **Required** - Cell phone for attendance in lab.
- **Encouraged** - Masks at all times.
- **Optional, but encouraged** - Laptop or tablet for use in lab.

Technology Requirements

To successfully complete this course, students are required to:

- purchase access to the **Top Hat Response System** – Mobile/Electronic device-driven platform that we will use in both lecture and lab for attendance, quizzes, readings, AND homework activities. There is an app for both android and apple-based smartphones and tablets so that you can take physiology anywhere! It also works well with and without Wi-Fi, although Wi-Fi is required. Your lecture or lab instructor will have more information on how to join the lecture and lab sections through the Top Hat Monocle.

- purchase **Mastering A and P** access – MAP is an effective and widely used online homework, tutorial, and assessment system for human physiology. You will use MAP in both lecture and lab. From MAP you will be able to access the electronic textbook, PhysioEx and Interactive Physiology (IP) assignments.
- have reliable Wi-Fi and broadband internet access either on campus, off campus, or both.
- have access to a desktop computer or laptop (must be able to run the Google Chrome browser)
- have in class (both lecture and lab) access to a laptop or a smartphone/tablet (either Apple or Android-based)
- have access to a web camera (either on a desktop computer/laptop or smartphone/tablet)
- check Blackboard regularly. Announcements, grades, some course materials, and assignments for lectures will be distributed this way. Most lab resources will be distributed via the LAB Blackboard course page.
- complete the Biosafety Course on Bb. You cannot attend lab unless you take and pass the required safety training with at least a 90%. It must be completed by the 2nd lab meeting.
- **NOT Required** – Chromebooks are **NOT** allowed for the technology that we use in lecture (or lab). The technology that we use **CANNOT** be accessed by a Chromebook.

Note: lecture presentations, handouts, outlines, exam checklists, and study tips are posted on Top Hat or Blackboard.

Communication

Class communication will be routinely distributed via email. Students are required to have an ASU email account that is **MUST** be checked **DAILY** and is the prefer method of communication for BIOL 2324/2124. **This is NOT an option.** Call the ASU IT Department if you need one or have forgotten how to access it (325-942-2911).

All private communication will be done exclusively through your ASU email address, which should be checked frequently for announcements and policy changes. In your emails, you are required to include the course name and section number/day and time in your subject line. In the body of your email clearly state your name, ASU (campus) ID number, and a detailed reason for your email. Email messages will receive a response within 24 hours during working hours Monday through Friday. Weekend and late Friday afternoon messages may not be returned until Monday. **However, if the email subject line is different from that stated above AND you do not include the information previously stated, your email will not receive a reply in a timely manner or it may not receive a reply at all. Any email not originating from an ASU email account will NOT receive a reply.**

Virtual communication is available: Office hours and/or advising may be done with the assistance of the telephone, Collaborate, etc. Please email me for more information on these modes of communication.

Grading

Evaluation and Grades

Course grades will be determined as indicated in the table below.

Assessment	Maximum Number of Points	Percent of Total Grade
Lab Exam 1	150 points	15% of Final Course Grade
Lab Exam 2	150 points	15% of Final Course Grade
Lab Exam 3	150 points	15% of Final Course Grade
Total	450 points	45% of Final Course Grade

Grading System

Course grades will depend on completing course requirements and meeting the student learning outcomes. Once all lab assessments and course components are complete your lab point total will be reported to your lecture instructor (BIOL 2324). All points will be added together and a letter grade will be assigned based on the grading scale below.

BIOL 2324/2124 uses the following grading scale:

A = 900.00-1000 points

B = 800.00-899.99 points

C = 700.00-799.99 points

D = 600.00-699.99 points

F = 0-599.99 points (Grades are not rounded up)

Please note exams, quizzes, or final grades are not curved, nor are they negotiable (i.e., an 899.9 pts = B; 599.9 pts = F, etc.). Grades will be changed only if you can demonstrate (with verifiable evidence) that there was an error in how the grade was calculated or an incorrect grade was entered. Once the grade is posted on Blackboard, you have only 48 hours to challenge it...(the end of the semester is too late). See 'Re-grading Procedures' below for a complete explanation of how to do this. All students will be treated equally and fairly, and all grades will be calculated in the same way, regardless of extenuating circumstances or any reason not related to your actual performance in the course. However much I may sympathize with your

(personal) circumstances, I never consider them to be a basis for grade assignments. The activity points in the lecture component of this course serve as an incredibly generous, built-in curve. You are required to complete ALL activity points when they become available because once assigned; they cannot be made up. Therefore, you should always attend class and strive to do your best so that you may earn the grade you want. It is your responsibility to keep up with your point total. Don't worry; I will help if you just ask!

ASSIGNMENT and ACTIVITY DESCRIPTIONS

HOW DO I PREPARE and WHAT DO I NEED STUDY?

Prior to attending each lab, students will be expected to:

1. download and print out all handouts associated with the upcoming week's lab, including Lab Protocol pages that you will use as your guide and instructions for each week's lab activity. If you prefer you can access these documents electronically. Documents are located under the LAB Blackboard course page link titled "**Lab Protocols**".
2. READ and reread if necessary ALL lab protocol materials BEFORE coming to lab. This will better prepare you for the topics that will be addressed in the activities planned for your lab session each week (i.e. Know what you are doing BEFORE coming to lab. There WILL NOT be time for "figuring it out" once you arrive.)
3. Refer to any additional **Optional Study Materials** also located on the Lab Blackboard Course page. These are provided as items that you may or may not use but have been requested by students in the past to offer additional study material for lab exams. Many of these documents contain explanations and expected results for various lab experiments that will be completed.

Note: Lab Protocols and Optional Study Materials will never be assigned for grades nor collected for grading in any way. They are provided for your use to complete lab activities and prepare for lab exams. If you have any questions on these documents, be sure to contact your lab instructor. Again, many of the documents are provided strictly as additional resources.

Laboratory Agenda:

The larger objectives and learning outcomes for labs are to be able to:

1. Analyze and interpret the data collected in order to make reasonable conclusions
2. Associate actual observed phenomena from lab to physiological processes.
3. Apply the concepts connected to the experiments to practical "real life" scenarios related to human homeostasis, health, and disease.

During the lab, group members will perform experiments, collect data, make observations and record these. Discussion and collaboration within the group is encouraged so that the work accomplished is a direct reflection of the efforts of all members of the group. A major part of lab work extends beyond simply collecting experimental data.

Each member of a lab group will be expected to do their fair share and contribute willingly to the completion of each day's activities. IT IS RECOMMENDED THAT EACH STUDENT SHOULD RETAIN A COMPLETED COPY OF EACH ASSIGNMENT SINCE THESE WILL BE VALUABLE IN HELPING STUDENTS TO PREPARE FOR LAB EXAMS. Data collected and assignments completed WILL NOT be turned in for points, but rather used to study for your lab exams.

ASSESSMENT DESCRIPTIONS

Lab Exams:

Lab exams are intended to offer a real ability to show what you have learned by using and applying the analytical methods and interpretive skills being learned in your lab protocols. Each exam will employ a variety of testing methods. A portion of the exam will be factual recall and objective-type questions. Additionally, you will also be expected to interpret and analyze data similar to what you collected in your various lab activities. You will be expected to make mathematical calculations using the formulas in the same manner as they were used during lab activities. Exam dates for your particular lab section are noted by week on the lab schedule included in this syllabus.

Re-grading Procedures:

An answer "key copy" of each lab exam will be made available (in your instructor's office ONLY) after it has been graded. You are encouraged to review the "key copy" (in your instructor's office ONLY) to learn from your mistakes. You are also encouraged to confer with your instructor via the outlined procedure below if you have concerns regarding your exam once you have compared your work to the key. To report calculation or grading errors on your exam, you are required to follow the **Procedures for Re-grading** shown below. **If you believe you have found a grading error:**

- remember that a 1-point error is at best only .0025 pts on your final course average.
- study the key in your instructor's office before you request that any question(s) be re-graded. You must clearly state your reason(s) for thinking the question has been graded incorrectly in a neatly written, note. "Question X is graded wrong, or I deserve more points on question Y" are not reasons. This means your instructor expects a clearly delineated/rational reason based on verifiable factual

information that your answer is correct (i.e., from a reputable source like your text or lab manual). This means your instructor expect a short paragraph for each error along with specific “page” references.

- Email or turn in to your instructor your justification. Understand your instructor will be very fair and accurate, but the entire exam will be re-graded, AND if the resulting grade is lower than the previous, the second grade will replace the first.
- The deadline for requesting any recalculating or re-grading is 48 hours following the posting of the grade on Black board...No Exceptions.

LAB SAFETY

- **Covid Safety:** As a member of the Texas Tech University System, Angelo State University has adopted a [Facial Covering Policy](#)ⁱ to ensure a safe and healthy classroom experience. Current research on the COVID-19 virus suggests there is a significant reduction in the potential for transmission of the virus from person to person by wearing a mask/facial covering that securely covers the nose and mouth areas. Therefore, in compliance with the university policy physiology lab students are strongly encouraged to wear a mask/facial covering before, during, and after class. Faculty members may also ask you to display your daily wellness screening “badge” on Rampart as a prerequisite to enter the lab. You are also asked to maintain safe distancing practices to the best of your ability. Handwashing after before and lab activities is required.
- **Required:** Biosafety Training on Bb. Students must take and pass the Biosafety Training AND Lab Chemical Safety and Hygiene on Blackboard prior to the 2nd week of lab and pass a quiz with a score of at least 90%. Multiple attempts are allowed.
- Students must follow all written and verbal safety instructions.
- Students must wear proper protective equipment (gloves/masks/eye shields, etc.) when instructed.
- Students must wash hands before lab begins and after any manipulation of lab materials.
- First aid kits are located at the front table. Exact location will be disclosed in lab.
- Students must follow the Lab Safety Rules & Information posted below.

LAB SAFETY RULES & INFORMATION:

All students are required to read and follow the lab rules:

1. During lab, students must follow ASU Covid 19 safety procedures. Students are strongly encouraged to wear a mask at all times and maintain adequate (6ft) social distancing. Students must also wash hands before and after entering the lab.

2. Student behavior in the lab is to be maintained in a manner conducive to learning and study. No horseplay, rough housing, or any type of disruptive behavior is allowed in the lab at any time. Likewise, no degrading or offensive language will be tolerated. You will be asked to leave and subject to further disciplinary action if you are disruptive in any way.
3. You must attend the lab for which you are officially registered. No switching is allowed no matter what the reason.
4. No children are allowed in the lab at any time. This means during regular lab times and open review sessions.
5. You are not allowed to remove any materials from the laboratory. You must always return materials to their proper place.
6. Food, drinks, and all tobacco products are not allowed in the laboratory. You may take breaks at your discretion outside the lab.
7. You are expected to treat the lab materials with the utmost respect. Any person caught defacing, throwing, carelessly handling, etc., these materials will be asked to leave the lab immediately and subject to further disciplinary action from the university.
8. Familiarize yourself with the location and operation of eyewash stations.
9. If you are injured during lab, please alert the instructor for help.
10. At the end of each lab session, each lab group is responsible for cleaning their work area. You must clean the table with soap or other materials provided and water. You will not be allowed to leave lab unless your table is cleaned and your chairs are pushed under the table. **Up to 5 points may be deducted from every member of your lab group each time your area or the lab is not cleaned properly.**
11. Electronic devices such as cell phones, pagers, smart watches, headphones, google glasses etc. are allowed only when your instructor says. They should always be set to silent, so they are not a distraction to your peers or the instructor. **If they go off during lab, 5 points will automatically be deducted from your point total for each incidence after an initial warning.** You will not be allowed to have them out during lab exams either. Electronic devices are not allowed during lab exams and carry a steeper point penalty (see #12 below). You may use your phone, digital cameras or other recording devices if you wish during regular lab times.
12. No form of academic dishonesty will be tolerated. Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook.

Attendance Policy

Attendance and participation are mandatory. You are required to come prepared and attend lab for the full time each week. The volume of material and completion of the lab activities make it critical that you make every second in lab quality time. You must also attend the lab for which you are registered. Labs cannot be made up except under extraordinary circumstances. Only excuses acknowledged by the university catalog will be considered for make-up and will always be subject to written verification. Excessive absences will be reported to the Registrar's office and other required agencies.

Lab Make-Up Policy

If you miss a lab FOR ANY REASON, you must first contact your lab instructor within 24 hours of your absence (no exceptions) and provide them with a written, valid, university recognized excuse that is verifiable and make arrangements to attend another lab. All labs must be made up the same week they were originally scheduled, no exceptions. This is because the lab changes weekly.

Lab Exam Make-Up Policy

Students will be permitted to take a missed lab exam in another section only if they have contacted their instructor and been given permission to do so. The following criteria for Lab Exam Make Up is as follows:

- All lab exams must be made up the same week they are missed no exceptions.
- A grade of 0 will be recorded for any exam that is not taken or made-up.
- No student will be permitted to take more than ONE make-up exam at another section/time per semester unless they have discussed this possibility with their instructor well in advance.

The make-up exam policy beyond what is described above is left to the discretion of each lab instructor. The format of any make-up lab exam will be left to the discretion of your lab instructor but is usually extremely truncated versions with the same point values. Again, failure to follow these procedures will result in a 0 for the lab exam in question. Consider changing your schedule immediately if your personal or work-related commitments away from campus are likely to create a problem in this regard.

WITHDRAWAL FROM THE COURSE

Contrary to what many students believe, you are not automatically withdrawn from a course if you cease to attend lectures or labs. If you wish to discontinue participation in human physiology, you must formally withdraw by first seeing your instructor. After visiting with your instructor and you still wish to drop the course, you must complete and submit the **Course Drop Request Form** located on RamPort (Under the Registration

link). Requests for drops after the established drop date will not be processed and you will receive a grade in the class. **The last day to drop the course is Thursday, 28 April 2022. The appropriate form must be submitted by 5:00 p.m. Central Time.**

General Policies Related to This Course

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](#)²
- [Angelo State University Catalog](#)³

Academic Integrity

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's [Statement of Academic Integrity](#).⁴

Accommodations for Students with Disabilities

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the [Student Disability Services website](#).⁵ The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford
Director of Student Disability Services
Office of Student Affairs

325-942-2047

dallas.swafford@angelo.edu

Houston Harte University Center, Room 112

Incomplete Grade Policy

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](#)⁶ for more information.

Plagiarism

Plagiarism is a serious topic covered in ASU's [Academic Integrity policy](#)^[OBJ] in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft. in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the [ASU Writing Center](#).⁷

Student Absence for Observance of Religious Holy Days

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 [Student Absence for Observance of Religious Holy Day](#)⁸ for more information.

Title IX at Angelo State University

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault,

sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](#)⁹

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: michelle.miller@angelo.edu

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](#).¹⁰

Information About COVID-19

Please refer to ASU's [COVID-19 \(Coronavirus\) Updates](#)¹¹ web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification on potentially short notice based on developing circumstances.

Course Schedule

Week of	Lab Number	Topic, Activities, & Assignments
Jan. 17 th	1	Introduction, Orientation, Syllabus and Class Resources Fundamental Physiological Principles Mathematical Conversions and Applications
Jan. 24 th	2	Cell Physiology and Movement Through Cell Membranes PhysioEx Exercise #1 IP Module: Fluid and Electrolytes – Introduction to Body Fluids

Jan 31 st	3	Glucose Tolerance Testing and Metabolic Applications PhysioEx Exercise #4 IP Modules: Endocrine System Modules – Mechanism of Hormone Action, The Actions of Hormones on Target Cells: 1) Direct Gene Activation 2) Second Messenger Activation, The Hypothalamic-Pituitary Axis, Response to Stress
Feb. 7 th	4	Mechanical vs. Chemical Digestion Selected Examples of Enzymatic Digestion PhysioEx Exercise # 8 IP Modules: Digestive System Modules - Control of the Digestive System, Digestive Secretion, Enzymatic Digestion and Absorption
Feb. 14th	Lab Exam 1	Covers Labs 1-4
Feb. 21 st	5	Basic Neuroanatomy Review and Fundamentals of Neurophysiology Human Reflex Arc Considerations, Functions, and Reaction Time Assessments PhysioEx Exercise # 3 IP Modules: Nervous System I - Resting Membrane Potential, Generation of an Action Potential, Propagation and Velocity of the Action Potential Nervous System II – Events at the Synapse
Feb. 28 th	6	Sensory Physiology I: Cutaneous & Auditory Functions in Sensation and Perception
Mar. 7 th	7	Sensory Physiology II: Vision Considerations and Vestibular Labyrinthine Reflexes <i>Review and Refer to Mastering A&P – A&P Flix, PhysioEx & IP Modules from Weeks 5 & 6</i>
Mar. 14th		<i>Spring Break Holiday – NO LABS – Study and Review for Lab Exam 2</i>
Mar. 21 st	8	Muscle Contractility Exercises: Simulations and Analysis PhysioEx Exercise #2 IP Modules: Events at the Neuromuscular Junction, The Cross-Bridge Cycle, Muscle Metabolism
Mar. 28th	Lab Exam 2	Covers Labs 5-7
Apr. 4 th	9	Cardiovascular Physiology I: PhysioEx Exercise # 6 IP Modules: Pathway of Blood through the Heart, IP2: Electrical Activity of the Heart, IP2: Cardiac Cycle, IP2: Cardiac Output, Action Potentials in Autorhythmic Cells, Intrinsic Conduction System of the Heart, Cardiac Cycle, Regulation of Cardiac Output
Apr. 11 th	10	Cardiovascular Physiology II: Human Cardiovascular Dynamics and Electrocardiography PhysioEx Exercise # 5

		IP Modules: IP2: Cardiac Output, IP2: Factors Affecting Blood Pressure, IP Animation: Arterial Baroreceptor Reflex, IP Animation: Capillary Pressures and Capillary Exchange
Apr. 18 th	11	Respiratory Function Tests and Volume Determinations Selected Exercise Physiology Applications (Vernier) PhysioEx Exercise # 7 IP Modules: IP Animation: Pulmonary Ventilation, IP Animation: Control of Respiration IP Animation: Gas Exchange
Apr. 25 th	12	Renal Function Tests and Urinalysis PhysioEx Exercise # 9, 10 IP Modules: Urinary System- IP Animation: Introduction to Body Fluids, IP Animation: Glomerular Filtration, IP Animation: Processing of Salt and Water in the Nephron, IP Animation: Reabsorption and Secretion in the Proximal Tubule, IP Animation: Mechanisms to Control Acid-Base Homeostasis, IP Animation: Acid-Base Problems
May 2nd	Lab Exam 3	Covers Labs 9-12

² <https://www.angelo.edu/current-students/student-handbook/>

³ <https://www.angelo.edu/academics/catalog/>

⁴ <https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=96>

⁵ <https://www.angelo.edu/current-students/disability-services/>

⁶ <https://www.angelo.edu/content/files/14197-op-1011-grading-procedures>

⁷ https://www.angelo.edu/current-students/writing-center/academic_honesty.php

⁸ <https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of>

⁹ <https://www.angelo.edu/incident-form>

¹⁰ <https://www.angelo.edu/title-ix>

¹¹ <https://www.angelo.edu/covid-19/>