

# BIOL250 16

**STUDENT WARNING:** This course syllabus is from a previous semester archive and serves only as a preparatory reference. Please use this syllabus as a reference only until the professor opens the classroom and you have access to the updated course syllabus. Please do NOT purchase any books or start any work based on this syllabus; this syllabus may NOT be the one that your individual instructor uses for a course that has not yet started. If you need to verify course textbooks, please refer to the online course description through your student portal. This syllabus is proprietary material of APUS.

## Course Summary

**Course :** BIOL250 **Title :** Human Anatomy and Physiology with Lab I

**Length of Course :** 16

**Prerequisites :** CHEM133, SCIN131, MATH110, MATH111, MATH225 **Credit Hours :** 4

## Description

**Course Description:** This is the first of a two-course sequence in human anatomy & physiology. This intensive course is intended to prepare students for careers in the health sciences (sports medicine, physical therapy, EMS nursing, physician assistant, etc.). Lessons and laboratory exercises focus on the organization of the human body, homeostasis, basic chemistry, cell biology, genetics and heredity, and the integumentary, musculoskeletal, and nervous systems. This course includes a hands-on laboratory component, and students are required to perform dissection of preserved animal specimens. Some of the laboratory activities require the use of glass or sharp laboratory instruments; therefore, students must have a safe work area available to perform laboratory activities. Students must also have room temperature storage available in order to maintain laboratory materials and specimens through both BIOL250 and BIOL251. Refrigerated storage is not required. In addition, students must be able to document their laboratory work using still pictures and/or video. This is a time and resource-intensive course. Students intending to pursue a career in the health sciences should verify that the BIOL250 and BIOL251 course sequence meets the requirements of their intended program prior to enrollment. Lab material for this course will only be provided once. If you need replacement lab equipment for any reason or need to retake the course later, you will need to purchase your own lab refills. NOTE: Students may take either BIOL201 or BIOL250/BIOL251 for credit, but not both versions of anatomy & physiology. (Prerequisites: CHEM133 or SCIN131, and MATH110, MATH111, or MATH225)

### Course Scope:

The two-course sequence in human anatomy and physiology provides the foundation for further study in all areas of human performance and healthcare. A working knowledge of both the structure (anatomy) and the function (physiology) of the human body is critical for providing effective counseling, care, or treatment of clients and patients. Others will entrust you with their care, and it is your professional obligation to both understand and be able to explain the underlying mechanisms for the procedures you perform.

This course takes a systems approach to learning anatomy and physiology. Chemistry, cell biology, genetics, and the structure of tissues are common to all of the organ systems of the body. We will use that foundation to discuss the anatomy and physiology of the integumentary, musculoskeletal, and nervous systems as single, independent systems. As we progress through the course, we will relate how the individual organ systems work together to maintain homeostasis: The maintenance of a consistent environment within the body.

It is important to note that this is a science course, and not a course specific to any particular discipline. The

content and assignments in this course were selected to develop both your foundational knowledge in anatomy and physiology, as well as your scientific literacy skills. The laboratory exercises included in this course provide you the opportunity to apply the knowledge contained in the lesson materials, develop your scientific inquiry skills, and produce products that demonstrate your knowledge of anatomy and physiology to others.

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## Objectives

After successfully completing this course, you will be able to

- CO-1** Explain the presence of inherited anatomical and physiological traits using the principles of genetics and heredity.
  - CO-2** Identify the gross and microscopic structures of the integumentary, musculoskeletal, and nervous systems.
  - CO-3** Explain the normal physiological processes of the integumentary, musculoskeletal, and nervous systems.
  - CO-4** Explain the use of feedback loops to control the integumentary, musculoskeletal, and nervous systems.
  - CO-5** Explain the relationship between anatomical structures and physiological functions in the integumentary, musculoskeletal, and nervous systems.
  - CO-6** Explain the interrelationships within and between anatomical and physiological systems of the human body.
  - CO-7** Explain the relationship between homeostatic imbalances of the integumentary, musculoskeletal, and nervous systems and each of the following; Lifestyle decisions, disease, and injury.
  - CO-8** Explain basic clinical assessment and laboratory procedures used to evaluate the physiological functions of the integumentary, musculoskeletal, and nervous systems.
  - CO-9** Interpret graphs of anatomical and physiological data.
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## Outline

### Week 1: Introduction to Anatomy & Physiology

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Learning Objectives

CO-4  
CO-5

Readings

#### Text Readings

OpenStax Anatomy and Physiology, Chapter 1 (Intro and sections 1.1-1.5)

#### eScience Lab Activity

Getting Started (Read ALL sections and download the Lab Safety Contract)

Assignment

Introduction Forum

Quiz 1

Assignment 1: Lab Safety Video

## **Week 2: Anatomical Terminology**

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Learning Objectives

CO-2

Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 1 (sections 1.6-1.7) and Chapter 7 (Intro and sections 7.1-7.4)

### **eScience Lab Activity**

The Skeletal System

- Experiment 4: Virtual Model – The Axial Skeleton

The Muscular System

- Experiment 4 Virtual Model – The Muscular System (Upper Body)

Assignment

Week 2 Forum

Quiz 2

## **Week 3: The Chemical Level of Organization**

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Learning Objectives

CO-5

CO-9

Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 2 (Intro and sections 2.1-2.5)

### **eScience Lab Activity**

Introduction to Science (Real ALL sections)

Assignment

Week 3 Forum

Assignment 2: Lab Report 1

Unit Exam 1

## **Week 4: The Cellular Level of Organization**

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Learning Objectives

CO-1

CO-5

CO-9

Readings

**Text Readings:**

OpenStax Anatomy and Physiology, Chapter 3 (Intro and sections 3.1-3.6)

**eScience Lab Activity**

Diffusion and Osmosis (Read ALL sections)

Assignment

Week 4 Forum

Quiz 3

Assignment 3: Unit Exam 1 Extra Credit

**Week 5: Genetics**

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Learning Objectives

CO-1

CO-2

CO-5

CO-9

Readings

**Text Readings**

OpenStax Anatomy and Physiology, Chapter 28 (Intro and section 28.7)

**eScience Lab Activity**

Diffusion and Osmosis (Review as needed)

The Skeletal System (Review as needed)

- Experiment 4: Virtual Model – The Axial Skeleton

The Muscular System (Review as needed)

- Experiment 4 Virtual Model – The Muscular System (Upper Body)

Assignment

Week 5 Forum

Quiz 4

Assignment 4: Lab Report 2 – Diffusion and Osmosis

**Week 6: The Tissue Level of Organization**

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Learning Objectives

CO-2

CO-5

Readings

**Text Readings**

OpenStax Anatomy and Physiology, Chapter 4 (Intro and sections 4.1-4.6)

## **eScience Lab Activity**

The Skeletal System (Review as needed)

- Experiment 4: Virtual Model – The Axial Skeleton

The Muscular System (Review as needed)

- Experiment 4 Virtual Model – The Muscular System (Upper Body)

Assignment

Week 6 Forum

Unit Exam 2

## **Week 7: The Integumentary System**

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Learning Objectives

CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 5 (Intro and sections 5.1-5.4)

## **eScience Lab Activity**

Tissues and Skin (Read ALL sections)

- Experiment 1: Microscopic Slide Examination of Tissue
- Experiment 2: Microscopic Slide Examination – Skin

Assignment

Week 7 Forum

Quiz 5

Assignment 5: Unit Exam 2 Extra Credit

## **Week 8: Bone Tissue**

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Learning Objectives

CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 6 (Intro and sections 6.1-6.7)

### **eScience Lab Activity**

The Skeletal System (Read ALL sections)

- Experiment 6: Virtual Model - The Appendicular Skeleton

Assignment

Week 8 Forum

Quiz 6

Assignment 6: Lab Report 3 – Skin and Bone

## **Week 9: The Structure of Joints**

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Learning Objectives

CO-2

CO-3

CO-5

Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 8 (Intro and sections 8.1-8.4) and Chapter 9 (Intro and sections 9.1-9.7)

### **eScience Lab Activity**

The Skeletal System (Review as needed)

- Experiment 6: Virtual Model – The Appendicular Skeleton

The Muscular System (Review as needed)

- Experiment 4: Virtual Model – The Muscular System (Upper Body)

Assignment

Week 9 Forum

Unit Exam 3

## **Week 10: Muscular Tissue**

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Learning Objectives

CO-2

CO-3

CO-4

CO-5

CO-6

CO-7

CO-8  
CO-9

Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 10 (Intro and sections 10.1-10.9) and Chapter 11 (Intro and sections 11.1-11.6)

### **eScience Lab Activity**

The Skeletal System (Review as needed)

- Experiment 7: Articulations

The Muscular System (Read ALL sections)

- Experiment 1: Tendons and Ligaments
- Experiment 2: The Neuromuscular Junction

Assignment

Week 10 Forum

Quiz 7

Assignment 7: Unit Exam 3 Extra Credit

## **Week 11: Nervous Tissue**

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Learning Objectives

CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8  
CO-9

Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 12 (Intro and sections 12.1-12.5)

### **eScience Lab Activity**

The Nervous System (Read ALL sections)

- Experiment 1: Microscopic Anatomy of the Nervous System
- Experiment 2: Virtual Model - The Nervous System

Assignment

Week 11 Forum

Quiz 8

## **Week 12: The Spinal Cord**

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## Learning Objectives

CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

## Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 13 (Intro and sections 13.1-13.4)

### **eScience Lab Activity**

The Skeletal System (Review as needed)

- Experiment 6: Virtual Model – The Appendicular Skeleton

The Muscular System (Review as needed)

- Experiment 5: Virtual Model – The Muscular System (Lower Body)

## Assignment

Week 12 Forum

Unit Exam 4

## **Week 13: The Brain**

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## Learning Objectives

CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

## Readings

### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 14 (Intro and sections 14.1-14.3)

### **eScience Lab Activity**

The Nervous System (Review as needed)

- Experiment 4: Sheep Brain Dissection

## Assignment

Week 13 Forum

Quiz 9

## Week 14: The Autonomic Nervous System

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### Learning Objectives

CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

### Readings

#### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 15 (Intro and sections 15.1-15.4)

#### **eScience Lab Activity**

The Skeletal System (Review as needed)

- Experiment 6: Virtual Model - The Appendicular Skeleton

The Muscular System (Review as needed)

- Experiment 5: Virtual Model - The Muscular System (Lower Body)

The Nervous System (Review as needed)

- Experiment 4: Sheep Brain Dissection

### Assignment

Week 14 Forum

Quiz 10

Assignment 9: Lab Report 4 – The Brain

## Week 15: The General and Special Senses

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### Learning Objectives

CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

### Readings

#### **Text Readings**

OpenStax Anatomy and Physiology, Chapter 16 (Intro and sections 16.1-16.5)

#### **eScience Lab Activity**

The Nervous System (Review as needed)

- Experiment 3: Cow Eye Dissection
- Experiment 5: Reflexes (Part I)

Assignment

Week 15 Forum

Unit Exam 5

## **Week 16: Wrap-Up and Assessment**

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Learning Objectives

Readings

None

Assignment

Week 16 Forum

Assignment 10: Unit Exam 5 Extra Credit

Assignment 11: Lab Report 5 – Eye and Reflexes

Comprehensive Final Exam

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## **Evaluation**

Your final grade in the course will be determined by your performance on five types of assignments:

### **Discussion Forums (16 forums; 10% of final grade)**

During each week of the course, you will provide an initial post to the discussion forum by Thursday of that week that is relevant to the assigned topic. In addition, you will respond to at least two of your classmate's initial posts and answer any questions asked about your initial post by Sunday. The forums are for student interaction and input should be submitted as early in the week in order to fully participate in the discussions. Students should demonstrate their own knowledge in the forums and not copy and paste from websites.

Initial Post (40 possible points)

- The post is on topic, clearly related to the thread, and addresses all components of the assignment with significant depth, analysis, and clarity.
- The post is approximately 250-350 words long and written in your own words.

Reply Posts (30 possible points)

- Reply to at least two of your classmates' original posts with responses that are on topic, clearly related to the thread, and further the discussion of the original comment. For example, ask an interesting and related question, or share relevant information on the topic.
- The post is approximately 100-200 words long and written in your own words.
- Please reply early enough in the week to allow time for your classmates and instructor to respond.

Creates Conversation and Community (15 possible points)

- Respond to follow-up questions and comments posted to your initial post by your classmates and

instructor during the week.

- All posts are written in a constructive and respectful tone.

#### Terminology, Sources, and Attribution (15 possible points)

- All posts accurately apply scientific concepts and use scientific terminology correctly (including spelling).
- Posts include background information based on credible sources of scientific information, where applicable, to support discussion. \*
- All sources used are attributed to the original author with a citation or URL so that your classmates and instructor can locate and view the source. \*
- If a post is based on an opinion, the post offers a well-phrased and thought-out position.

*\*Please review Academic Honesty Policies.*

#### Quizzes (10 quizzes; 10% of final grade)

In most weeks, you will complete a quiz. Quiz questions will cover the week's lesson and reading from the textbook. Quizzes are open-book, open-notes and may be submitted multiple times prior to the due date with the highest grade recorded.

#### Lab Assignments (5 assignments; 30% of final grade)

Each week, you will apply the lesson content in a laboratory exercise. You will submit five laboratory reports based on the related laboratory exercises. Two of these assignments will be written assignments and three will be video-based submissions.

#### Unit Exams (5 exams; 35% of final grade)

You will complete five unit exams during the course. Each unit exam will cover approximately 3 chapters of the course textbook, lesson content, and laboratory activities. Exam questions cover both new material and relevant material from respective chapters. Unit exams are closed-book, closed-note, and the use of any external resources is prohibited.

#### Cumulative Final Exam (1 final exam; 15% of final grade)

You will complete one comprehensive final exam at the end of the course. The exam will cover all course readings, lessons, and laboratory activities completed during the course. The final exam is closed-book, closed-note, and the use of any external resources is prohibited.

Please see the [Student Handbook](#) to reference the University's [grading scale](#).

#### Grading:

Name	Grade %
Forums	10.00 %
Introduction Forum	0.63 %
Week 2 Forum	0.63 %
Week 3 Forum	0.63 %
Week 4 Forum	0.63 %
Week 5 Forum	0.63 %
Week 6 Forum	0.63 %
Week 7 Forum	0.63 %
Week 8 Forum	0.63 %
Week 9 Forum	0.63 %
Week 10 Forum	0.63 %
Week 11 Forum	0.63 %
Week 12 Forum	0.63 %
Week 13 Forum	0.63 %
Week 14 Forum	0.63 %

Week 15 Forum	0.63 %
Week 16 Forum	0.63 %
<b>Quizzes</b>	<b>10.00 %</b>
Quiz 1	1.00 %
Quiz 2	1.00 %
Quiz 3	1.00 %
Quiz 4	1.00 %
Quiz 5	1.00 %
Quiz 6	1.00 %
Quiz 7	1.00 %
Quiz 8	1.00 %
Quiz 9	1.00 %
Quiz 10	1.00 %
<b>Lab Reports</b>	<b>30.00 %</b>
Assignment 2: Lab Report 1 - Introduction to Science	6.00 %
Assignment 4: Lab Report 2 - Diffusion and Osmosis	6.00 %
Assignment 6: Lab Report 3 - Skin and Bone	6.00 %
Assignment 9: Lab Report 4 - The Brain	6.00 %
Assignment 11: Lab Report 5 - The Eye	6.00 %
<b>Unit Exams</b>	<b>35.00 %</b>
Unit Exam 1	7.00 %
Unit Exam 2	7.00 %
Unit Exam 3	7.00 %
Unit Exam 4	7.00 %
Unit Exam 5	7.00 %
<b>Final Exam</b>	<b>15.00 %</b>
Comprehensive Final Exam	15.00 %
<b>Extra Credit</b>	<b>5.00 %</b>
Assignment 3: Unit Exam 1 Extra Credit	1.00 %
Assignment 5: Unit Exam 2 Extra Credit	1.00 %
Assignment 7: Unit Exam 3 Extra Credit	1.00 %
Assignment 8: Unit Exam 4 Extra Credit	1.00 %
Assignment 10: Unit Exam 5 Extra Credit	1.00 %

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## Materials

**Book Title:** Custom Anatomy & Physiology 1 Lab Kit

**Author:** eScience

**Publication Info:** eScience

**ISBN:** 5197

**Book Title:** Anatomy & Physiology - e-book available online, link provided in the classroom Lessons section

**Author:** No Author Specified

**Publication Info:** OpenStax

**ISBN:** N/A

**Book Title:** Until further notice, eScience kits will ship without any action needed from students. Your shipping address on file must be current - <https://apus.libanswers.com/coursematerials/faq/238652>

**Author:**

**Publication Info:**

**ISBN:** eScience Note

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In accordance with the Student Handbook (<http://www.apus.edu/student-handbook/course-materials/>), students who have not received a shipping confirmation email from eScience Labs or UPS by the first Friday of class must drop the course and re-register for a future semester.

If you are retaking BIOL250 and need to replenish the supplies in your kit:

- A resupply kit is available for purchase directly from eScience Labs. Please discuss your situation with your instructor before purchasing the consumables kit.

### Required Technology

- See the Technology Requirements section of the undergraduate catalog for the minimum hardware and software requirements.
  - In addition, students must be able to document their laboratory work using still pictures and/or video.
  - Microsoft Office 365 is available to APUS students for free. To sign up, visit <http://products.office.com/en-us/student>. If you have questions about accessing the software, please contact Classroom support at [classroomsupport@apus.edu](mailto:classroomsupport@apus.edu).
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## Course Guidelines

### Citation and Reference Style

- Attention Please: Students will follow the APA Format as the sole citation and reference style used in written work submitted as part of coursework to the University. Assignments completed in a narrative essay or composition format must follow the citation style cited in the APA Format.

### Tutoring

- [Tutor.com](https://www.tutor.com) offers online homework help and learning resources by connecting students to certified tutors for one-on-one help. AMU and APU students are eligible for 10 free hours\* of tutoring provided by APUS. Tutors are available 24/7 unless otherwise noted. Tutor.com also has a SkillCenter Resource Library offering educational resources, worksheets, videos, websites and career help. Accessing these resources does not count against tutoring hours and is also available 24/7. Please visit the APUS Library and search for 'Tutor' to create an account.

### Late Assignments

- Students are expected to submit classroom assignments by the posted due date and to complete the course according to the published class schedule. The due date for each assignment is listed under each Assignment.
- Generally speaking, late work may result in a deduction up to 15% of the grade for each day late, not to exceed 5 days.
- As a working adult I know your time is limited and often out of your control. Faculty may be more flexible if they know ahead of time of any potential late assignments.

## **Turn It In**

- Faculty may require assignments be submitted to Turnitin.com. Turnitin.com will analyze a paper and report instances of potential plagiarism for the student to edit before submitting it for a grade. In some cases professors may require students to use Turnitin.com. This is automatically processed through the Assignments area of the course.

## **Academic Dishonesty**

- Academic Dishonesty incorporates more than plagiarism, which is using the work of others without citation. Academic dishonesty includes any use of content purchased or retrieved from web services such as CourseHero.com. Additionally, allowing your work to be placed on such web services is academic dishonesty, as it is enabling the dishonesty of others. The copy and pasting of content from any web page, without citation as a direct quote, is academic dishonesty. When in doubt, do not copy/paste, and always cite.

## **Submission Guidelines**

- Some assignments may have very specific requirements for formatting (such as font, margins, etc) and submission file type (such as .docx, .pdf, etc) See the assignment instructions for details. In general, standard file types such as those associated with Microsoft Office are preferred, unless otherwise specified.

## **Disclaimer Statement**

- Course content may vary from the outline to meet the needs of this particular group.

## **Communicating on the Forum**

- Forums are the heart of the interaction in this course. The more engaged and lively the exchanges, the more interesting and fun the course will be. Only substantive comments will receive credit. Although there is a final posting time after which the instructor will grade comments, it is not sufficient to wait until the last day to contribute your comments/questions on the forum. The purpose of the forums is to actively participate in an on-going discussion about the assigned content.
- “Substantive” means comments that contribute something new and hopefully important to the discussion. Thus a message that simply says “I agree” is not substantive. A substantive comment contributes a new idea or perspective, a good follow-up question to a point made, offers a response to a question, provides an example or illustration of a key point, points out an inconsistency in an argument, etc.
- As a class, if we run into conflicting view points, we must respect each individual's own opinion. Hateful and hurtful comments towards other individuals, students, groups, peoples, and/or societies will not be tolerated.

## **Identity Verification & Live Proctoring**

- Faculty may require students to provide proof of identity when submitting assignments or completing assessments in this course. Verification may be in the form of a photograph and/or video of the student's face together with a valid photo ID, depending on the assignment format.
- Faculty may require live proctoring when completing assessments in this course. Proctoring may include identity verification and continuous monitoring of the student by webcam and microphone during testing.

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# University Policies

## [Student Handbook](#)

- [Drop/Withdrawal policy](#)
- [Extension Requests](#)
- [Academic Probation](#)
- [Appeals](#)
- [Disability Accommodations](#)

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.

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