

# BIOL251 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 :** BIOL251 **Title :** Human Anatomy and Physiology with Lab II

**Length of Course :** 16

**Prerequisites :** BIOL250 **Credit Hours :** 4

## Description

**Course Description:** This is the second 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 homeostasis, metabolism, acid-base balance, growth and development, and the endocrine, cardiovascular, lymphatic, respiratory, urinary, digestive, and reproductive systems. Students are also required to successfully complete a cumulative assessment of anatomy & physiology objectives from both BIOL250 and BIOL251. 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. 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. (Prerequisite: BIOL250)

### 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 endocrine, cardiovascular, lymphatic, respiratory, urinary, digestive, and reproductive 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** Identify the gross and microscopic structures of the endocrine, cardiovascular, lymphatic, respiratory, urinary, digestive, and reproductive systems.

**CO-2** Explain the normal physiological processes of the endocrine, cardiovascular, lymphatic, respiratory, urinary, digestive, and reproductive systems.

**CO-3** Explain the use of feedback loops to control the endocrine, cardiovascular, lymphatic, respiratory, urinary, digestive, and reproductive systems.

**CO-4** Explain the relationship between anatomical structures and physiological functions in the endocrine, cardiovascular, lymphatic, respiratory, urinary, digestive, and reproductive systems.

**CO-5** Explain the interrelationships within and between anatomical and physiological systems of the human body.

**CO-6** Explain the relationship between homeostatic imbalances of the endocrine, cardiovascular, lymphatic, respiratory, urinary, digestive, and reproductive systems and each of the following; Lifestyle decisions, disease, and injury.

**CO-7** Explain basic clinical assessment and laboratory procedures used to evaluate the physiological functions of the endocrine, cardiovascular, lymphatic, respiratory, urinary, digestive, and reproductive systems.

**CO-8** Interpret graphs of anatomical and physiological data.

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## Outline

### Week 1: Welcome to A&P II The Endocrine System

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#### Learning Objectives

CO-1  
CO-2  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

#### Readings

#### Text Readings:

OpenStax Anatomy and Physiology, Chapter 17: The Endocrine System (Intro and sections 17.1-17.11)

#### eScience Lab Activities:

Getting Started

Introduction to the Fetal Pig

## Tissues and Skin

- Experiment 1: Introduction to the Fetal Pig

## The Skeletal System

- Experiment 2: Skeletal System of the Fetal Pig

## The Muscular System

- Experiment 1: Fetal Pig Dissection - Muscular System

## The Nervous System

- Experiment 2: Fetal Pig Dissection - Nervous System

## The Endocrine System

- Experiment 1: Microscopic Anatomy of the Endocrine System
- Experiment 2: Fetal Pig Dissection - Endocrine System

## Assignment

### Introduction Forum

### Quiz 1

### Assignment 1: Lab Safety Video and Contract

## **Week 2: Blood**

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### Learning Objectives

CO-1  
CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

### Readings

#### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 18: The Cardiovascular System: Blood (Intro and sections 18.1-18.6)

#### **eScience Lab Activities:**

### Blood and Heart

- Ex. 1: Microscopic Anatomy of Blood
- Ex. 2: Blood Typing Experiment

### Assignment

### Week 2 Forum

## Quiz 2

Assignment 2: (Lab Report 1) Dissection Video of Fetal Pig Skeletal, Muscular, Nervous, and Endocrine Systems

### **Week 3: The Heart**

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#### Learning Objectives

CO-1  
CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

#### Readings

##### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 19: The Cardiovascular System: The Heart (Intro and sections 19.1-19.5)

##### **eScience Lab Activities:**

#### Blood and Heart

- Experiment 4: Sheep Heart Dissection

#### Assignment

#### Week 3 Forum

#### Unit Exam 1

Assignment 3: (Lab Report 2) Blood Typing Lab

### **Week 4: The Blood Vessels**

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#### Learning Objectives

CO-1  
CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

#### Readings

##### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 20: The Cardiovascular System: Blood Vessels and Circulation (Intro and sections 20.1-20.6)

## **eScience Lab Activities:**

### The Circulatory System

- Experiment 1: Microscopic Examination of Blood Vessels
- Experiment 2: Virtual Model - The Circulatory System
- Experiment 3: Fetal Pig Dissection - The Circulatory System

### Assignment

### Week 4 Forum

### Quiz 3

### Assignment 4: Unit Exam 1 Extra Credit

## **Week 5: The Lymphatic System**

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### Learning Objectives

CO-1  
CO-2  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

### Readings

### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 21: The Lymphatic and Immune System (Intro and sections 21.1-21.7)

## **eScience Lab Activities:**

### The Lymphatic System and Immunity

- Experiment 1: Examining the Microscopic Anatomy of the Lymphatic System
- Experiment 2: Virtual Model - The Lymphatic System
- Experiment 3: Fetal Pig Dissection - The Lymphatic System

### Assignment

### Week 5 Forum

### Quiz 4

## **Week 6: The Respiratory System**

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### Learning Objectives

CO-1  
CO-2  
CO-3  
CO-4  
CO-5

CO-6  
CO-7  
CO-8

Readings

**Text Readings:**

OpenStax Anatomy and Physiology, Chapter 22: The Respiratory System (Intro and sections 22.1-22.7)

**eScience Lab Activities:**

The Respiratory System

- Experiment 1: Microscopic Anatomy of the Respiratory System
- Experiment 2: Virtual Model - The Respiratory System
- Experiment 3: Fetal Pig Dissection - The Respiratory System

Assignment

Week 6 Forum

Unit Exam 2

**Week 7: The Urinary System**

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Learning Objectives

CO-1  
CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

Readings

**Text Readings:**

OpenStax Anatomy and Physiology, Chapter 25: The Urinary System (Intro and sections 25.1-25.10)

**eScience Lab Activities:**

The Urinary System

- Experiment 2: Virtual Model - The Urinary System
- Experiment 3: Fetal Pig Dissection - The Urinary System

Assignment

Week 7 Forum

Quiz 5

Assignment 5: (Lab Report 3) Dissection Video of Sheep Heart and Fetal Pig Circulatory, Lymphatic, and Respiratory System

## Assignment 6: Unit Exam 2 Extra Credit

### Week 8: Fluid and Electrolyte Balance

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#### Learning Objectives

CO-2  
CO-6  
CO-7  
CO-8

#### Readings

#### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 26: Fluid, Electrolyte, and Acid-Base Balance (Intro and sections 26.1-26.3)

#### **eScience Lab Activities:**

None

Assignment

Week 8 Forum

Quiz 6

### Week 9: Acid-Base Balance

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#### Learning Objectives

CO-2  
CO-5  
CO-6  
CO-7  
CO-8

#### Readings

#### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 26: Fluid, Electrolyte, and Acid-Base Balance (Sections 26.4-26.5)

#### **eScience Lab Activities:**

Electrolytes, Water, Acids, and Bases

- Experiment 1: Breathing and Acid-Base Balance
- Experiment 2: Urine pH

Assignment

Week 9 Forum

Unit Exam 3

## Week 10: The Digestive System

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### Learning Objectives

CO-1  
CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

### Readings

#### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 23: The Digestive System (Intro and sections 23.1-23.7)

#### **eScience Lab Activities:**

##### The Digestive system

- Experiment 1: Microscopic Anatomy of the Digestive System
- Experiment 2: Virtual Model - The Digestive System
- Experiment 3: Fetal Pig Dissection of the Digestive System

### Assignment

Week 10 Forum

Quiz 7

Assignment 7: (Lab Report 4) Electrolytes, Water, Acids, and Bases

Assignment 8: Unit Exam 3 Extra Credit

## Week 11: Nutrition

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### Learning Objectives

CO-2  
CO-6  
CO-7  
CO-8

### Readings

#### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 24: Metabolism and Nutrition (Intro and sections 24.5-24.7)

#### **eScience Lab Activities:**

None

### Assignment

Week 11 Forum

Quiz 8

## **Week 12: Metabolism**

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Learning Objectives

CO-2  
CO-4  
CO-6  
CO-7  
CO-8

Readings

### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 24: Metabolism and Nutrition (Sections 24.1-24.4)

### **eScience Lab Activities:**

Metabolism

- Experiment 1: Fermentation in Yeast
- Experiment 2: Aerobic Respiration in Beans

Assignment

Week 12 Forum

Unit Exam 4

## **Week 13: The Male Reproductive System**

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Learning Objectives

CO-1  
CO-2  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

Readings

### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 27: The Reproductive System (Intro and section 27.1)

### **eScience Lab Activities:**

None

Assignment

Week 13 Forum

## Quiz 9

Assignment 9: (Lab Report 5) Metabolism

Assignment 10: Unit Exam 4 Extra Credit

## **Week 14: The Female Reproductive System**

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### Learning Objectives

CO-1  
CO-2  
CO-3  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

### Readings

#### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 27: The Reproductive System (Sections 27.2-27.3)

#### **eScience Lab Activities:**

##### The Reproductive System

- Experiment 1: Microscopic Anatomy of the Reproductive System
- Experiment 2: Virtual Model - The Reproductive System
- Experiment 3: Fetal Pig Dissection - The Reproductive System

### Assignment

Week 14 Forum

Quiz 10

## **Week 15: Human Development and Aging**

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### Learning Objectives

CO-1  
CO-2  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

### Readings

#### **Text Readings:**

OpenStax Anatomy and Physiology, Chapter 28: Development and Inheritance

#### **eScience Lab Activities:**

## Mitosis and Meiosis

- Experiment 1: Observation of Mitosis in a Plant Cell
- Experiment 2: Following Chromosomal DNA Movement through Mitosis
- Experiment 3: Following Chromosomal DNA Movement through Meiosis

## Assignment

Week 15 Forum

Unit Exam 5

Assignment 11: (Lab Report 6) Dissection Video of Sheep Kidney, Fetal Pig Urinary, Digestive and Reproductive System

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

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### Learning Objectives

CO-1  
CO-2  
CO-4  
CO-5  
CO-6  
CO-7  
CO-8

### Readings

#### **Text Readings:**

None

#### **Lab Activity:**

None

### Assignment

Week 16 Forum Self-Assessment and Course Feedback

Assignment 12: Unit Exam 5 Extra Credit

Comprehensive Exam (Covers material from both BIOL250 and BIOL251)

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## **Evaluation**

### **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 activities; 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 Reports (6 assignments; 30% of final grade)**

Each week, you will apply the lesson content in a laboratory exercise. You will submit six laboratory assignments based on the related laboratory exercises. Three of these assignments will be a written assignment and three will be a video-based submission.

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

You will complete five unit exams during the course. Each 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.

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

You will complete one final exam at the end of the course. The exam will cover all course readings, lessons, and laboratory activities completed during both BIOL250 and BIOL251 courses. 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 % |
|------|---------|
|------|---------|

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## Materials

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

**Author:** eScience

**Publication Info:** eScience

**ISBN:** 5198

**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

**Book Title:** Various resources from the APUS Library & the Open Web are used. Please visit <http://apus.libguides.com/er.php> to locate the course eReserve.\*

**Author:**

**Publication Info:**

**ISBN:** ERESERVE 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 BIOL251 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](#)

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