BIOL-219: HUMAN PHYSIOLOGY

Effective Term
Fall 2026

CC Approval
12/05/2025

AS Approval
12/11/2025

BOT Approval
12/18/2025

COCI Approval
02/26/2026

SECTION A - Course Data Elements

CB04 Credit Status
Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Biological Sciences (Master's Degree)	

Subject Code
BIOL - Biology
Course Number
219

Department
Biology

Division
Science and Engineering (SE)

Full Course Title
Human Physiology

Short Title
Human Physiology

CB03 TOP Code
0410.00 - Anatomy and Physiology

CB08 Basic Skills Status
NBS - Not Basic Skills

CB09 SAM Code
E - Non-Occupational

Rationale
Update DEI and dating.

SECTION B - Course Description

Catalog Course Description
An introduction to the function of the human body, emphasizing mechanisms of homeostasis and integration at the biochemical, cellular, tissue, organ, and organ system levels. Laboratory exercises include measurement and analysis of physiological data and study of structure-function relationships in body tissues and organs. Primarily intended for students pursuing an Associates Degree in Nursing, A.S. degree in Respiratory Care, or B.A./B.S. degree in a Health Sciences field.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit
No

Repeatability
Not Repeatable

Grading Options
Letter Grade or Pass/No Pass

Allow Audit
Yes

Requisites

Prerequisite(s)
Completion of CHEM-110 and BIOL-105 or BIOL-120 with a minimum grade of C.

Advisory Prerequisite(s)
Completion of BIOL-218 with a minimum grade of C.

Requisite Justification

Requisite Description
Course in a Sequence

Subject
BIOL
Course #
105

Level of Scrutiny
Content Review

Upon entering this course, students should be able to:
1. Current working knowledge of basic biology vocabulary, including cell structure and function; mitosis and meiosis; chemistry of life, including protein synthesis and DNA replication; ATP and cell metabolism.
2. Understanding of biochemistry, including properties of molecules and chemical bonds; energy exchange and conservation; ions and acid/base balance.
3. Structure of atoms and molecules, elements, chemical bonds, chemical reactions, ions, acids and bases.
4. Measurement and calculation of physical and chemical quantities including units and conversions.
5. Basic laboratory practices and safety.

Requisite Description
Course in a Sequence

Subject
BIOL
Course #
120

Level of Scrutiny
Content Review

Upon entering this course, students should be able to:
1. Current working knowledge of basic biology vocabulary, including cell structure and function; mitosis and meiosis; chemistry of life, including protein synthesis and DNA replication; ATP and cell metabolism.
2. Understanding of biochemistry, including properties of molecules and chemical bonds; energy exchange and conservation; ions and acid/base balance.
3. Structure of atoms and molecules, elements, chemical bonds, chemical reactions, ions, acids and bases.

4. Measurement and calculation of physical and chemical quantities including units and conversions.
5. Basic laboratory practices and safety.

Requisite Description
Course in a Sequence

Subject
CHEM

Course #
110

Level of Scrutiny
Content Review

Upon entering this course, students should be able to:

1. Current working knowledge of basic biology vocabulary, including cell structure and function; mitosis and meiosis; chemistry of life, including protein synthesis and DNA replication; ATP and cell metabolism.
2. Understanding of biochemistry, including properties of molecules and chemical bonds; energy exchange and conservation; ions and acid/base balance.
3. Structure of atoms and molecules, elements, chemical bonds, chemical reactions, ions, acids and bases.
4. Measurement and calculation of physical and chemical quantities including units and conversions.
5. Basic laboratory practices and safety.

SECTION D - Course Standards

Is this course variable unit?
No

Units
5.00000

Lecture Hours
54

Lab Hours
108

Outside of Class Hours
108

Total Contact Hours
162

Total Student Hours
270

Distance Education Approval

Is this course offered through Distance Education?
Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Hybrid	Permanent

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Communicate understanding of physiological processes including mechanisms of homeostasis.
2.	Critically evaluate physiological function in normal and disease states.
3.	Perform basic physiological measurements and analyze physiological data quantitatively.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Explain the principle of homeostasis and provide examples of homeostatic control mechanisms in the body.
2.	Recognize the chemical structures of the major classes of biomolecules and describe their major roles in living cells.
3.	Relate biological structure to function at the cellular, tissue, organ, and organ system levels of organization.
4.	Explain mechanisms of cellular communication in the nervous, sensory, and endocrine systems.
5.	Describe the function and regulation of the major organ systems of the body and provide examples of integration among these systems.
6.	Compare physiological function in normal and disease states such as diabetes, cardiovascular disease, and obstructive pulmonary disease.
7.	Perform physiological measurements and apply quantitative methods to analyze physiological data.

Course Content

Lecture content includes:

1. Homeostasis and feedback control systems
2. Organization and function of the cell membrane, cells, and tissues
3. Body fluid compartments
4. Chemistry of life
5. Cellular metabolism
6. Membrane permeability and transport
7. Membrane potentials and action potential
8. Cell-cell communication
9. Nervous system organization and function
10. Sensory transduction and sensory systems
11. Endocrine system organization and function
12. Muscle structure and function
13. Cardiovascular system function and regulation
14. Lymphatic system and immune function
15. Respiratory physiology function, regulation, and blood gas transport
16. Renal physiology: osmoregulation, excretion, electrolyte balance, and acid-base balance
17. Digestive system function and regulation
18. Reproductive systems function and regulation
19. Clinical applications of physiology

Laboratory content includes:

1. Performing scientific measurements and data analysis
2. Doing calculations with physiological variables and units
3. Preparing dilutions and measuring concentration of solutions
4. Observing osmotic effects in cells and dialysis membrane sacs
5. Identifying basic tissue types and their functional properties
6. Studying anatomical models and dissected specimens
7. Observing and interpreting function of sensory systems
8. Electromyogram and electrocardiogram recording and analysis
9. Blood pressure measurement
10. Measuring respiratory volumes by spirometry
11. Evaluating acid-base balance using case studies
12. Performing urinalysis

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Discussion	
Experiments	
Lab	
Lecture	

Online Adaptation

Types	Examples of learning activities
Activity	
Directed Study	
Discussion	
Group Work	
Individualized Instruction	
Journal	
Lecture	

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
Chat Rooms
Discussion Boards
E-mail Communication
Telephone Conversations
Video or Teleconferencing

Student-Initiated Online Contact Types

Chat Rooms
Discussions
Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	Exams include 3-4 midterm exams, 2 laboratory exams, and a cumulative final exam.
Quizzes	Biweekly quizzes cover lecture and lab topics.
Class Participation	Class participation is based on engagement in lab exercises, group learning activities and class discussions.
Homework	Homework assignments include problem-solving exercises, laboratory data analysis, and written answers to questions from the lab exercises.
Lab Activities	Lab activities include measurement and analysis of physiological data, study of functional anatomy and histology, and case studies.

Assignments

Reading Assignments

Textbook and laboratory manual reading assignments.

For example:

Read Chapter 2 in the textbook in preparation for lecture and discussion on protein structure and function.

Read Exercise 6.2 Introduction and Procedure sections prior to the laboratory on protein measurement.

Writing Assignments
Recording of laboratory observations, analysis of data, and answering questions assigned in the lab manual.
For example:
Write a short report on results of the serial dilution lab exercise. Include a plot of your standard curve of absorbance versus concentration and show how you determined the concentration of the unknown solution using the standard curve.

SECTION F - Textbooks and Instructional Materials

Material Type
Textbook

Author
Silverthorn, D.U.

Title
Human Physiology, An Integrated Approach

Edition/Version
8th

Publisher
Pearson

Year
2019

Material Type
Textbook

Author
Fox, S.I

Title
Human Physiology

Edition/Version
15th

Publisher
McGraw-Hill

Year
2019

Material Type
Manual

Author
Fox, S.I.

Title
A Laboratory Guide to Human Physiology, 13th ed.

Publisher
McGraw Hill

Year
2013

SECTION G - Diversity, Equity and Inclusivity

How does your course and/or course outline of record reflect strategies for accommodating and engaging diverse student populations, advancing equitable outcomes, and fostering inclusion for all students?

This course supports diverse student populations through the use of multiple representations of concepts, varied applications, and technology. Strategies may also include collaborative learning, transparent assessment practices, low-cost resources, and opportunities for students to connect course material to their own experiences, fostering equitable outcomes and an inclusive classroom environment.

Course Codes (Admin Only)

CB00 State ID

CCC000547219

CB10 Cooperative Work Experience Status

N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status

Y - Credit Course

CB13 Special Class Status

N - The Course is Not an Approved Special Class

CB23 Funding Agency Category

Y - Not Applicable (Funding Not Used)

CB24 Program Course Status

Program Applicable

Allow Pass/No Pass

Yes

Only Pass/No Pass

No