BI 014: HUMAN ANATOMY AND PHYSIOLOGY II

Date Submitted: Fri, 27 Jan 2023 21:02:57 GMT

Originator

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Co-Contributor(s)

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Justification / Rationale

Prerequisite change from CH-004 to CH-007 due to Chemistry course number changes.
Update course objectives.

Effective Term

Fall 2024

Credit Status

Credit - Degree Applicable

Subject

BI - Biology

Course Number

014

Full Course Title

Human Anatomy and Physiology II

Short Title

ANAT & PHYS II

Discipline

Disciplines List
Biological Sciences

Modality

Face-to-Face

Catalog Description

This course involves an integrated study of human body organization and function. Topics include the endocrine, immune, cardiovascular, respiratory, digestive, urinary and reproductive systems. This is the second part of a two-course sequence that studies the fundamental concepts of anatomy and physiology and provides a foundation for advanced study of the human body. Both BI 013 and BI 014 must be taken to study all of the major body systems. This two-course sequence is designed to meet the prerequisites for health professional programs; e.g. nursing, physical therapy.

Schedule Description

Second of a two course sequence that offers an in depth study of the human body. This course covers the endocrine, immune, cardiovascular, respiratory, digestive, urinary and reproductive systems. Prerequisite: BI 013 & CH 007 or CH 005 IGETC: 5B, 5C

Lecture Units

4

Lecture Semester Hours

72

Lab Units

1

Lab Semester Hours

54

In-class Hours
126

Out-of-class Hours
144

Total Course Units
5

Total Semester Hours
270

Prerequisite Course(s)
BI 013 & CH 007 OR
BI 013 & CH 005

Required Text and Other Instructional Materials

Resource Type
Book

Open Educational Resource
No

Author
Marieb, Elaine N. and Hoehn, Katja

Title
Human Anatomy and Physiology

Edition
11th

City
San Francisco

Publisher
Pearson

Year
2019

College Level
Yes

Flesch-Kincaid Level
12

ISBN #
978-0134580999

Resource Type
Book

Author
Marieb, Elaine N.; Lori A. Smith

Title
Human Anatomy and Physiology Laboratory Manual, Fetal Pig Version

Edition
13th

Publisher
Pearson

Year
2018

College Level
Yes

ISBN #
9780134806365

Class Size Maximum
28

Entrance Skills
Demonstrate the ability to use appropriate anatomical and physiological terminology in discussing principles and relationships.

Requisite Course Objectives
BI 013-Use appropriate anatomical and physiological terminology in discussing principles and relationships.

Entrance Skills
Properly operate a compound light microscope.

Requisite Course Objectives
BI 013-Properly operate a compound light microscope.

Entrance Skills
Demonstrate an understanding of the structure and function of cellular structures and cellular transport processes.

Requisite Course Objectives
BI 013-Identify cellular structures and explain the function of cellular structures and cellular transport processes.

Entrance Skills
Recognize the structure and function of the four basic adult tissue types.

Requisite Course Objectives
BI 013-Compare and contrast the structure and function of the four basic adult tissue types.

Entrance Skills
Compare and contrast the structure and function of skeletal, cardiac, and smooth muscle.

Requisite Course Objectives
BI 013-Compare and contrast the structure and function of skeletal, cardiac, and smooth muscle.
BI 013-Explain skeletal muscle contraction from the events associated with the somatic motor neuron through the recocking of the myosin heads.
BI 013-Identify the major muscles of the body and state their points of attachment and actions.

Entrance Skills
Demonstrate a general understanding of chemistry including ions, inorganic and organic compounds, weak bonds, nomenclature and acid-base.

Requisite Course Objectives
CH 007-Describe the major principles of chemistry.
CH 007-Identify and distinguish the major categories of inorganic and organic chemical and biochemical reactions.

CH 007-Balance reactions and perform stoichiometry calculations.
CH 007-Explain metric measurement and its importance in the physical science domain.
CH 007-Describe inorganic and organic nomenclature.
CH 007-Illustrate and name the major functional groups of organic compounds.
CH 007-Explain oxidation and reduction as it applies to both chemical and biological systems.
CH 007-Describe the major groups of biological molecules and their essential functions in metabolism.
CH 007-Collect and interpret data in the laboratory setting.
CH 007-Collaborate respectfully with fellow students in the laboratory.
CH 007-Explore the relationship between different types of nuclear decay and their medical applications.

Course Content

1. Structure and function of the endocrine system, including cell signaling pathways.
2. Components of blood and the function of formed elements and plasma proteins and electrolytes.
3. The innate and adaptive immune systems and mechanisms of protection.
4. Regulation of blood pressure and blood flow.
5. Regulation of the cardiac cycle and intrinsic conduction system of the heart.
6. Structure and function of the lymphatic system, including study of lymph nodes.
7. Anatomy of the respiratory system.
8. Gas exchange in the lungs and transport of respiratory gases in the bloodstream.
9. Cellular metabolism.
10. Functional anatomy of the digestive system and control of digestive processes.
11. Processing of nutrients and nutritional requirements.
12. Structure and function of the urinary system.
13. Fluid and electrolyte balance and acid-base chemistry.
14. Physiology of reproductive processes including regulation of reproductive cycles and gametogenesis.

Lab Content

1. Gross anatomy of the vascular system.
2. Electrocardiogram.
3. Respiratory volumes and respiratory rates.
4. Respiratory anatomy.
5. Urinalysis and urinary anatomy.
6. Gross anatomy of the heart.
7. Heredity and Punnett squares.
8. Blood typing and blood transfusions.
9. Blood cell identification and blood cell counts.
10. Determination of blood pressure and valve sounds.
11. Processes of digestion.
12. Gross anatomy of the digestive system.
13. Gross anatomy of the reproductive system.

Course Objectives

	Objectives
Objective 1	Explain how hormones affect human metabolic function of other cells in the body, and describe the major mechanisms by which hormones affect target tissues.
Objective 2	Compare and contrast the functions of various blood cells and plasma proteins.
Objective 3	Compare and contrast innate and adaptive mechanisms of immunity and explain the role of each type of white blood cell in immune protection.
Objective 4	Identify the location of major blood vessels and explain how blood pressure and blood flow are regulated.
Objective 5	Explain the microscopic and gross anatomy of the heart.
Objective 6	Explain the cardiac cycle and compare and contrast sympathetic and parasympathetic effects on the cardiac cycle.
Objective 7	Identify major lymph vessels and anatomical regions within the lymph node.
Objective 8	Explain how the lymph system interacts with the vascular system and how the processing of lymph contributes to immune system function.

Objective 9	Identify the structures of the respiratory system.
Objective 10	Explain gas exchange on both the organismal and cellular levels.
Objective 11	Compare and contrast cellular metabolic processes of different macromolecules.
Objective 12	Explain the functional anatomy of the digestive system and explain major digestive processes.
Objective 13	Identify structures of the urinary system and explain how the kidney processes plasma to produce urine.
Objective 14	Explain how the body regulates fluid volume, fluid osmolarity and regulation of fluid pH.
Objective 15	Compare and contrast the structure and function of the male and female reproductive systems.
Objective 16	Explain the affect of sex hormones on reproductive processes.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Describe the structures and functions of the human cardiovascular system.
Outcome 2	Characterize the relationships between hormones and the body processes that they regulate.
Outcome 3	Describe the multifunctional roles of blood and the immune system in maintaining a healthy body.
Outcome 4	Explain how the digestive , respiratory, and urinary systems act to provide the body with the necessary chemicals and work to remove waste products.
Outcome 5	Measure and analyze the physiological processes using laboratory techniques.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Laboratory	Study of anatomical models and dissections. Use of BIOPAC to collect data related to human body function. Performance of experiments related to digestion and urinary function.
Lecture	Lecture format includes using the white board and PowerPoint. Multimedia displays of key biological phenomena.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	Students apply and analyze concepts from the course in assignments that include short answers and multiple choice questions	Out of Class Only
Laboratory projects	Students complete assignments in which they need to evaluate and assess clinical scenarios.	In and Out of Class
Tests/Quizzes/Examinations	Exams and quizzes require students to identify anatomical structures and to interpret and describe physiological concepts covered in lab and in lecture.	In Class Only
Group activity participation/observation	Students work in small groups, to complete lab worksheets.	In Class Only

Assignments

Other In-class Assignments

1. Examinations consisting of multiple choice, true/false and essay questions.
2. Quizzes consisting of short answer questions.
3. Laboratory exercise data sheets.

Other Out-of-class Assignments

1. Homework assignments on lecture material.
2. Laboratory exercise sheets.

Grade Methods

Letter Grade Only

COD GE
C1 - Natural Sciences

CSU GE
B2 - Life Science
B3 - Laboratory Activity

IGETC GE
5B - Biological Science
5C - Science Laboratory

MIS Course Data

CIP Code
26.0101 - Biology/Biological Sciences, General.

TOP Code
040100 - Biology, General

SAM Code
E - Non-Occupational

Basic Skills Status
Not Basic Skills

Prior College Level
Not applicable

Cooperative Work Experience
Not a Coop Course

Course Classification Status
Credit Course

Approved Special Class
Not special class

Noncredit Category
Not Applicable, Credit Course

Program Status
Program Applicable

Transfer Status
Transferable to both UC and CSU

C-ID
BIOL 115BS

Allow Audit
No

Repeatability
No

Materials Fee
No

Additional Fees?
No

Approvals

Curriculum Committee Approval Date
3/21/2019

Academic Senate Approval Date
3/28/2019

Board of Trustees Approval Date
5/17/2019

Course Control Number
CCC000343329

Programs referencing this course
Physical Therapist Assistant AS Degree (http://catalog.collegeofthedesert.eduundefined/?key=222)
Liberal Arts: Math and Science AA Degree (http://catalog.collegeofthedesert.eduundefined/?key=29)
Public Health Science AS-T Degree (http://catalog.collegeofthedesert.eduundefined/?key=37)
Health Science AS Degree (http://catalog.collegeofthedesert.eduundefined/?key=65)
Sports Medicine AS Degree (http://catalog.collegeofthedesert.eduundefined/?key=67)
Registered Nursing AS Degree (http://catalog.collegeofthedesert.eduundefined/?key=72)
Kinesiology AA-T Degree (http://catalog.collegeofthedesert.eduundefined/?key=8)