CLOUD COUNTY COMMUNITY COLLEGE

Our Mission: Cloud County Community College prepares students to lead successful lives and enhances the vitality of our communities.

**GENERAL INFORMATION**

**Course Number and Title:** SC 120 Human Anatomy and Physiology I

**Term and Year:**Academic Year 2022-2023

**Credit Hours**: 4

**Course Description**: Human Anatomy and Physiology I is an introduction to the basic concepts of biochemistry, cytology, histology, and cellular physiology that relate to all tissues, organs and organ systems of the human body. This will include the following organ systems: integumentary, skeletal, muscular, and neural. This course includes three hours of lecture and one and one-half hours of laboratory time.

**Prerequisites**: None

**Division:** Mathematics, Science and Technical Programs   
**Department**: Science

**STUDENT LEARNING OUTCOMES AND ASSESSMENT**

**Course Learning Outcomes**

For this course, students are expected to demonstrate the skills associated with the course learning goals as described by the student learning outcomes below:

Body Plan & Organization

1. Name and describe anatomical and directional terminology including the following topics:

a) anatomical position

b) body planes, sections

c) body cavities & regions

d) directional terms

e) basic terminology

f) levels of organization g) survey of body systems

Homeostasis (Combine A&P into general or foundational A&P knowledge)

2. Name and describe basic concepts of homeostasis and how homeostatic mechanisms apply to body systems including the following topics:

a) general types of homeostatic mechanisms

b) examples of homeostatic mechanisms

c) application of homeostatic mechanisms

d) predictions related to homeostatic imbalance, including disease states & disorders

Chemistry and Cellular Biology Review

3. Name and describe basic chemistry and cellular structures and function, including the following topics:

a) atoms & molecules

b) chemical bonding

c) inorganic compounds/solutions (including the concept of pH)

d) organic compounds e) energy transfer using ATP f) intracellular organization of nucleus and cytoplasm g) membrane structure & function

h) mechanisms for movement of materials across cellular membranes

i) organelles

j) protein synthesis

k) cellular respiration (introduction)

l) somatic cell division (mitosis & cytokinesis)

m) reproductive cell division

n) application of homeostatic mechanisms

o) predictions related to homeostatic imbalance, including disease states and disorders

Histology

4. Identify the basic tissues of the body and their location and explain their functions, including the following topics.

a) overview of histology & tissue types

b) microscopic anatomy, location, & functional roles of epithelial, connective, muscular and nervous tissues - membranes (mucous, serous, cutaneous & synovial) - glands (exocrine & endocrine) - tissue injury & repair

Integumentary System

5. Identify major gross and microscopic anatomical components of the integumentary system and describe the functions of the system, including the following topics.

a) general functions of the skin & the subcutaneous layer

b) gross & microscopic anatomy of the skin

c) roles of the specific tissue layers of the skin & subcutaneous layer

d) anatomy & functional roles of accessory structures

e) application of homeostatic mechanisms

f) predictions related to homeostatic imbalance, including disease states & disorders

Skeletal System

6. Identify major gross and microscopic anatomical components of the skeletal system and explain their functional roles in osteogenesis, repair, and body movement, including the following topics.

a) general functions of bone & the skeletal system

b) structural components – microscopic anatomy

c) structural components – gross anatomy

d) physiology of embryonic bone formation (ossification, osteogenesis)

e) physiology of bone growth, repair & remodeling

f) organization of the skeletal system - gross anatomy of bones

g) classification, structure & function of joints (articulations)

h) application of homeostatic mechanisms

i) predictions related to homeostatic imbalance, including disease states & disorders

Muscular System

7. Identify major gross and microscopic anatomical components of the muscular system and explain their functional roles in body movement, maintenance of posture, and heat production, including the following topics.

a) general functions of muscle tissue

b) identification, general location, & comparative characteristics of skeletal, smooth, & cardiac muscle tissue - detailed gross & microscopic anatomy of skeletal muscle

c) physiology of skeletal muscle contraction

d) skeletal muscle metabolism

e) principles & types of whole muscle contraction - nomenclature of skeletal muscles

f) location & function of skeletal muscles

g) group actions of skeletal muscles

h) lever systems

i) application of homeostatic mechanisms

j) predictions related to homeostatic imbalance, including disease states & disorders

Nervous System

8. Identify the major gross and microscopic anatomical components of the nervous system and explain their functional roles in communication, control, and integration, including the following topics.

a) general functions of the nervous system

b) organization of the nervous system from both anatomical & functional perspectives

c) gross & microscopic anatomy of the nerve tissue

d) neurophysiology, including mechanism of resting membrane potential, production of action potentials, & impulse transmission

e) neurotransmitters& their roles in synaptic transmission

f) sensory receptors & their roles

g) division, origin, & function of component parts of the brain

h) protective roles of the cranial bones, meninges, & cerebrospinal fluid

i) structure & function of cranial nerves

j) anatomy of the spinal cord & spinal nerves

k) reflexes & their roles in nervous system function

l) physiology of sensory & motor pathways in the brain & spinal cord

m) functions of the autonomic nervous system

n) comparison of somatic & autonomic nervous systems

o) application of homeostatic mechanisms

p) predictions related to homeostatic imbalance, including disease states & disorders

The learning outcomes detailed in this syllabus meet or exceed the learning outcomes specified by the Kansas Core Outcomes Project for this course as sanctioned by the Kansas Board of Regents to ensure transfer between Kansas colleges and universities. Systemwide Transfer (SWT) Code: BIO2030

In class, students are assessed on the mastery of these outcomes using the learning management system. Student names will not be used when reporting results. Outcomes-based assessment is used to improve the instructional planning, design, and quality of student learning throughout the college

**General Education Outcomes**

For this course, students are expected to demonstrate the skills associated with the college wide learning goals as described by the general education/program outcomes below:

GESc1: Apply the scientific process to evaluate current issues and circumstances

GESc2: Demonstrate scientific literacy and knowledge about the study of matter, life and the universe.

GESc3: Critically analyze events through a scientific lens.

GESc4: Demonstrate quantitative reasoning and problem-solving.

Artifacts of student work are collected from general education course and reviewed by a faculty committee to assess general education outcomes. Artifacts may also be reviewed by a professional outside the college. Student names will not be used when reviewing artifact nor reporting results. Program accomplishment is partially measured through performance on program outcomes. Outcomes-based assessment is used to improve the instructional planning, design, and quality of student learning throughout the college.

**Institutional Learning Outcomes**

For this course, students are expected to demonstrate the skills associated with the college wide learning outcomes as described below.

*Sustainability*

ILO\_S1: Students will understand the importance and implementation of sustainable practices that meet the needs of today without compromising the needs of the future.

In class, students are assessed on the mastery of these outcomes. Student names will not be used when reporting results. Outcomes-based assessment of the institutional learning outcomes is used to ensure we are meeting the mission of the college, following the guiding values and enhance instructional planning, design, and quality of student learning throughout the college.