This course covers physiological function of the basic systems of the human body. Emphasis will be on integration of body systems and the inter-relationships for maintaining body homeostasis. Designed for paramedical biology majors (nursing, x-ray technicians, dental hygiene, physical therapy, etc.) and physical education majors. Will not satisfy transfer requirements for biology majors. UC Credit limitations: Maximum credit of two courses for Biology G220, G221 and G225.
NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course
OCUPATIONAL (SAM) CODE: E
REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:
REQUIRED FOR DEGREE OR CERTIFICATE: No [ ] Yes [X]
Career Ladder Option Associate Degree Program(Associate in Arts)
Kinesiology(Associate in Arts for Transfer)
Liberal Arts: Emphasis in Science(Associate in Arts)
GE AND TRANSFER REQUIREMENTS MET:
IGETC Area 5: Physical and Biological Sciences
   5B: Biological Science
      x
      x
CSU GE Area B: Scientific Inquiry and Quantitative Reasoning
   B2 - Life Science
   B3 - Laboratory Sciences
COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:
1. summarize the human body systems and their interactions.
2. apply critical thinking and analytical skills to correctly interpret data pertaining to human physiological processes.
3. collect, report and analyze scientific data in a laboratory setting.
4. identify normal and abnormal physiological values.
5. outline how normal physiological processes maintain internal homeostasis.
COURSE OBJECTIVES:
1. Answer questions covering course content objectives for human physiology.
2. Collect, evaluate and analyze data gathered in a laboratory setting.
3. Relate normal physiological processes to the maintenance of internal homeostasis
4. Identify normal versus abnormal physiological values.
5. Explain homeostatic mechanisms as they apply to the disease process.
6. Relate cellular biochemistry with the physiological process of the body.
7. Correlate anatomical structures with their physiological function(s).
COURSE CONTENT:
LECTURE CONTENT:
   A. Introduction: The Cell
      1. Introduction to human physiology
      2. The cell and its composition
      3. Basic functional systems of the cell
      4. Control of cell function; and cell reproduction
      5. DNA, protein synthesis, gene regulation, DNA replication
   B. The Body Fluids and the Urinary System
      1. The fluids of the body
      2. Capillary membrane dynamics, and the body=s special fluid systems
      3. Formation of urine by the kidney and micturition
      4. Regulation of body fluid constituents and volumes
   C. Blood and Immunity
      1. The blood cells
2. The reticuloendothelial system, immunity and allergy
3. Blood coagulation and transfusion

D. The Cardiovascular System
   1. The pumping action of the heart, and its regulation
   2. Blood flow through the systemic circulation and its regulation
   3. Special areas of the circulatory system
   4. Systemic arterial pressure and hypertension
   5. Cardiac output, venous pressure, cardiac failure and shock

E. Respiration
   1. Mechanics of respiration and transport of oxygen and carbon dioxide
   2. Regulation of respiration and the physiology of respiratory abnormalities

F. The Nervous System and Muscle
   1. The nerve and membrane potentials
   2. Muscle physiology
   3. Synaptic functions of neurons, and design of the nervous system
   4. Somesthetic sensations and interpretation of sensations by the brain
   5. The thought processes and control of motor activities
   6. Reflex functions of the spinal cord and brain stem
   7. The autonomic nervous system, sleep and psychosomatic effects

G. The Special Sensory Systems
   1. Vision
   2. Hearing, taste and smell
   3. Proprioception
   4. Tactile sensations

H. The Gastrointestinal and Metabolic Systems
   1. Gastrointestinal movements, secretion, and their regulation
   2. Digestion and assimilation of carbohydrates, fats and proteins
   3. Release of energy from foods and nutrition
   4. Body heat and temperature regulation

I. Endocrinology and Reproduction
   1. Introduction to endocrinology
   2. The hypophyseal hormones
   3. Thyroxin
   4. Adreocortical hormones
   5. Calcium metabolism, bone, parathoid hormone
   6. Pancreatic hormones
   7. Sexual functions of the male and female sex hormones
   8. Reproduction

LABORATORY CONTENT:

A. Metrics
B. Cell Division
C. Acid/Base & Buffers
D. Enzyme
E. Molecular motion / cell transport
F. Endocrine concepts
G. Neurophysiology
H. Senses
   I. Muscle Physiology / EMG
J. ECG
K. Fluid Flow concepts
L. Respiratory concepts
M. Blood
N. Digestive System
O. Urinary System / Urinalysis
The lab is a combination of wet lab experiments and physioEx computer simulated experiments.

The students turn in weekly lab reports.

METHODS OF INSTRUCTION:

A. Lecture:
B. Lab:
C. Tutoring – noncredit:
D. Other simultaneous interactive:
E. Independent Study:

INSTRUCTIONAL TECHNIQUES:

Lecture

Lab

COURSE ASSIGNMENTS:

Reading Assignments

Required Reading such as:
A physiology text providing explanations, process, and theory relating to physiology.
Appropriate text chapters on a weekly basis.

Out-of-class Assignments

Completion of Interactive Physiology CD modules on a computer (home or computer lab). CD’s cover nervous system, cardiac function, muscle physiology, respiratory physiology, urinary physiology, fluids, electrolytes, endocrinology, digestion and immunity.

Writing Assignments

Students must write lab reports and/or summaries of experimental data gathered in laboratory. Students will also demonstrate mastery of course objectives by essay examination questions.

METHODS OF STUDENT EVALUATION:

Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Essay Examinations
Objective Examinations
Report
Problem Solving Exercises

Demonstration of Critical Thinking:

After collection of laboratory experiment data or data supplied by the instructor, students must analyze the data so as to produce conclusions about the data.

Required Writing, Problem Solving, Skills Demonstration:

Students must write lab reports and/or summaries of experimental data gathered in laboratory. Students will also demonstrate mastery of course objectives by essay examination questions.

TEXTS, READINGS, AND RESOURCES:

TextBooks:
LIBRARY:
   Adequate library resources include:
   Comments:

Attachments:
   Attached Files