

**PHYSIO 1 Course Outline as of Fall 2017****CATALOG INFORMATION**

Dept and Nbr: PHYSIO 1 Title: HUMAN PHYSIO

Full Title: Human Physiology

Last Reviewed: 5/8/2023

| Units   |      | Course Hours per Week |      | Nbr of Weeks | Course Hours Total |        |
|---------|------|-----------------------|------|--------------|--------------------|--------|
| Maximum | 5.00 | Lecture Scheduled     | 4.00 | 17.5         | Lecture Scheduled  | 70.00  |
| Minimum | 5.00 | Lab Scheduled         | 3.00 | 8            | Lab Scheduled      | 52.50  |
|         |      | Contact DHR           | 0    |              | Contact DHR        | 0      |
|         |      | Contact Total         | 7.00 |              | Contact Total      | 122.50 |
|         |      | Non-contact DHR       | 0    |              | Non-contact DHR    | 0      |

Total Out of Class Hours: 140.00

Total Student Learning Hours: 262.50

Title 5 Category: AA Degree Applicable

Grading: Grade or P/NP

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

Study of the function of the human body with a focus on mechanisms of homeostasis at the biochemical, cellular, and systemic levels. Laboratory experiments are conducted to illustrate major principles associated with these systems. (Intended for nursing and dental hygiene students.)

**Prerequisites/Corequisites:**

Completion of CHEM 60 or higher (V6) and Completion of BIO 10 or higher (V7) and Course Completion of ENGL C1000 ( or ENGL 1A)

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Study of the function of the human body with a focus on mechanisms of homeostasis at the biochemical, cellular, and systemic levels. Laboratory experiments are conducted to illustrate major principles associated with these systems. (Intended for nursing and dental hygiene students.) (Grade or P/NP)

Prerequisites/Corequisites: Completion of CHEM 60 or higher (V6) and Completion of BIO 10 or higher (V7) and Course Completion of ENGL C1000 ( or ENGL 1A)

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;UC.

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

|                            |                      |                           |            |           |
|----------------------------|----------------------|---------------------------|------------|-----------|
| <b>AS Degree:</b>          | <b>Area</b>          |                           | Effective: | Inactive: |
|                            | C                    | Natural Sciences          | Fall 1981  |           |
| <b>CSU GE:</b>             | <b>Transfer Area</b> |                           | Effective: | Inactive: |
|                            | B2                   | Life Science              | Fall 1981  |           |
|                            | B3                   | Laboratory Activity       |            |           |
| <b>IGETC:</b>              | <b>Transfer Area</b> |                           | Effective: | Inactive: |
|                            | 5B                   | Biological Sciences       | Fall 1981  |           |
|                            | 5C                   | Fulfills Lab Requirement  |            |           |
| <b>CSU Transfer:</b>       | Transferable         | Effective:                | Fall 1981  | Inactive: |
| <b>UC Transfer:</b>        | Transferable         | Effective:                | Fall 1981  | Inactive: |
| <b>CID:</b>                |                      |                           |            |           |
| CID Descriptor:            | BIOL 120B            | Human Physiology with Lab |            |           |
| SRJC Equivalent Course(s): |                      | PHYZ1                     |            |           |

### **Certificate/Major Applicable:**

Major Applicable Course

## **COURSE CONTENT**

### **Outcomes and Objectives:**

In order to achieve these learning outcomes, during the course the students will:

1. Describe the characteristics of the scientific method and how it forms the basis of all modern scientific research.
2. Define homeostasis and explain how feedback mechanisms function to maintain homeostasis.
3. Explain relationships between structure and function at the molecular, cellular, and systems level of biological organization.
4. Explain how the structures of proteins and cells support the function of organ systems.
5. Compare and contrast the basic mechanisms by which cells, organs, and systems of the body carry out their specific physiological functions and maintain homeostasis.
6. Describe and evaluate the body's response to some major physiological stressors such as exercise, fasting, severe temperature extremes, injury, hemorrhage, infection, and diarrhea.
7. Apply knowledge about the function of the body to understanding the physiological basis for some of the major diseases and disorders of the human body.
8. Conduct physiological experiments that elucidate the functions of the body's organ systems.

## **Topics and Scope:**

### **I. Introductory Concepts**

- A. Scientific method
- B. Levels of biological organization
- C. Homeostasis

### **II. Cell Structure and Function**

- A. Macromolecules
- B. Organelles
- C. Cell membranes
- D. ATP and enzymes

### **III. Control Systems: Nervous and Endocrine**

- A. Neurons, membrane potentials, synapses
- B. Structure and function of central, peripheral and autonomic divisions of nervous system
- C. Sensory receptors, transduction
- D. Endocrine glands, hormones

### **IV. Muscle System**

- A. Skeletal, cardiac, smooth muscle
- B. Mechanism and control of muscle contraction

### **V. Circulatory System**

- A. Basic plan of circulation
- B. Cardiac cycle
- C. Blood vessels and blood pressure
- D. Regulation of cardiac output, blood pressure
- E. Basis for heart attack, hypertension, atherosclerosis

### **VI. Respiratory System**

- A. Mechanisms of ventilation, gas exchange, gas transport
- B. Regulation of respiratory rate
- C. Description of chronic obstructive pulmonary disease

### **VII. Urinary System**

- A. Mechanism of formation of urine
- B. Regulation of salt and water balance
- C. Regulation of acid-base balance

### **VIII. Digestive System**

- A. Organs and enzymes of digestion
- B. Factors that affect absorption

### **IX. Immune System**

- A. Injury and infection
- B. Organs, cells, molecules and mechanisms that provide immune defense

### **X. Reproductive System**

- A. Organs and hormones involved in sperm production
- B. Organs and hormones of menstrual cycle, pregnancy, parturition, lactation

### **XI. Laboratory Exercises**

- A. Acid-base balance
- B. Blood chemistry
- C. Cardiac function
- D. Enzyme activity
- E. Glucose tolerance test
- F. Homeostasis

- G. Muscle contraction
- H. Pulmonary function
- I. Reflex arc
- J. Renal function
- K. Senses

**Assignment:**

Lecture Related Assignments:

1. Reading in text (30-60 pages per week)
2. Research paper may be required (1-5 pages), requires library research
3. Quizzes (0-17)
4. Midterm exams (3-4) including objective, essay, and lab material questions
5. Comprehensive final exam including objective and essay questions
6. Attendance and participation

Lab Related Assignments:

1. Lab reports (18) which may include fill-in questions, short answer questions, data calculation and graphing

**Methods of Evaluation/Basis of Grade:**

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

|                             |                     |
|-----------------------------|---------------------|
| Lab reports, research paper | Writing<br>10 - 20% |
|-----------------------------|---------------------|

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

|      |                           |
|------|---------------------------|
| None | Problem solving<br>0 - 0% |
|------|---------------------------|

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

|      |                                |
|------|--------------------------------|
| None | Skill Demonstrations<br>0 - 0% |
|------|--------------------------------|

**Exams:** All forms of formal testing, other than skill performance exams.

|   |                   |
|---|-------------------|
| Quizzes; midterm exams including objective, essay, and lab material questions; comprehensive final exam including objective and essay questions | Exams<br>75 - 90% |
|---|-------------------|

**Other:** Includes any assessment tools that do not logically fit into the above categories.

|                              |                          |
|------------------------------|--------------------------|
| Attendance and participation | Other Category<br>0 - 5% |
|------------------------------|--------------------------|

**Representative Textbooks and Materials:**

Human Physiology. 14th ed. Fox, Stuart. McGraw-Hill. 2015

Human Physiology. Derrickson, Bryan. Wiley. 2016

Instructor prepared lab manual textbook.