

# Minnesota State University Moorhead

## BIOL 349: Human Physiology

### A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 3

OJT Hours/Week: \*.\*

Prerequisites:

- BIOL 111 - Cell Biology AND CHEM 210L - General Chemistry II Lab; OR
- CHEM 110 - Fundamentals of Chemistry AND CHEM 210 - General Chemistry II AND BIOL 115 - Organismal Biology; OR
- CHEM 110 - Fundamentals of Chemistry AND CHEM 110L - Fundamentals of Chemistry Lab AND CHEM 210 - General Chemistry II AND CHEM 210L - General Chemistry II Lab

Corequisites: None

MnTC Goals: None

The study of human physiology from cellular homeostasis through organ systems. Includes the study of normal function, regulation, and integration of organ systems, and the implications of abnormal function.

**B. COURSE EFFECTIVE DATES:** 02/20/1999 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Course Introduction
2. Cells: structure, function, metabolism
3. Cells: membrane transport, chemical messengers
4. Nerve Cells: electrical signaling, synaptic transmission, neural integration
5. Nervous System: CNS, Sensory Systems, Autonomic and Motor
6. Muscle System: Structure, Mechanics, Control
7. Cardiovascular System: the heart, vascular system, blood
8. The Heart: cardiac muscle, cardiac cycle, cardiac output
9. Vascular System: arteriole blood pressure, diffusion of capillary walls, venous pressure, baroreceptors
10. Blood: red blood cell, plasma and hemostasis
11. Respiratory System: pressures and mechanics, gas exchange, regulation
12. Urinary System: renal structure and function, fluid balance
13. Urinary System: electrolyte balance, acid-base balance
14. Digestive System: gastrointestinal process regulation
15. Endocrine System: energy and growth
16. Reproductive System: Male and Female

#### **D. LEARNING OUTCOMES (General)**

1. To learn basic physiology at cellular and tissue level including cell structure, function, metabolism, transport and communication.
2. To learn several physiological concepts of organs and organ systems for integument, skeletal, muscle, digestive, respiratory, cardiovascular, lymphatic, reproductive and nervous.
3. To learn physiological concepts using hands-on activities
4. To learn computer applications associated with equipment such as EKGs, spirometers and gas pressure sensors
5. Learn to use blood pressure kits and stethoscopes and its relation to cardiac cycle
6. To learn computer application in basic statistical analyses on laboratory data collection
7. To learn experimental design
8. To learn how to write a scientific laboratory report
9. To communicate to peers their results of laboratory experiments
10. To prepare students for careers in health and medical sciences.

#### **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

None

#### **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

#### **G. SPECIAL INFORMATION**

None noted