HIBBING COMMUNITY COLLEGE
COURSE OUTLINE

COURSE NUMBER & TITLE: BIOL 1280: Human Anatomy and Physiology:
Internal Organ Systems

CREDITS: 4 (3 Lec / 1 Lab)
PREREQUISITES: None

CATALOG DESCRIPTION:
Human Anatomy and Physiology: Internal Organ Systems is the study of organ systems
and tissues of the human body. Systems included are the cardiovascular, respiratory,
lymphatic, digestive, urinary, and reproductive. The focus is on structure and the
integrated control mechanisms of physiology in these systems. This course is intended
for students in health-related fields as well as liberal arts students. MNTC goal area: (3)
Natural Science.

OUTLINE OF MAJOR CONTENT AREAS:
1. Overview of anatomy and physiology
   A. Structural organization
   B. Functional characteristics
   C. Homeostasis
2. Basic chemistry and biochemistry
   A. Bonds and reactions
   B. Acids, bases, and salts
   C. Organic compounds
3. Cells and tissues
   A. Membranes
      1. Transport
      2. Electrical potential
      3. Cell interactions
   B. Epithelium
      1. Type
      2. Location
      3. Function
   C. Connective tissue
   D. Blood
      1. Composition
      2. Formed elements including cells
      3. Plasma
      4. Hemostasis
4. Cardiovascular system
   A. Heart anatomy
   B. Heart physiology
      1. Electrical events
2. Heart sounds and contraction
3. Cardiac output

C. Blood vessels
1. Arteries, capillaries, and veins
2. Blood flow, pressure, and resistance
3. Circulatory pathways

5. Lymphatic system
A. Lymphatic vessels
B. Lymph nodes
C. Spleen, thymus, and tonsils
D. Immunity
   1. Nonspecific cell and chemical defense
   2. Phagocytes and inflammation
   3. Antigen-antibody response
   4. Cell-mediated immune response
   5. Immunological memory
   6. Imbalances of immunity

6. Respiratory system
A. Functional anatomy
B. Mechanics of breathing
C. Gas exchanges
D. Transport of gases by blood
E. Control of respiration

7. Digestive system
A. Functional anatomy
B. Digestive physiology
   1. Chemical digestion
   2.Absorption
   3. Nutrition
   4. Metabolism and the role of the liver
   5. Energy balance

8. Urinary system
A. Kidney anatomy
B. Kidney physiology
   1. Filtration
   2. Reabsorption
   3. Secretion
C. Urine
   1. Regulation
   2. Composition
   3. Voiding
D. Fluid and electrolyte balance
E. Acid-base balance
Reproductive system
A. Anatomy of male reproductive system
B. Physiology of male system
C. Anatomy of female reproductive system
D. Physiology of female system
   1. Hormonal regulation of ovarian cycles
   2. Hormonal regulation of uterine cycles
E. Pregnancy and embryonic development

COURSE GOALS/OBJECTIVES/OUTCOMES:
1. Students will outline the structural organization and major functions of the human body's organ systems.
2. Students will define negative feedback and describe its role in maintaining body homeostasis.
3. Students will explain the functional classification of tissues indicating their chief roles and locations.
4. Students will relate the composition, physical characteristics, and the processes involved in hemostasis of the blood.
5. Students will describe the functional anatomy of the heart and blood vessels as it relates to heart sounds, EKG (electrocardiogram), blood pressure, and the nervous system control of cardiac output.
6. Students will compare and contrast the general, specific, and related functions of the B and T lymphocytes, as well as the events during nonspecific immune response.
7. Students will diagram the mechanics of breathing, gas exchange in the body, and the transport of gases by blood.
8. Students will identify and describe the overall function of the digestive system from physical and chemical breakdown to assimilation and metabolism of components of macromolecules.
9. Students will diagram the nephron of the kidney and the mechanisms of urine formation and evaluate the kidney's role in the balance of fluids, electrolytes, and pH.
10. Students will describe structure, changes and hormonal regulation of testicular function, ovarian and menstrual cycles of reproductive physiology, and development.

MNTC GOALS AND COMPETENCIES MET:
Natural Sciences

HCC COMPETENCIES MET:
Working Productively and Cooperatively
Communicating Clearly and Effectively
Thinking Creatively and Critically
Practicing Cultural, Economic, and Environmental Sustainability
STUDENT CONTRIBUTIONS:
Students are expected to attend all lecture and laboratory sessions, participate in and contribute to class discussions, complete all assignments on time and request assistance when needed. Attendance is critical for the successful completion of this course.

SPECIAL ASSESSMENT SHALL TAKE PLACE USING INSTRUMENTS SELECTED/DEVELOPED BY THE COURSE INSTRUCTOR.

ADDITIONAL INFORMATION:
Students are required to manipulate small sharp dissection instruments. Dissection is an integral component of this course. Exposure to chemical preservatives is minimal. Students may provide their own gloves (optional) which are available for purchase in the college bookstore. Students must observe all lab safety procedures.

Curriculum Approval Date: February 5, 2018

AASC APPROVAL DATE: February 21, 2018
REVIEW DATE: February 2023