UNITED STATES INTERNATIONAL UNIVERSITY
SCHOOL OF ARTS AND SCIENCES
COURSE SYLLABUS
NSC 2205: HUMAN PHYSIOLOGY
CREDIT 3 UNITS

A. COURSE DESCRIPTION

Functions of the systems of the human body and their relation to homeostasis; includes disease prevention and cure, health, wellness, and nutrition.

B. PURPOSE OF THE COURSE

The importance of knowing and understanding thyself cannot be overemphasised. The goal of teaching this course is to impart to the students facts about our bodies and to have a greater and better understanding of how a normal human body works.

C. COURSE OBJECTIVES

The student should be able to:

- Understand the concepts and principles on how a normal human body works. The student should be able to recognize abnormal situation/conditions of ill health and therefore act in a logical and human manner to save his/her life and those of others.
- Know how much work has been done and what work is required to be done in regard to the functions and limitations of the human body.
- Find interest and challenge in looking for further knowledge pertaining to the structure and functions of the human body.

D. TEACHING METHODOLOGY

Lectures, power point presentations, and class discussions: The instructor will give lectures in class to explain to the students various topics on Human Physiology. The lectures will take a participatory approach where the instructor will involve students by frequently asking them questions that are meant to keep them alert in class and trigger class discussions. The instructor will also be free to answer questions from the students in the course of the lectures. **Video shows and/or CD-Roms** on Human Physiology will be shown in class when available after the relevant topic has been covered.

Assignment criteria: Students will be given several research assignments on a relevant topics the instructor thinks are important and relevant to the course (but which will not be adequately covered in class due to limited time) for the students to research on either individually or in groups,

E. COURSE CONTENT

The topics to be covered in this course are:

WEEK ONE
Introduction to the human body

Anatomy and physiology: Classification of the human organism
Levels of organization of the human body:
Cells (basic units), Cell differentiation: Tissues, Organs and organ systems
Classification of cells based on function
- Epithelial cells, connective tissue cells, muscle cells and nerve cells

Human body systems and their general functions
The Internal Environment: Body fluid compartments, Homeostasis
Anatomical position, Principal body regions, body cavities and membranes
The principal body planes

WEEK TWO
Chemical composition of the body

Atoms and molecules
Chemical elements, covalent bonds, ions, polar molecules, solutions, hydrogen ions and acidity
Classes of organic molecules
Carbohydrates, lipids, proteins, nucleic acids and mixed organic molecules

Cell Structure and Function

Microscopic organisation of the cell
- Organelles of the Cell e.g. Nucleus, Ribosome, Mitochondria, ER etc.
- Chromosomes,
- Cell Division- Mitosis and Meiosis

WEEK THREE: Introduction to Body Systems (Co-ordinating Systems)
Co-ordination I: **The Nerve**
Structure and Function
- Divisions of the Nervous System: Central and Peripheral Nervous System
- Autonomic Nervous System
- The Neurone
- Junctional Transmission
- Receptor Mechanisms

WEEK FOUR
Co-ordination II: **The Senses**
- The Visual System
- The Auditory System
- Organ of Balance
- Chemical Senses: Gustatory & Olfactory

WEEK FIVE
Co-ordination III: **The Endocrine system**
- The Nature of Hormones
- Pituitary Gland
- Thyroid Glands
- Parathyroid Gland

- Adrenal Glands
- The Pancreas
- The Gonads

WEEK SIX
The Muscular System

Types of muscle
Functions of muscle
Structure of muscle: Histology
The Neuromuscular Junction and Muscle Contraction
Types of muscle contractions: muscle twitch, isometric contraction, isotonic contraction, tetanic contractions etc

WEEK SEVEN
The Circulatory System
Blood

- Plasma and Cellular Elements
- The Heart
  - Heartbeat co-ordination
  - Cardiac cycle and cardiac output
- The Vascular System
  - Arteries, arterioles, capillaries, veins, lymphatics
- Cardiovascular Control Centers in the Brain
- Cardiovascular patterns in health and disease
- Hemostasis: The Prevention of blood loss

Mid Semester Examination

WEEK EIGHT
The Respiratory system

- Organization of the Respiratory System
- Ventilation and Lung Mechanics
- Exchange of Gases in Alveoli and Tissues
- Transport of Gases in the Blood
- Control of Respiration
- Chemical and Neural Control
- Non respiratory Functions of the Lungs

WEEK NINE
The Digestive System

- Structure & Function
- The Gastrointestinal Hormones
- Digestion in Mouth
  -Stomach
  -Small Intestine
-Large Intestine
- Absorption
- The Liver, Pancreas

WEEK TEN
The Urinary System

- Structure of the Kidney and the Urinary System
- Basic Renal Processes
  - Glomerular filtration
  - Tubular reabsorption
  - Tubular secretion
  - Metabolism by the tubules
- Micturition (urination)
- ADH Secretion and Extracellular Volume
- Kidney disease

WEEK ELEVEN

Acid-Base Balance

- Regulation of electrolytes (sodium, chloride, potassium, and hydrogen) and water balance

WEEK TWELVE

The Reproductive System

(i) The Male

- Structure & Functions
- Accessory Organs
  - -Seminal Vesicles
  - -Prostate Gland
  - -Cowper's Glands
- Spermatogenesis

WEEK THIRTEEN

(ii) The Female

- Structure & Function
  - Oogenesis
  - Menstrual Cycle
  - The Placenta
  - Pregnancy & Foetal Development
- Parturition & Lactation

WEEK FOURTEEN

Final Examination

F. COURSE TEXT

Thibodeau, G.A. and Patton, K.T. (1997) *Structure and Function of the Body*. St. Louis: Mosby- Year Book, Inc.

G. RECOMMENDED TEXTS

1. Guyton, A.C. (1977) *Basic human physiology: normal function and mechanisms of disease*. Philadelphia: Saunders.
2. Martini, F. H. and Welch, K. (1995) *Fundamentals of anatomy and physiology*. Springfield: Charles C. Thomas
3. Marieb E. N. (1992) *Human Anatomy and Physiology*. California.: The Benjamin/Cummings Publishing Company,
4. Roberts, M.B.V. (1986) *Biology, a functional approach* by. Walton-on-Thames, Thomas Nelson and Sons Ltd.

5. Luciano, D.S., Vander, A.J. and Sherman, J.H. (1978) *Human function and structure*. New York: McGraw Hill
6. Beckett, B.S (1990) *Illustrated human and social biology*. London, Oxford University Press.
7. Mader, S.S. (1994) *Understanding human anatomy and physiology*. Dubuque: W.C. Brown.
8. Simpkins J and Williams, J.I (1989); *Advanced Biology*. London. Uwing Hyman Publishers,
9. Wilson, K.J.W. and Waugh, A. (1990) *Ross and Wilson anatomy and physiology in health and illness*. New York: Churchill Livingstone.

H. DISTRIBUTION OF MARKS

Attendance & Participation	10%
Quizzes	5%
Assignments	15%
Mid-Quarter Exam	30%
Final Exam	40%
Total	**100%**

I. GRADING

90 - 100	A
87 - 89	A-
84 - 86	B+
80 - 83	B
77 - 79	B-
74 - 76	C+
70 - 73	C
67 - 69	C-
64 - 66	D+
62 - 63	D
60 - 61	D-
0 - 59	F