

UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA
PSY 3130: PHYSIOLOGICAL PSYCHOLOGY
COURSE SYLLABUS
CREDIT: 4 UNITS
LECTURER:

COURSE DESCRIPTION

Introduction to the physiological systems of the body as they relate to behavior. Emphasis on the nervous system (central, autonomic, and somatic), the muscular systems (striated, smooth, and cardiac), and the glandular systems (endocrine and exocrine).

COURSE OBJECTIVES

Students will demonstrate and apply knowledge in the following areas upon completion of the course:

- * An understanding of the role of the nervous system in the control of behavior.
- * A general understanding of the organization of the nervous system and endocrine system.
- * Mechanisms of communication within a neuron.
- * A general understanding of how neuropharmacological agents affect transmission.
- * Discuss the basic mechanisms by which receptors transduce sensory stimuli into nerve signals.
- * Understand methods of coding in the nervous system
- * Defend the teleological value of receptor adaptation.
- * Understand the structure and function of muscle receptors.
- * Discuss the mechanisms underlying control of motor functions at cortical and subcortical levels.
- * Identify the somatosensory pathways.
- * Neurochemical basis of learning.
- * Physiological mechanisms of wakefulness and sleep.
- * Human communication.
- * Nature and physiology of maladaptive behavior.

COURSE CONTENT

Week 1

Historical perspective of physiological psychology.

- Philosophical Roots
- Biological Roots

Structure and functions of the cell.

- Neurons

- Neuralgia

Week 2

Cellular membranes and transmembrane transport processes.

- Membrane Structure
- Passive Transport Processes
- Active Transport Processes

Communication within a neuron

- Resting Membrane Potential
- Action Potential
- Propagation of Action Potential

Week 3

Synaptic and functional transmission.

- Basic Characteristics of Chemical Synapses
- Structure of a Synapse
- Ionic Basis of Postsynaptic Potentials (EPSP, IPSP, EPP)

Synaptic and functional transmission

- Neurotransmitter Substances
- Neuropharmacology of the Synapse

Week 4

Structure of the neuro-endocrine system.

- Vascular Supply, Meninges
- Ventricular System
 - Cerebrospinal Fluid (CSF)
 - Blood-Brain Barrie (BBB)
- The Central Nervous System
 - Brain and Spinal Cord
- The Peripheral Nervous system
 - Sympathetic Nervous System
 - Autonomic Nervous System

Sensory Systems

- Receptor Mechanisms.
 - Receptor (or generator) Potentials
 - Methods of Coding in the Nervous System
 - Cutaneous, Deep and Visceral Sensations
 - Somatosensory pathways.

Week 5

Structure and function of muscle (Skeletal, Cardiac & Smooth Muscles)
Muscle receptors.

MID-TERM EXAMINATION

Week 6

Reflexes

- Monosynaptic Stretch Reflex
- Polysynaptic Reflexes

Gamma Loop

Motor systems

- Cortical Control of Movement
- Control of Movement by
 - Cerebellum
 - Basal Ganglia
 - Brain Stem

Week 7

Reticular activating system and brain.

- Physiological Mechanism of Sleep and Waking
 - Sleep Disorders

Learning

- Anatomy of Learning
- The Cellular Basis of Learning

Week 8

Reinforcement and addiction

Human Communication

- Brain Mechanisms of Reading and Comprehension
- Reading and Writing Disorders

Week 9

Mental disorders

- Schizophrenia
- Major Affective Disorders

Anxiety Disorders

Week 10

Student Presentations

Week 11

END OF TERM EXAMINATION

TEACHING METHODOLOGY

The students are expected to read assigned materials prior to coming to class. The students are expected to participate in class discussions.

COURSE TEXT

Carlson, N. R.; *Physiology of Behavior* Ed. 5 (Boston: Allyn and Bacon, 1994)

READINGS

Ganong, W. F. *Review of Medical Physiology* (Los Altos: Lange Medical Publications, 1991.)

Kalat, J. W. *Biological Psychology*. 5th Ed. (Pacific Grove: Brooks/Cole publishing Company, 1995.)

McGuigan, F. J. *Biological Psychology A Cybernetic Science*: (London: prentice Hall, 1994.)

COURSE EVALUATION

Attendance	10%
Quizzes	10%
Term Paper	20%
Oral Presentation	10%
Mid-Term Exam	25%
Final Exam	25%
TOTAL	100%

GRADING

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