

SCHOOL OF HEALTH AND SCIENCES

SYLLABUS

TITLE:	Physiological Psychology
CODE:	PSI 321
PREREQUISITE	BIO 101, PSI 209
CREDITS:	3 credits 45 contact hours 1 term

DESCRIPTION

In this course, the biological, anatomical, and physiological perspective is integrated into the study of human behavior. Students are presented with the opportunity to learn more about the biological and physiological foundations of the human body, the relationship between mind and body, and the current debates around this.

JUSTIFICATION

It is relevant for students of human behavior to understand how the study of biological and physiological elements, structures and processes is related to psychological processes, functional and dysfunctional behaviors. The course emphasizes on the biological systems most studied for their relationship to the mind and behavior. These include the central nervous system and the peripheral nervous system, the endocrine system, and the brain.

COMPETENCES

The course develops the following competences in students:

- **Critical questioning**
- **Communication**

OBJECTIVES

After completion of the course, students will be able to:

1. Know the relationship between Psychology and the fundamentals of Physiology in human behavior.

2. Know the relevance of Neuroanatomy for the study of human behavior.
3. Identify the main structures in the central and peripheral nervous systems as well as their relationship to behavior.
4. Identify brain structures and their relationship to behavior.
5. Know how the memory, motivation and sleep systems work at the brain level and its effect on human behavior.
6. Analyze the effect of the endocrine system on human behavior.
7. Know some basic principles of Neuropsychopharmacology and its effect on the study of human behavior.

CONTENTS

- I. Fundamentals of physiological Psychology
 - A. Physiological Psychology as a study discipline
 - B. Methodological approaches
 - C. Historical background to Physiological Psychology
 1. The brain vs the heart as a central organ
 2. Contemporary Physiological Psychology
 - D. Biopsychosocial perspective
 - E. Santiago Ramón y Cajal's Neuron Theory
 - F. Hebb Rule
- II. Neuroanatomy
 - A. Major divisions of the nervous system
 1. Nervous system
 - a. Central nervous system
 - b. Peripheral nervous system
 - B. Units of the central nervous system
 1. Neuron
 2. Form and location of neurons
 3. Common synaptic connections
 4. Electrochemistry and action potential
 5. Myelination and demyelination
 - C. Synapse
 1. Inhibitory potential

- 2. Excitatory potential
 - 3. Neuroglia
- III. Units Of the Peripheral Nervous System
 - A. Afference and efference
 - B. Gray matter, white matter
 - C. Cranial and spinal nerves
- IV. Autonomous Nervous System
 - A. Sympathetic system
 - B. Parasympathetic system
- V. Central Nervous System
 - A. Meninges
 - B. Neuronal plasticity
- VI. Neurotransmitters
 - A. Types of neurotransmitters
 - B. Neural pathway and psychological function or correlate
 - 1. Processes in the synapse
 - 2. Binding
 - 3. Degradation
 - 4. Reuptake
 - 5. Enzymatic degradation
- VII. Neuroimaging Techniques
 - A. Animal model
 - B. CT Scan, Pet Scan, MRI
 - C. FMRI, EEG
- VIII. Functional Neuroanatomy
 - A. Development of the nervous system
 - B. General organizational divisions of the brain
 - C. Cortical regions
 - D. Subcortical regions
 - E. Executive functions
- IX. Neurodegenerative Diseases
- X. Endocrine System
 - A. Hormones and behavior

- XI. Biological Rhythms
 - A. Sleep, consciousness
 - B. Emotions
- XII. Memory and Learning
 - A. Types of memory
- XIII. Neuropsychopharmacology
 - A. Pharmacokinetics
 - B. Pharmacodynamics
 - C. Medications
 - D. Drug addiction

METHODOLOGY

The following strategies from the active learning methodology are recommended:

- Flipped classroom
- Lectures
- Discussion
- Reflections
- Analysis of maps
- Research project
- Visits to neurological service centers

EVALUATION

Oral presentations	25%
Partial assignments	25%
Compositions	25%
Final project or exam	25%
Total	100%

LEARNING ASSESSMENT

The institutional assessment rubric is applied to the course's core activity.

BIBLIOGRAPHY

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integration across levels of biological organization. *Annual review of*

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- The University of Texas Health Science Center at Houston. (2019). *Neuroscience* [E-Book]. <http://nba.uth.tmc.edu/neuroscience>
- Tortora, G.J., Anagostakos, N.P. (2016). *Principles of Anatomy and Physiology* (15th ed.). Wiley.

ELECTRONIC RESOURCES

CogniFit: <https://www.cognifit.com/es/funciones-cerebrales>

The Human Brain [Video]: <https://www.youtube.com/watch?v=dzyxSgLtyRM>

Human Connectome Project. University of Southern California:

<http://www.humanconnectomeproject.org/>

“Big Brain” el atlas de nuestro cerebro [Video]:

<https://www.youtube.com/watch?v= GiRhS105RU>

For more information resources related to the course’s topics, access the library’s webpage <http://biblioteca.sagrado.edu/>

REASONABLE ACCOMMODATION

For detailed information on the process and required documentation you should visit the corresponding office. To ensure equal conditions, in compliance with the ADA Act (1990) and the Rehabilitation Act (1973), as amended, any student in need of reasonable accommodation or special assistance must complete the process established by the Vice Presidency for Academic Affairs.

ACADEMIC INTEGRITY

This policy applies to all students enrolled at Universidad del Sagrado Corazón to take courses with or without academic credit. A lack of academic integrity is any act or omission that does not demonstrate the honesty, transparency, and responsibility that should characterize all academic activity. Any student who fails to comply with the Honesty, Fraud, and Plagiarism Policy is exposed to the following sanctions: receive a grade of zero in the evaluation and / or repetition of the assignment in the seminar, a grade of F (*) in the seminar, suspension, or expulsion as established in the Academic Integrity Policy effective in November 2022.

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