

Course Outline for: PSYC 2500 Biopsychology

A. Course Description

1. Number of credits: 3
2. Lecture hours per week: 3
3. Prerequisites: PSYC 1110 or Biology 1102 or permission of instructor
4. Corequisites: None
5. MnTC Goals: Goal 5 – History and the Social and Behavioral Sciences

Biopsychology provides an overview of neuroanatomy, basic principles of neural conduction, and basic techniques used in biopsychological investigations. It reviews current knowledge of the biological bases of human behavior and experience (e.g., sensation and perception, cognition and language, attention, learning, memory, emotion, wakefulness and sleep, psychiatric disorders). Students examine important questions in psychology that can be addressed with biological methods. Biopsychology meets Minnesota Transfer Curriculum Goal 5.

B. Date last reviewed/updated: January 2022

C. Outline of Major Content Areas

1. Research Methods in Biopsychology
2. Neuroanatomy
3. Neural Communication and Synapses
4. Genetics and Evolution
5. Neurodevelopment and Plasticity
6. Sensation and Perception
7. Wakefulness and Sleep
8. Internal Regulation and Motivation
9. Emotion
10. Learning and Memory
11. Cognitive Functions
12. Psychological Disorders

D. Course Learning Outcomes

Upon successful completion of the course, the student will be able to:

1. Describe fundamental features of neuroanatomy and neurophysiology and their relationship to psychological phenomena. (Goal 2c; Goal 5a)

2. Explain the strengths and weaknesses of important biological methods for investigating hypotheses about human behavior and experience, such as brain imaging, electroencephalography, transcortical magnetic stimulation, single cell recording, magnetoencephalography, and measurement of the startle response via electromyography. (Goal 2c; Goal 5a)
3. Critically evaluate new findings in brain science. (Goal 2a; Goal 2c; Goal 5a; Goal 5d)
4. Explain how the biological level of explanation can be applied to the major areas of Psychology and is foundational for the scientific study of behavior and experience. (Goal 2c; Goal 5c)
5. Identify the areas of current research emphasis in Biopsychology (such as neuroplasticity, neurogenesis, epigenetics, optogenetics, the "connectome", and gene-environment interactions) and summarize recent important discoveries in those areas. (Goal 2a; Goal 5a)
6. Describe both ethical and practical guidelines for research using animal subjects. Articulate and support personal arguments regarding the ethics of animal research. (Goal 2d; Goal 5d)

E. Methods for Assessing Student Learning

1. Exams consisting of multiple choice, fill-in-the-blank, and/or essay questions
2. In-class activities
3. Out of class writing assignments and projects

F. Special Information

None