PSYC 0140 - INTRODUCTION TO BIOPSYCHOLOGY

Catalog Description

Formerly known as PSYC 40
Prerequisite: Completion of PSYC 100 with grade of "C" or better
Advisory: Eligibility for ENGL 1A
Hours: 54 lecture
Description: An introduction to biopsychology focusing on the relationship between the nervous system and behavior. Emphasis on physiological, biochemical, and neuroanatomical foundations of behavior and mental processes. Topics include the central nervous system function and its relation to psychoactive drug effects, sensory/perceptual processes, sleep and dreaming, learning phenomena, memory mechanisms, human communication disorders, and abnormal behavior. (C-ID PSY 150) (CSU, UC)

Course Student Learning Outcomes

- CSLO #1: Describe the structure and physiology of the nervous system at the anatomical, cellular, and molecular levels and relate this structure and physiology to behaviors and psychological disorders.
- CSLO #2: Compare and contrast the specialty areas within Biological Psychology and the related disciplines within the neurosciences and the types of research that characterizes the biological approach.
- CSLO #3: Critically evaluate the major issues in human evolution, genetics, and behavioral development that underlie the “biology of behavior.”

Effective Term

Fall 2022

Course Type

Credit - Degree-applicable

Contact Hours

54

Outside of Class Hours

108

Total Student Learning Hours

162

Course Objectives

1. Describe the various methods used to study the biological basis of behavior.
2. Use scientific terminology appropriately in reference to biology and behavior.
3. Read and critically evaluate published biopsychological research.
4. Identify the divisions of the brain and nervous system and describe their functions.
5. Describe the structure of neurons and how neural impulses are generated.
6. Describe the structure and functioning of synapses.
7. Identify the major neurotransmitters and discuss the impact of each on behavior.
8. Explain the role of the nervous system in sensation and perception.
9. Describe the nature and function of the endocrine system and its effect on behavior.
10. Relate behavior and mental processes to anatomical, biological, chemical, and genetic mechanisms.
11. Compare and contrast proposed treatments for psychological disorders, motor disorders, and other central nervous system pathologies.
12. Describe the brain-behavior relationships associated with motivation, emotion, addiction, sex, sleep, stress, learning, and memory.
13. Summarize the historical and recent research on lateralization.

General Education Information

- Approved College Associate Degree GE Applicability
  - AA/AS - Life Sciences
- CSU GE Applicability (Recommended-requires CSU approval)
  - CSUGE - B2 Life Science
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)
  - IGETC - 5B Biological Science

Articulation Information

- CSU Transferable
- UC Transferable

Methods of Evaluation

- Classroom Discussions
  - Example: The students are put into small groups and asked to evaluate this statement: "The hippocampus is the brains' “memory center” — if you lose your hippocampus, you lose all your memories and can’t form new ones!" This is followed by a class discussion. Each group submits a written report of its responses, which are graded with a rubric for completeness and accuracy.
- Essay Examinations
  - Example: Describe the monoamine hypothesis of depression. Explain why it was influential and the problems with it. This question is graded with a rubric to assess the completeness and accuracy of the answer.
- Objective Examinations
  - Example: In this example, the student must apply what was learned in class to an experiment that was not discussed in class: Sleep deprivation has a negative effect on cognitive ("thinking") tasks in monkeys (and people). Deadwyler and his colleagues (2007) reported that if sleep-deprived monkeys were given a certain chemical, these negative effects were reduced and thus the performance of the monkeys on the cognitive task was improved. Based on what you have learned, what do you think was given to the monkeys that reduced the effects of sleep deprivation? A. Adenosine B. Orexin C. An antihistamine D. Melatonin
- Reports
  - Example: Find a recent article in the popular media (newspaper, online news source, etc.) on a research discovery in the field of behavioral neuroscience. Next, find the original paper (from a scholarly journal) in which this research is reported. Write a paper in which you: 1) Describe the research as presented in the

magazine/newspaper. 2) Give more details on the actual study, based on the research article. 3) Discuss discrepancies between the two reports, information that you think is critical but was left out of the newspaper/magazine article, etc. 4) Discuss your own thoughts on the research – if it is relevant to you or someone you know, how it fits in with what you have learned elsewhere, etc. 5) Write a conclusion. This is graded with a rubric to assess the clarity and completeness of the work.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. After the instructor covers action potentials (with lecture and videos), the students, as a class, are asked to fill in the missing words on a slide describing the process.
2. After an instructor lecture on the basics of functional neuroanatomy, the students are divided into small groups and asked to identify the location of brain damage based on the symptoms described for a set of hypothetical cases.

Distance Learning

1. After the instructor covers the basics of functional neuroanatomy, the students take a LMS quiz in which they are asked to identify, from a pull-down menu, the location of brain damage based on the symptoms described for a set of hypothetical cases. Students are provided immediate feedback on which answers are incorrect and allowed to retake the quiz multiple times.

Typical Out of Class Assignments Reading Assignments

1. Read Chapter 1 of the textbook and then take the Chapter 1 quiz in LMS and be prepared tod discuss in class. 2. Read the article "The Brain Implants That Could Change Humanity" from the New York Times (posted in LMS) and be prepared for a class discussion. 3. Read the article "The Frozen Addicts" posted on LMS and answer the question: How did the case of frozen addicts advance our understanding of the etiology of Parkinson's disease?

Writing, Problem Solving or Performance

1. Listen to the podcast of ""His and Hers: Sex Differences in the Brain," on Dana Foundation's web site: https://www.dana.org/explore-neuroscience/neuro-news/videos-and-podcasts-explore-neuroscience-dana-foundation/. Discuss what Dr. Catherine Woolley believes is true and not true about sex differences in the brain, and why she thinks this is an important topic. 2. Find a biopsychology-related website and write a review. In this review, you should include: - A brief, 2 – 3 sentence description of the site – IN YOUR OWN WORDS. - The number of "brains" you would give the site, with one brain being the worst and five brains being the best. - A review (500 - 600 words) of the site in which you MUST: a) Discuss your opinion of the site (be specific about what you liked and or didn't like; that is, give examples). b) Indicate if you think the site would be helpful to others and to what type of others, and why (or why not).

Other (Term projects, research papers, portfolios, etc.)

Find a recent article in the popular media (newspaper, online news source, etc.) on a research discovery in the field of behavioral neuroscience. Next, find the original paper (from a scholarly journal) in which this research is reported. Write a paper in which you: 1) Describe the research as presented in the magazine/newspaper. 2) Give more details on the actual study, based on the research article. 3) Discuss discrepancies between the two reports, information that you think is critical but was left out of the newspaper/magazine article, etc. 4) Discuss your own thoughts on the research – if it is relevant to you or someone you know, how it fits in with what you have learned elsewhere, etc. 5) Write a conclusion.

Required Materials

- Biological Psychology
  - Author: James W. Kalat
  - Publisher: Cengage
  - Publication Date: 2018
  - Text Edition: 13th
  - Classic Textbook?:
  - OER Link:
  - OER:
- Physiology of Behavior
  - Author: Carlson
  - Publisher: Allyn and Bacon
  - Publication Date: 2016
  - Text Edition: 12th
  - Classic Textbook?:
  - OER Link:
  - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.