

COURSE OUTLINE**Psychology 103 (C-ID Number: PSY 150)**  
**Physiological Psychology (C-ID Title: Introduction to Biological Psychology)****I. Catalog Statement**

Psychology 103 provides an introduction to the scientific study of the biological bases of behavior and its fundamental role in the neurosciences. Physiological, hormonal, and neurochemical mechanisms, and brain-behavior relationships underlying the psychological phenomena of sensation, perception, regulatory processes, emotion, learning, memory, and psychological disorders are addressed. The course also includes historical scientific contributions and current research principles for studying brain-behavior relationships and mental processes. Ethical standards for human and animal research are discussed in the context of experimental research.

Total Lecture Units: 3.0

**Total Course Units: 3.0**

Total Lecture Hours: 48.0

**Total Faculty Contact Hours: 48.0**

Prerequisite: Psychology 101

**II. Course Entry Expectations**

Skills expectations: Reading 6, Writing 6, Listening/Speaking 6, Math 2.

Prior to enrolling in the course, the student should be able to:

1. demonstrate familiarity with major concepts, theoretical perspectives, research methods, core empirical findings, and historic trends in psychology;
2. critically analyze major theoretical perspectives of psychology;
3. demonstrate knowledge and understanding of biological bases of behavioral and mental processes, sensation, perception, learning, memory, cognition, consciousness, individual differences, personality, social psychology, developmental changes across the lifespan, psychological disorders, emotion, and motivation;
4. describe and demonstrate an understanding of applied areas of psychology;
5. recognize and understand the impact of diversity on psychological research, theory, and application;
6. understand and apply psychological principles to personal experience as well as social and organizational settings.

### **III. Course Exit Standards**

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

1. define and use basic biological, physiological, and psychological terminology of the neurosciences;
2. differentiate among specialty areas within biological psychology and the related disciplines within the neurosciences and the types of research that characterize the biopsychological approach;
3. summarize the major issues in human evolution, genetics, and behavioral development that underlie the “biology of behavior”;
4. generate and explicate concrete examples of invasive vs. noninvasive research methods and the general principles of research ethics for the study of animals and human beings, including the research safeguards and the peer-review process in science;
5. explain scientific approaches used in methodologies for the study of brain-behavior relationships;
6. explain the general anatomy and physiology of the nervous system and its relationship to behavior;
7. describe neural conduction and synaptic transmission;
8. discuss the role of the neuroendocrine system as it relates to behavior;
9. summarize examples of various brain-behavior relationships including ingestive behavior, motivation, sexual behavior, sleep, learning, memory, stress, drug dependence, and psychiatric disorders such as affective disorders and schizophrenia.

### **IV. Course Content**

**Total Faculty Contact Hours = 48 hours**

A. Research Methods and Ethics	6 hours
1. Scientific method	
2. Experimental design	
3. The scientific research process	
4. Research ethics applied to humans and animals	
B. Quantitative Genetics and Behavior	5 hours
1. DNA, gene sequences, and protein products	
2. Family, adoption, and twin studies	
3. Genes, environment, and interactions	
4. Complex traits	
C. Neural Communication and Neurochemicals	5 hours
1. Graded potentials and action potentials	
2. Neurotransmitters	
D. Anatomy and Physiology	6 hours
1. Meninges, ventricles, and CSF	
2. Central nervous system (structure & function of forebrain, midbrain, & hindbrain)	
3. Peripheral nervous system (structure & function of somatic & autonomic systems)	

4. Terms for anatomical directions
  5. Planes/sections of the nervous system
- E. Sensation and Perception 5 hours
1. Vision
  2. Audition
  3. Gustation and olfaction
  4. Cutaneous senses and proprioception
  5. Pain
- F. Hormone System, Sexual Development, and Sexual Behavior 5 hours
1. Eating, thirst, and sleep
  2. Sexual development
  3. Hormonal and neural control of sexual behavior
- G. Memory 3 hours
1. Learning
  2. Types of memory
  3. Hippocampus vs. cortex
  4. Long term potentiation
  5. Amnesia, dementia, and Alzheimer's disease
- H. Psychophysiological Techniques and Brain Imaging 3 hours
1. Electrophysiological techniques
  2. Psychophysiological techniques
  3. Brain imaging approaches
- I. Neurological Disorders 2 hours
1. Seizure and epilepsy
  2. Parkinson's disease
  3. Multiple sclerosis
  4. Stroke
- J. Emotion, Stress, and the Biological Bases of Psychological Disorders 8 hours
1. Anxiety disorders
  2. Mood disorders
  3. Schizophrenia
  4. Addiction and drugs of abuse

V. **Methods of Instruction**

The following methods of instruction may be used in the course:

1. classroom lecture, discussion, and demonstrations;
2. small group activities, projects, and presentations;
3. computer laboratory use in internet resources and interactive demonstrations;
4. individual student presentations;

5. multimedia;
6. guest speakers;
7. field activities or trips;
8. on-line instruction.

## **VI. Out of Class Assignments**

The following out of class assignments may be used in the course:

1. homework assignment (e.g. contrast differences in brainwave activity for the stages of sleep);
2. short papers or essays demonstrating application of concepts and critical thinking skills (e.g. short essay discussing the experimental design of an assigned journal article);
3. research paper demonstrating use of sources and critical thinking skills (e.g. paper describing the causes, symptoms, types, and treatments for seizure);
4. individual projects (e.g. presentation regarding electrophysiological techniques);
5. group projects (e.g. informational poster about antidepressant medication).

## **VII. Methods of Evaluation**

The following methods of evaluation may be used in the course:

1. four to five in-class tests and one final examination requiring demonstration of course exit standards;
2. peer review or critique of student work;
3. instructor evaluation of in-class assignments;
4. instructor evaluation of in-class presentations;
5. class participation in individual and group tasks to practice course exit standards.

## **VIII. Textbook(s)**

Pinel, John. *Biopsychology 9th Edition*. Boston: Allyn & Bacon, 2013. Print.  
13th Grade Textbook Reading Level. ISBN: 978-0-205-91557-6.

## **IX. Student Learning Outcomes**

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

1. critically analyze psychophysiological techniques;
2. in written or oral work, explain the process of neural communication;
3. comprehend and explain the anatomy of the nervous system.