

COURSE OUTLINE

**Psychology 203**  
**Physiological Psychology Lab**

**I. Catalog Statement**

Psychology 203 is an introductory science laboratory course that surveys structure and function of the nervous system, neurological correlates of behavior, psychophysiological research methodology, and scientific research investigation. Main topics include neuroanatomy, behavioral neuroscience, consciousness, emotion, stress, sensation and perception of vision, audition, touch, olfaction, and gustation.

Total Lecture Units: 1.0

**Total Course Units: 1.0**

Total Laboratory Hours: 48.0

**Total Faculty Contact Hours: 48.0**

Prerequisite: Psychology 103

**II. Course Entry Expectations**

Skill Level Ranges: Reading 6, Writing 6, Listening/Speaking 6, Math 2.

Prior to enrolling in the course, the student should 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.

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

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

1. apply procedures of psychophysiological research methods;
2. test hypotheses regarding psychophysiological mechanisms that underlie behavior by designing experiments and evaluating the results;
3. explain the structure and function of the nervous system;
4. analyze the neurological correlates of behavior.

### **IV. Course Content**

**Total Faculty Contact Hours = 48 hours**

- |   |          |
|---|----------|
| A. The Research Process   | 3 hours  |
| 1. Research articles and scientific journals                        |          |
| 2. Databases and literature searches                                |          |
| 3. Scientific writing and manuscript fundamentals                   |          |
| <br>  |          |
| B. Scientific Method  | 3 hours  |
| 1. Research methods: descriptive vs. experimental studies           |          |
| 2. Independent, dependent, and confounding variables                |          |
| 3. Hypotheses testing   |          |
| 4. Statistical inference  |          |
| <br>  |          |
| C. Anatomy and Physiology of the Nervous System                     | 6 hours  |
| 1. Structure, function, and neurotransmitters of the nervous system |          |
| 2. Neural communication   |          |
| 3. Neuropsychological assessment                                    |          |
| <br>  |          |
| D. Psychophysiological Techniques                                   | 10 hours |
| 1. Electroencephalogram   |          |
| 2. Event-related potentials   |          |
| 3. Electro-oculogram  |          |
| 4. Electromyogram and startle response                              |          |
| 5. Skin response  |          |
| 6. Heart rate   |          |
| <br>  |          |
| E. Consciousness  | 6 hours  |
| 1. Sleep and wakefulness  |          |
| 2. Psychophysiological correlates of states of consciousness        |          |
| <br>  |          |
| F. Emotion and Stress   | 6 hours  |
| 1. The hormone system   |          |
| 2. Autonomic nervous system   |          |

G. Sensation and Perception: Vision and Audition	2 hours
H. Sensation and Perception: Touch, Olfaction, and Gustation	2 hours
I. Learning and Memory	3 hours
J. Psychiatric Disorders	4 hours
K. Current Topics in Behavioral Neuroscience	3 hours

## **V. Methods of Instruction**

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

1. lecture and demonstration;
2. analysis and critique of scientific articles;
3. individual instructor-to-student assistance in class;
4. small group activities, projects, and presentations;
5. computer laboratory use;
6. individual student presentations;
7. online instruction;
8. multimedia;
9. field trips to other research labs;
10. guest speakers.

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

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

1. homework assignment (e.g. diagram and label facial muscles recorded for electromyography);
2. short papers or essays demonstrating application of concepts and critical thinking skills (e.g. written critique of a journal article's conclusions);
3. research paper (e.g. final project report regarding student's experimental hypothesis, rationale, methods, results, and interpretation);
4. individual projects (e.g. design experiment to compare levels of stress hormone);
5. group project (e.g. present results on experiment regarding electrodermal activation).

## **VII. Methods of Evaluation**

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

1. class participation in individual and group activities;
2. practical examination;
3. oral presentation;
4. examinations requiring demonstration of course exit standards;
5. peer review or critique of student work;
6. instructor evaluation of in-class assignments;
7. instructor evaluation of in-class presentations;
8. evaluation of technical skills.

**VIII. Textbook(s)**

Pinel, John. *Basics of Biopsychology*. Boston: Allyn & Bacon, 2007. Print.  
12<sup>th</sup> Grade Textbook Reading Level. ISBN: 978-0205461080.

Dionisio, Daphne. *Physiological Psychology Lab Manual*. Glendale: Glendale  
Community College, 2012. Print.  
12<sup>th</sup> Grade Textbook Reading Level.

**IX. Student Learning Outcomes**

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

1. explain the structure and function of the nervous system;
2. apply procedures of psychophysiological research methods;
3. critically analyze hypotheses regarding psychophysiological mechanisms that underlie behavior by designing experiments and evaluating the results.