

# NEUROSCIENCE, B.S..

## Requirements

Total minimum of credits required for a major in Neuroscience leading to the B.S. degree - 120

Total minimum of credits required for a minor – 28

## Neuroscience Major

**Coordinator:** Dr. Edward Schicatano

The Neuroscience major must complete a minimum of 120 credit hours. In addition to satisfying the University's General Education requirements, the student majoring in Neuroscience completes a minimum of 73 credits in Neuroscience and other required courses (please see the course listings for the specific course requirements).

Students are encouraged to consult the Undergraduate Bulletin for all information regarding the degree requirements. Each student should also meet and work closely with their faculty advisor in order to make the optimal course selections based upon the student's interests and future goals.

## Required Courses (73 credits)

Psychology majors must take all of the following courses:

[[BIO-121]]	Principles of Modern Biology I	4 credits
[[BIO-226]]	Cellular & Molecular Biology	4 credits
[[BIO-321]] or [[BIO-398]]	Mammalian Physiology or Neurophysiology	4 credits
[[BIO-398]]	Molecular Neurobiology	4 credits
[[CHM-115]]	Elements and Compounds	4 credits
[[CHM-116]]	The Chemical Reaction	4 credits
[[CHM-231]]	Organic Chemistry	4 credits
[[PHY-171]]	Principles of Classical & Modern Physics	4 credits
[[PHY-174]]	Application of Classical & Modern Physics	4 credits
[[MTH-111]]	Calculus	4 credits
[[PSY-101]]	General Psychology	3 credits
[[PSY-200]]	Statistics	4 credits
[[PSY-300]]	Research Methods	4 credits
[[PSY-398]]	Social Neuroscience	3 credits
[[PSY-400]]	Capstone	3 credits
[[PSY-257]]	Neuropsychology	3 credits
[[PSY-311]]	Behavioral Neuroscience	4 credits
[[PSY-359]]	Psychopharmacology	3 credits
[[PSY-398]]	Social Neuroscience	3 credits

	One 300 level PSY class	3 credits
	BIO, CHM or PSY elective	3 or 4 credits

## Recommended Course Sequence

### First Semester Credits

[[BIO-121]] – Principles of Modern Biology I  
[[CHM-113]] – Elements & Compounds Lab  
[[CHM-115]] – Elements & Compounds  
[[FYF-101]] – First Year Foundations  
[[PSY-101]] – General Psychology

### Second Semester Credits

[[CHM-114]] – The Chemical Reaction Lab  
[[CHM-116]] – The Chemical Reaction  
[[ENG-101]] – Composition  
[[MTH-111]] – Calculus  
Distribution Requirement

### Third Semester Credits

[[CHM-231]] – Organic Chemistry I  
[[CHM-233]] – Organic Chemistry Lab  
[[PSY-257]] – Neuropsychology  
3 Distribution Requirements

### Fourth Semester Credits

[[PSY-200]] – Statistics  
[[BIO-226]] – Cellular & Molecular Biology  
3 Distribution Requirements

### Fifth Semester Credits

[[PHY-171]] – Principles of Classical & Modern Physics  
[[BIO-321]] – Mammalian Physiology or Neurophysiology  
PSY elective (required) or [[PSY-311]]  
Free elective

### Sixth Semester Credits

[[PHY-174]] – App. Of Class & Mod Physics  
[[PSY-300]] – Research Methods  
[[PSY-359]] – Psychopharmacology  
[[PSY-398]] – Social Neuroscience

### Seventh Semester Credits

[[PSY-311]] – Behavioral Neuroscience or PSY elective  
[[BIO-398]] – Molecular Neurobiology

2 Free electives

[[PSY-400]] – Capstone or Free elective

### Eighth Semester Credits

Free electives or [[PSY-400]] Capstone  
Or [[PSY-398]] - Social Neuroscience  
BIO, PSY or CHM elective

## PSY. PSYCHOLOGY

### PSY-101. GENERAL PSYCHOLOGY

**Credits:** 3

An introduction to the field of psychology with emphasis on objective and systematic methods of inquiry. Extensive survey of major psychological topics including: biological basis of behavior, sensory systems, learning, cognition, emotions, consciousness, development, stress, personality, social factors and mental health.

### PSY-200. STATISTICS

**Credits:** 4

An introduction to the use of statistical procedures (by hand and with SPSS) in the analysis of psychological data. Topics include descriptive statistics and inferential statistics. Techniques such as t-tests, ANOVA, correlation and regression will be used for hypothesis testing. It is recommended that students take this course at the end of their sophomore or their junior year. Psychology and Neuroscience majors must earn a 2.0 or higher in this course.

### Pre-Requisites

[[PSY-101]] and Math competency (MTH 101 or higher).

### PSY-221. DEVELOPMENTAL PSYCHOLOGY

**Credits:** 3

The course provides a general view of human growth and development from conception through the life span. Physical, cognitive, personal, and social development of the various stages of life will be presented. Discussions will include issues such as the influence of heredity versus environment and how these issues can be studied using various developmental research techniques.

### Pre-Requisites

[[PSY-101]].

### PSY-222. ADOLESCENT PSYCHOLOGY

**Credits:** 3

This course is designed as a study of the adolescent stage of life. Emphasis will be placed on the following areas of development: physical; emotional; cognitive; and social.

### Pre-Requisites

[[PSY-101]].

### PSY-242. PERSONALITY

**Credits:** 3

An examination of the major theoretical perspectives on personality development and functioning, with additional emphasis on the assessment of personality and research in personality.

### Pre-Requisites

[[PSY-101]].

**PSY-250. APPLIED BEHAVIOR ANALYSIS****Credits:** 3

This course will explore the dynamics and management of human behavior. As such, the course will involve exercises with empirical research, statistics, literature searches and analysis with emphasis on the principles emanating from Operant and Pavlovian conditioning phenomena.

**Pre-Requisites**

[[PSY-101]].

**PSY-257. NEUROPSYCHOLOGY****Credits:** 3

A survey of the relationship between nervous system physiology and human behavior with emphasis on neurological disorders, neuropsychological assessment, head injury, cerebral asymmetry, and rehabilitation.

**Pre-Requisites**

[[PSY-101]].

**PSY-264. POSITIVE PSYCHOLOGY****Credits:** 3

Positive Psychology encompasses psychological theory and research about what makes our lives satisfying, purposeful, and "worth living", as well as what creates happiness and well-being. Students will examine the major theories and concepts of the field of positive psychology, and will engage in a variety of empirically-supported interventions designed to help them reach their fullest potential, improve overall quality of life, and enhance psychological well-being.

**PSY-266. PEAK PERFORMANCE COACHING****Credits:** 3

Peak Performance Coaching is a field of study and application with the aim of helping individuals reach their optimal level of performance. Students will learn and use multiple methods that can help clients with the process of setting and reaching goals. This course surveys and applies approaches such as Neurolinguistic Programming (NLP) and Life Coaching, employing techniques from these disciplines.

**Pre-Requisites**

[[PSY-101]]

**PSY-300. RESEARCH METHODS****Credits:** 4

A lecture and laboratory course designed to familiarize the student with the methods of psychological research. Hands-on experimental participation will give the student direct experience with research design and statistical analyses using SPSS. The student will prepare a formal APA style research proposal to be used for the capstone experience.

[Click here for course fees.](#)**Pre-Requisites**

[[PSY-101]] and [[PSY-200]]. Students must have earned a 2.0 or higher in [[PSY-200]]. To be taken by Psychology or Neuroscience majors only, during the junior or senior year.

**PSY-301. PSYCHOLOGICAL RESEARCH****Credits:** 3

An introduction to how psychological research methods and statistics are used in academic journals and the popular media. The following topics will be discussed: scientific method, research methods used to gather evidence, descriptive statistics and hypothesis testing. Students will be asked to critically review and evaluate research findings.

**Pre-Requisites**

[[PSY-101]] and [[PSY-200]]. Students must have earned a 2.0 or higher in [[PSY-200]]. To be taken by Psychology majors only, during the junior or senior year.

**PSY-309. CAREER MENTORING FOR THE SOCIAL SCIENCES****Credits:** 2

This course will offer career guidance for students in the Behavioral and Social Sciences. The course will include topics such as mentoring, networking, résumés and interviewing skills.

**Pre-Requisites**

[[PSY-101]], junior standing. Course will be cross-listed with PS and [[SOC-309]] Course credits will not count towards minor credits. Open only to majors in the Social and Behavioral Sciences.

**PSY-311. BEHAVIORAL NEUROSCIENCE****Credits:** 4

A study of the physiological mechanisms mediating behavior and cognition. Emphasis on the structure and function of the nervous system and the neurophysiological bases of sensory processes, emotion, abnormal behavior, sleep, learning and memory, pain, and drug abuse. Laboratory experience includes brain dissection and psychophysiological techniques employed in human behavioral neuroscience research.

[Click here for course fees.](#)**Pre-Requisites**

[[PSY-101]]; junior or senior standing.

**PSY-331. COGNITION****Credits:** 3

A survey of human cognitive processes such as attention, pattern recognition, memory, language, and problem solving as well as other selected aspects of human cognition. The course includes historical as well as current perspectives on cognitive issues and emphasis on the research techniques used.

**Pre-Requisites**

[[PSY-101]].

**PSY-333. CRITICAL THINKING IN PSYCHOLOGICAL SCIENCE****Credits:** 3

This course provides an opportunity to learn and practice the basic skills of critical thinking within the context of psychological science. Students will evaluate claims and theories in psychology, generate alternative explanations of psychological findings, identify common fallacies in thinking, construct and evaluate arguments, and learn how to become a more intelligent consumer of information. Additional topics include the interface of politics and the media with science and the dangers of pseudoscience.

**Pre-Requisites**

[[PSY-101]].

### **PSY-341. INTRODUCTION TO SOCIAL PSYCHOLOGY**

**Credits:** 3

An introduction to the study of social behavior from a psychological perspective. Topics include attitude formation and change, conformity, leadership, culture, gender and sexuality, prejudice and discrimination. Cross listed with [[SOC-341]].

#### **Pre-Requisites**

[[ANT-101]], [[PSY-101]], or [[SOC-101]].

### **PSY-351. BEHAVIORAL MEDICINE**

**Credits:** 3

This course provides a survey of the basic theoretical concepts and major issues in Behavioral Medicine. Specifically, this course examines how the areas of health, illness, and medicine can be studied from a psychological perspective. Topics of emphasis include the following: the psychological aspects of wellness and illness; preventive medicine; stress; chronic and terminal diseases (such as cancer and AIDS); and the use of alternative medicine.

#### **Pre-Requisites**

[[PSY-101]].

### **PSY-352. ABNORMAL BEHAVIOR**

**Credits:** 3

A general survey of psychological disorders in children and adults with emphasis on symptomatology, etiology, and assessment. Forensic and classification issues are also examined.

#### **Pre-Requisites**

[[PSY-101]], [[PSY-242]].

### **PSY-353. CLINICAL METHODS IN PSYCHOLOGY**

**Credits:** 3

A survey of the clinical methods in psychology including general therapeutic models and specific clinical techniques. Issues of assessment and diagnosis of psychological disorders are examined.

#### **Pre-Requisites**

[[PSY-101]]; [[PSY-242]]; [[PSY-352]]

### **PSY-354. THE EXCEPTIONAL INDIVIDUAL**

**Credits:** 3

A study of the psychological, physical, and social challenges and needs of exceptional individuals with an emphasis on etiology, assessment, impact, and educational interventions.

#### **Pre-Requisites**

[[PSY-101]], [[PSY-221]].

### **PSY-355. FORENSIC PSYCHOLOGY**

**Credits:** 3

A survey of the role that psychology has played in the legal system from issues of morality and theories of crime, to eyewitness testimony, the evaluation of criminal suspects, and jury selection. The application of the methods and theories of psychology to the legal system will be emphasized.

#### **Pre-Requisites**

[[PSY-101]]

### **PSY-356. INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY**

**Credits:** 3

A survey of the applied areas of personnel, organizational, human factors, and consumer psychology.

#### **Pre-Requisites**

[[PSY-101]].

### **PSY-358. PSYCHOLOGICAL TESTS AND MEASURES**

**Credits:** 3

A survey of the psychometric properties of various instruments and measures of psychological phenomena (especially intelligence and personality). A variety of group and individual tests are studied as to their reliability, validity, and utility.

#### **Pre-Requisites**

[[PSY-101]], [[PSY-200]].

### **PSY-359. PSYCHOPHARMACOLOGY**

**Credits:** 3

A study of the effects and mechanisms of the action of psychoactive drugs on behavior. Focus will be placed on drugs used to treat psychopathological disorders and drugs of abuse. Topics of emphasis include a survey or stimulants, depressants, antipsychotics, antidepressants, psychedelics, and legal drugs, such as caffeine, nicotine, and alcohol.

#### **Pre-Requisites**

[[PSY-101]].

### **PSY-362. HISTORY OF PSYCHOLOGY**

**Credits:** 3

A study of the philosophic and scientific roots of contemporary psychology, with emphasis on the applicability of past questions and knowledge to current psychological thought.

#### **Pre-Requisites**

[[PSY-101]].

### **PSY-399. COOPERATIVE EDUCATION**

**Credits:** 1-3

Professional cooperative education placement in a private or public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See the Cooperative Education section of this bulletin for placement procedures.)

[Click here for course fees.](#)

#### **Pre-Requisites**

Sophomore standing, minimum 2.0 cumulative GPA, consent of academic advisor, and approval of placement by the department chairperson.

### **PSY-400. RESEARCH CAPSTONE**

**Credits:** 3

This course is designed to provide a research-based capstone experience for senior Psychology majors. Students will run an experiment, conduct the appropriate statistical analysis, and present the results formally in an APA manuscript, a poster, and in an oral presentation.

[Click here for course fees.](#)

#### **Pre-Requisites**

[[PSY-101]]; [[PSY-200]]; [[PSY-300]]; Senior status and departmental permission.

**PSY-401. APPLIED CAPSTONE**

**Credits:** 4

This course will offer a professional capstone experience, including a required internship experience. Students will prepare client case presentations based upon their observations during their internship. An internship is required prior to taking PSY 401 (PSY 399) and a second internship is required for this course, which is counted with the four credit requirement.

[Click here for course fees.](#)

**Pre-Requisites**

[[PSY-101]]; [[PSY-200]]; [[PSY-301]]; [[PSY-399]]; Senior status.

**PSY-402. FIELD EXPERIENCE IN SPORT PSYCHOLOGY**

**Credits:** 4

Students will be enrolled in an athletic internship and participate in a seminar format class. Class time will be devoted to examining research related to issues faced by athletes and how psychological variables can be used to improve performance.