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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 121</td>
<td>Principles of Modern Biology I</td>
<td>4</td>
</tr>
<tr>
<td>BIO 226</td>
<td>Cellular &amp; Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIO 321 or 398</td>
<td>Mammalian Physiology or Neurophysiology</td>
<td>4</td>
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<tr>
<td>BIO 398</td>
<td>Molecular Neurobiology</td>
<td>4</td>
</tr>
<tr>
<td>CHM 115</td>
<td>Elements and Compounds</td>
<td>4</td>
</tr>
<tr>
<td>CHM 116</td>
<td>The Chemical Reaction</td>
<td>4</td>
</tr>
<tr>
<td>CHM 231</td>
<td>Organic Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>PHY 171</td>
<td>Principles of Classical &amp; Modern Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHY 174</td>
<td>Application of Classical &amp; Modern Physics</td>
<td>4</td>
</tr>
<tr>
<td>MTH 111</td>
<td>Calculus</td>
<td>4</td>
</tr>
<tr>
<td>PSY 101</td>
<td>General Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 200</td>
<td>Statistics</td>
<td>4</td>
</tr>
<tr>
<td>PSY 300</td>
<td>Research Methods</td>
<td>4</td>
</tr>
<tr>
<td>PSY 398</td>
<td>Social Neuroscience</td>
<td>3</td>
</tr>
<tr>
<td>PSY 400</td>
<td>Capstone</td>
<td>3</td>
</tr>
<tr>
<td>PSY 257</td>
<td>Neuropsychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 311</td>
<td>Behavioral Neuroscience</td>
<td>4</td>
</tr>
<tr>
<td>PSY 359</td>
<td>Psychopharmacology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 398</td>
<td>Social Neuroscience</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>One 300 level PSY class</td>
<td>3</td>
</tr>
</tbody>
</table>

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
- 3 Distribution Requirements

## Third Semester Credits
- **CHM-231** – Organic Chemistry I
- **CHM-233** – Organic Chemistry Lab
- **PSY-257** – Neuropsychology

## Fourth Semester Credits
- **PSY-200** – Statistics
- **BIO-226** – Cellular & Molecular Biology

## Fifth Semester Credits
- **PHY-171** – Principles of Classical & Modern Physics
- **BIO-321** – Mammalian Physiology or Neurophysiology
- **PSY** elective (required) or **PSY-311**

## 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

## Eighth Semester Credits
- **PSY** elective or **PSY-398** - Social Neuroscience
- BiO, PSY or CHM elective

## Distribution Requirement
- 2 Free electives

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### 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.

#### Pre-Requisites
- **PSY-101** and Math competency (MTH 101 or higher).

#### 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.

#### Pre-Requisites
- **PSY-101** and Math competency (MTH 101 or higher).

#### PSY-201. APPLIED STATISTICS AND RESEARCH
**Credits:** 4
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 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-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]]. To be taken by Psychology 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]]. 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]]; junior or senior standing.

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]]; junior or senior standing.

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 of 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.)  
**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-201]] or [[PSY-301]]; [[PSY-399]]; Senior status.