

behavioral  
neuroscience



Andrews  University



Have you ever wondered why people behave the way they do? Or, for that matter, have you ever wondered if and how animals think? What if you could develop a method for predicting behavior? Understanding human and animal behavior is emerging as one of the most important and growing fields in modern science.

Behavioral Neuroscience is the interdisciplinary study of the relationships among the brain, behavior and psychological processes—in other words, how brain structures drive animal and human behavior. Andrews University's newly developed Behavioral Neuroscience program offers you the chance to be on the cutting edge.

In the Behavioral Neuroscience program at Andrews University, you will explore the ways the brain controls the behavior of humans and animals and develop a strong foundation in the underlying biological and physical sciences. You will continue this fascinating, rigorous program of

study by choosing one of three related fields for focused study: an extended understanding of human behavior; further study of the biological foundations for animal function and behavior; and prediction and evaluation of behavior. You will explore neurobiology, neuropharmacology, memory, behavioral control, human behavioral problems, drug and behavior addictions, and many other related topics. As a student, you will develop laboratory skills, be directly involved with a faculty mentor in research, and develop unique research projects of your own to present at conferences across the nation.



CHOOSE ANDREWS

## WHY BEHAVIORAL NEUROSCIENCE AT ANDREWS UNIVERSITY?

- **A clear vision of Christian education**—we seek to advance rigorous scientific study in relationship to our Creator.
- **A brand new, growing, National Science Foundation funded program** with impressive resources and opportunities for personal and professional development.
- **A great environment for learning** with small upper-division classes, lots of one-on-one interaction with faculty, and excellent departmental camaraderie.
- **Diverse, award-winning faculty** sharing a common vision—excellence in teaching and scholarship.
- **Excellent laboratory facilities and high-tech equipment** used regularly by students in course work and research.
- **Active student research program**
- **Outstanding Academic Advising** from knowledgeable, approachable, and user- friendly faculty members. Their job is to help you get where you are going as quickly and easily as possible.



THE ANDREWS EDGE

**Cutting Edge Science Education** Whatever your goal, if you want a cutting edge science education, Andrews University is the place to be. We are committed to helping you excel in developing the skills you need to achieve success. We will prepare you for graduate school or medical school, the teaching profession, or for immediate employment in professions or related industries that deal with behavioral problems. You will develop your understanding of responsible, environmentally sensitive use of global resources and be engaged in the process of discovery and creativity both in the research lab and in the classroom.

**High Academic Reputation** The decision to study at the university level is probably one of the most important you will ever make. An advanced education will equip you with the necessary skills to advance in life. Andrews University has had great success in educating its science students. The science and mathematics programs at Andrews are ranked among the strongest in the country. *Peterson's Top Colleges for Science* (1996) included Andrews University in the top 13% of 1442 colleges and universities. Our high academic reputation is known both nationally and abroad, attracting students from many other parts of the globe. Also, our location near Chicago in the Midwest, with easy access to nearby eastern states, puts you in the hub of the burgeoning neuroscience fields. However, academic qualifications are only part of the story. At Andrews we pride ourselves in educating students in a strong Christian environment.



**Christian Environment** Within the Behavioral Neuroscience program we have chosen a mission not only to train future scientists, teachers and behavioral and health professionals, but also to nurture lasting relationships and instill ethical and moral values in our students. Our teachers are committed to strong personal interactions with their students. We also believe that a Christian education enhances academic excellence. This is evident by the quality of our graduates. Many (about twice the national average) have successfully gone on to graduate school, professional programs, and medicine, frequently at some of the most highly ranked schools in the nation.

**Get Acquainted with the Program** If you are unsure as to whether Behavioral Neuroscience is right for you, consider enrolling in "Dealing With Your Mind." This general education class is open to all freshmen and will provide you with an excellent opportunity to get acquainted with the program. The class provides an introduction to the brain and how it works, with emphases on processes used in everyday life: perceptions of our surroundings, memory and other facets of general cognition, and links to addictive behavior. The labs highlight hands-on experience with different approaches to understanding how your brain works. You will also be introduced to student research opportunities and exciting career choices.



**Programs** Behavioral Neuroscience is an interdisciplinary program established with the support of a major grant from the National Science Foundation. Research with a faculty mentor is an integral part of the program and is supported by student scholarships. Students who enter the program will complete a common core of classes and choose one of three emphases outlined below to complete a BS degree in either Biology or Psychology.

**BS: Biology**

- Neuroscience emphasis
- Behavior/Mathematics emphasis

**BS: Psychology**

- Behavioral Neuroscience emphasis

"THE PROGRAM AT AU DEVELOPED AND SUPPORTED MY GROWING INTEREST IN NEUROSCIENCE. IT PROVIDED A STRONG FOUNDATION IN THE SCIENCES, INTEGRATED, THROUGH CHRISTIAN VALUES AND ETHICS WITH A HIGH QUALITY GENERAL EDUCATION. CHALLENGING RESEARCH OPPORTUNITIES WITH ACCOMPLISHED PROFESSORS AT AU OPENED THE DOOR TO RESEARCH IN NEUROSCIENCE AT A MAJOR EUROPEAN UNIVERSITY."  
LESLIE SAMUEL, BS BIOLOGY 2002





Imagine being interviewed on a television talk show which is broadcast via a cable network. In this case, the widespread cable connections allow you to interact with millions of people simultaneously. In the same way, nerve cells communicate with thousands of other nerve cells and other types of cells. Because of their broad, protracted actions, such systems in the brain can orchestrate entire behaviors, ranging from falling asleep to falling in love. Some examples of typical, foundational subject matter you'll explore in our program are listed below:

**Chemical Control of Brain and Behavior** Ever wondered why human behavioral problems such as depression, or the behavior of humans and animals more generally, can be positively or negatively influenced by drugs? In our program you will come to understand how neurochemicals normally function in the communication between nerve cells, in memory formation and retention and in many other ways. You will also learn why “drugs” can be used positively in solving human behavior problems or, when abused, negatively alter normal behavior and result in addiction.

**Brain Mechanisms and Emotions** To appreciate the significance of emotions, try to imagine life without them. Instead of the daily peaks and valleys we all experience, life would be a great empty plain. Without question, the expression of emotion is a large part of being human. The mechanisms of emotional experience are hard to grasp, but we can ask many questions, such as, how can incoming sensory stimuli lead to the behavioral and physiological responses typical of emotional expression?

**Wiring the Brain Memory Systems** Most of the operations of the brain depend on remarkably precise interconnections among its 300+ billion neurons. But how did such precise wiring arise? To find out, students look at brain and nervous system development to see how connections are formed and modified as the brain matures and how most of the wiring in the brain is specified by genetic instructions. We are by no means complete creatures when we are



born. From the moment we take our first breath, the sensory stimuli we experience modify our brain and influence our behavior. Indeed, one of the main goals of the first 20 years of our lives is to learn the skills we need in order to survive in the world. We learn an enormous number of things—some straightforward (snow is cold) and others more abstract (an isosceles triangle has two sides of equal length). You'll discuss and study the anatomy of memory—how different parts of the brain fit together to store particular types of information.

**Human Behavior** Most importantly, you will learn to apply these insights to understanding human behavior—both normal behavior and behavior under the influence of stressful social situations, chemical influences and other factors. Or you can choose to specialize in working with the behavior and nervous systems of both simpler and more sophisticated animals.

**Research** Ongoing research is crucial to higher education and especially to understanding the causes of behavior. The Behavioral Neuroscience program offers unusual opportunities for motivated students to hone their creative insights and develop analytical skills while getting a “taste” of the rigors of professional work and graduate-level study. Typically, either during the junior or senior year, students will conduct original research with a faculty mentor. Students who complete at least 3 credits of research can prepare a Senior Thesis that gives them a competitive edge in applying for excellent graduate programs or jobs. Frequently it results in the opportunity to present their research at the meetings of professional societies and/or publish in professional journals.

## **CURRICULUM GUIDES:**

**CLICK TO SEE GUIDE**

- Bachelor of Science: Behavioral Neuroscience



## BEHAVIORAL NEUROSCIENCE

### BS: BEHAVIORAL NEUROSCIENCE

Suggested course outline: It may not be necessary to take these courses in the order shown. An academic advisor will consult you in this regard.

Freshman Year - 1st Semester		Total Credits	15CR
PSYC101	INTRODUCTION TO PSYCHOLOGY		3CR
ENGL115	ENGLISH COMPOSITION I		3CR
HIST117	CIVILIZATIONS & IDEAS I		3CR
BIOL165	FOUNDATIONS OF BIOLOGY I		5CR
HLED120	FIT & WELL		1CR

Freshman Year - 2nd Semester		Total Credits	16CR
RELT100	GOD & HUMAN LIFE		3CR
PSYC180	DEALING WITH YOUR MIND		3CR
HIST118	CIVILIZATION & IDEAS II		3CR
BIOL166	FOUNDATIONS OF BIOLOGY II		5CR
BHSC100	PHILOSOPHY OF SERVICE		2CR

Sophomore Year - 1st Semester		Total Credits	16CR
ENGL215	ENGLISH COMPOSITION II		3CR
BHSC230	RESEARCH METHODS I: STATISTICS		3CR
PSYC432	RESEARCH METHODS II		3CR
CHEM131	GENERAL CHEMISTRY I		4CR
INFS100	COMPUTER TOOLS		3CR

Sophomore Year - 2nd Semester		Total Credits	16CR
COMM104	COMMUNICATION SKILLS		3CR
PSYC433	RESEARCH METHODS III		3CR
PSYC434	RESEARCH METHODS IV		3CR
CHEM131	GENERAL CHEMISTRY II		4CR

<b>Sophomore Year - 2nd Semester (cont'd)</b>	<b>Total Credits</b>	<b>16CR</b>
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Choose one course from the following:

RELB210	JESUS IN HIS TIME & OURS	3CR
RELT250	PERSONAL SPIRITUALITY & FAITH	3CR
RELT225	DOCTRINE OF ADVENTIST FAITH	3CR

<b>Junior Year - 1st Semester</b>	<b>Total Credits</b>	<b>16CR</b>
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MATH145	REASONING WITH FUNCTIONS	3CR
IDSC211	CREATIVITY IN THE ARTS	3CR
PSYC364	LEARNING & BEHAVIOR	3CR

Choose one course from the following:

PHYS141	GENERAL PHYSICS	4CR
PHYS241	PHYSICS FOR SCIENTISTS & ENGINEERS	4CR
CHEM 231/241	ORGANIC CHEMISTRY & LAB	4CR
BHSC235	CULTURE, PLACE & INTERDEPENDENCE	3CR

Choose one course from the following:

PSYC465	PHYSIOLOGICAL PSYCHOLOGY*	3CR
PSYC425	PSYCHOLINGUISTICS* (RECOMMENDED)	3CR

<b>Junior Year - 2nd Semester</b>	<b>Total Credits</b>	<b>16CR</b>
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RELT340	RELIGION & ETHICS IN MODERN SOCIETY	3CR
PHIL224	INTRODUCTION TO PHILOSOPHY	3CR
IDSC237	INDIVIDUAL, STATE & MARKETPLACE	3CR
BHSC300	PHILOSOPHY OF SERVICE FIELDWORK	0-2CR
PEAC	PHYSICAL ACTIVITY COURSE	1CR

Choose one course from the following:

PHYS142	GENERAL PHYSICS	4CR
PHYS242	PHYSICS FOR SCIENTISTS & ENGINEERS	4CR
CHEM232	ORGANIC CHEMISTRY & LAB	4CR

<b>Senior Year - 1st Semester</b>	<b>Total Credits</b>	<b>16CR</b>
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RELP400	SENIOR SEMINAR: HEALTH PROFESSIONS	3CR
ZOOL475	NEUROBIOLOGY	3CR
ELEC	ELECTIVES**	6CR
PEAC	PHYSICAL ACTIVITY COURSE	1CR

Choose one course from the following:

PSYC465	PHYSIOLOGICAL PSYCHOLOGY*	3CR
PSYC425	PSYCHOLINGUISTICS* (RECOMMENDED)	3CR

<b>Senior Year - 2nd Semester</b>	<b>Total Credits</b>	<b>14-15CR</b>
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PSYC460	PSYCHOLOGY OF ABNORMAL BEHAVIOR	3CR
PSYC449	PSYCHOPHARMACOLOGY	3CR
PSYC445	COGNITIVE PSYCHOLOGY	3CR
PSYC438	WORKSHOP: MPA CONVENTION (RECOMMENDED)	1-2CR
PEAC	PHYSICAL ACTIVITY COURSE	1CR
ELEC	ELECTIVES**	12CR

**Total Credits Needed for Graduation: 124+**

\* These classes are offered every other year.  
 \*\* These electives should be upper division courses from Biology, Mathematics or Psychology.

27 credits must be from courses 300 or above.  
 Please read bulletin carefully and consult with advisor.



## BEHAVIORAL NEUROSCIENCE

### CONNECT

Course descriptions for the Behavioral Science majors and general education requirements are available on our website, [www.andrews.edu/BHSC](http://www.andrews.edu/BHSC) or in the Andrews University Bulletin. Apply online or download an application at [connect.andrews.edu](http://connect.andrews.edu).

DEPARTMENT OF BEHAVIORAL SCIENCE    ENROLLMENT MANAGEMENT

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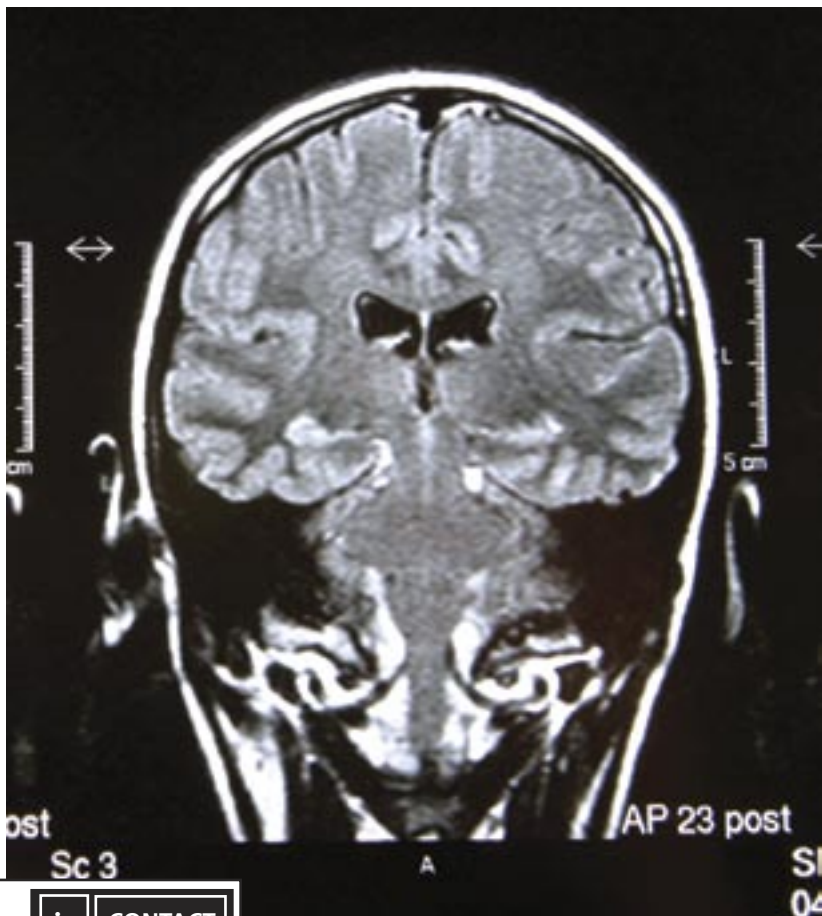
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