

# **NEUROSCIENCE ADVISEMENT GUIDE**

## **BAYLOR UNIVERSITY**

### **DEPARTMENT OF PSYCHOLOGY AND NEUROSCIENCE (Catalog Year: 2022-2023)**

#### ***What is neuroscience?***

Neuroscience is the scientific study of the nervous system and its involvement in mental processes and behavior. Neuroscience is an interdisciplinary field of study that employs the methods, perspectives, and knowledge base of biology, psychology, chemistry, physics, medicine, and other fields to gain a better understanding of how the nervous system functions and controls behavior.

#### ***Why major in neuroscience?***

Majoring in neuroscience provides interested undergraduate students with the opportunity to explore a fascinating and challenging area of study while preparing for a variety of career options. In addition, many of our life experiences, from the need to wear corrective lenses in childhood to memory loss in old age, are explored as part of the neuroscience curriculum.

#### ***What career options exist for neuroscience majors?***

Career options for neuroscience majors include biomedical research, health-care, teaching, administration, product development and distribution, government service, pharmaceutical sales, and other areas. Many neuroscience majors pursue graduate study in neuroscience, psychology, neurophysiology, neuropsychology, neuropharmacology, biotechnology, and related areas. Other neuroscience majors enter training programs for medicine, osteopathy, clinical psychology, physician's assistant, nursing, optometry, physical therapy, and healthcare administration. Some individuals with unique skills (such as artistic or writing ability) or interests (legal issues related to neuroscience and psychology) may pursue non-traditional career options such as medical illustration, scientific writing for the general public, law, or public policy. Yet others will enter positions where a strong liberal arts emphasis at the undergraduate level is more important than the specific major and where advanced education and training is not necessary (e.g. direct care provider for children with autism).

The types of career placements include academia (research, teaching, and/or administration in a college or university), health professions (psychology, medicine, osteopathy, physical therapy, etc), corporate institutions (research, administration, and product development or sales), and nonprofit institutions (research, administration, service, federal and state government, government-sponsored programs, public relations, and fund-raising).

#### ***What degree is necessary for the different types of careers?***

Professor at a college or university: Ph.D. (Doctor of Philosophy)

Professional services: M.D. (Doctor of Medicine), D.O. (Doctor of Osteopathy), O.D. (Doctor of Optometry), Ph.D.

Research scientist: Ph.D. or professional degree

Research assistant or technician: B.A (Bachelor of Arts), B.S. (Bachelor of Science), M.A. (Master of Arts), or M.S. (Master of Science)

Administrator: Bachelor's degree or above

Other positions: Bachelor's degree or above

### ***Is the neuroscience major appropriate for those who want to enter the healthcare field?***

The non-neuroscience requirements for a B.S. in neuroscience have considerable overlap with those required by the professional schools (medicine, osteopathy, optometry, etc), so the neuroscience major is an excellent choice of undergraduate major. A guide for pre-healthcare neuroscience majors is available from the Neuroscience Advisor.

### ***What do researchers in neuroscience do?***

As with other fields of scientific research, individual neuroscientists may focus on basic research or applied research, or both. Some neuroscientists focus on basic research leading to a better understanding of the nervous system. Others focus on applied research directed at solving problems (such as Alzheimer's disease) or evaluating the effectiveness of various treatments and procedures. Many researchers in neuroscience also teach, raise issues of public policy, and/or serve as consultants for government, foundations, and corporations.

### ***What is the training to be a neuroscientist?***

There are many paths to becoming a neuroscientist. Although many neuroscientists have been specifically trained in neuroscience programs, a significant number of individuals trained in other areas have utilized their training in fields such as medicine, chemistry, engineering, or mathematics to conduct basic or applied research on the nervous system. Thus, neuroscientists vary widely in the type of training they have received. They also differ substantially in the amount of training they have received, ranging from little or no formal training in neuroscience to 5-12 years of formal training. Doctoral programs in neuroscience arose because of the recognition that formal training in neuroscience is very valuable to those seeking to understand the nervous system.

The most prevalent model of training is for students to enter a 4-6 year doctoral program in neuroscience after receiving a bachelor's degree in one of the sciences (typically biology, psychology, or chemistry). As part of the doctoral program a student will take two years of coursework and complete and defend a major original research project called a dissertation). After earning a Ph.D. in neuroscience (or another closely related field), most individuals pursue 2-3 years of postdoctoral training in a different laboratory usually at a different institution to learn additional neuroscience techniques. Following this long period of training, the well-trained neuroscientist will seek a position in academia, industry, etc.

### ***Are there research opportunities available for undergraduates?***

Yes, there are a number of opportunities for neuroscience majors to participate in neuroscience research in the department or in summer training programs throughout the country. In general

students selected for these opportunities are juniors or seniors who have demonstrated a high level of academic performance and a strong desire to be involved in research. Research spots on campus tend to be very competitive, so for your first semesters on campus, focus on keeping a good GPA.

You can find professors who are looking for undergraduate research assistants on the departmental website; go to Baylor Psychology & Neuroscience, then the Research tab. You can also go to the Faculty and Staff Directory, and click on the professor you are interested in working with to get a link to their lab. There is also a board to the left of the Psychology and Neuroscience office (Baylor Sciences Building, Room B.309) that lists labs looking for research assistants.

### ***What is the neuroscience community like at Baylor University?***

It is comprised of neuroscience faculty, undergraduate students majoring in neuroscience, graduate students majoring in neuroscience, research faculty in the community, and other interested individuals. We have two student organizations in neuroscience (Nu Rho Psi and the Baylor Neuroscience Society) and two in psychology (Psi Chi and the Psychology Club). Nu Rho Psi is an honor society in neuroscience and Psi Chi is an honor society in psychology. The Baylor Neuroscience Society is open to anyone who is interested in neuroscience, regardless of major; similarly, the Psychology Club is open to all who are interested in psychology. Each of these four groups has its own officers, meetings, and activities, but there is considerable shared interest among them. The four groups have presentations by faculty and students, discussion of research opportunities in neuroscience and psychology, educational programs, social activities, and community service activities.

The Department of Psychology and Neuroscience at Baylor University is committed to promoting diversity, equity, and inclusion. We celebrate differences among individuals, families, and communities, and believe understanding context, culture, and diversity is central to our mission. Our goal is to foster a respectful, affirming, and inclusive climate through teaching, mentoring, advising, and research. The Department of Psychology and Neuroscience has taken deliberate actions to create an environment which encourages diversity, equity, and inclusion. To learn more about these actions, please visit our website: <https://sites.baylor.edu/departmentspsychologyandneurosciencedei/>

### ***I am a premedical student and would like to consider becoming a neuroscience major. Will it take me longer to graduate?***

The BS degree in Neuroscience only requires the university minimum of 124 hours and it is feasible to complete all of the premedical requirements and the requirements for the B. S. degree in Neuroscience within those 124 hours. You also have space to add a minor, if you desire.

### ***What do I do once I decide to major in Neuroscience?***

You should declare Pre-Neuroscience (see below) as your major; then you must complete the requirements listed in your degree plan.

## ***What is the “Pre-Neuroscience” designation? How do I become a Neuroscience major?***

### **Pre-Neuroscience (B.S. Degree)**

All students are admitted as “Pre-Neuroscience majors.” Students are **automatically** promoted to neuroscience majors when they have completed the following requirements.

Students enrolling at Baylor as freshmen:

- A. Completed the following PSY/NSC courses:
  - 1. Grade of C or better in NSC 1101 (Students who complete another New Student Experience course can substitute that course for NSC 1101.)
  - 2. Grade of C or better in NSC 1106, PSY 1305 and MTH 1321
- B. Earned a B or better in NSC 1306. With permission of the chair or chair’s designate, followed by Dean’s approval, students who fail to earn a B may repeat the course **one time**.
- C. Have a minimum overall GPA of 2.75 in no fewer than 40 hours attempted at Baylor University.

All students will be evaluated at the conclusion of the summer, fall, or spring term in which 40 hours is surpassed. Students failing to meet these requirements for promotion at that time will be ineligible to continue in the BS NSC major.

### **Transferring to BS NSC**

- 1. Students transferring from another institution may select Pre-NSC as a major. Transfer students must complete the above requirements within their first 30 hours attempted at Baylor University. Application for a Change of Major should be made with the student’s academic advisor
- 2. Students transferring from another major at Baylor cannot select Pre-NSC as a major. Rather, students desiring to change their major to BS NSC must have completed requirements listed in “A” above, must have an overall GPA of 3.30, and must do so before 45 hours are attempted at Baylor University. Upon successful application, such students will be admitted directly to the BS NSC major. Application for a Change of Major should be made through the student’s academic advisor

**Students failing to meet the promotion criteria cannot continue in the major.** You will automatically be changed to “undecided” in the subsequent semester, which may cause you to be dropped from upper-level neuroscience courses. Please be proactive and make an appointment with your departmental advisor, Dr. Malavanti, if it looks like you will not meet the promotion criteria so that we can discuss your options.

### ***What are the Neuroscience Degree Requirements?***

Thirty-two semester hours including the following:

- A. NSC 1306-1106 (Introduction to Neuroscience and Lab) and 2306 (Research Methods in Neuroscience).
- B. Eight hours from the following:  
NSC 3311-3111 (Cognition and Lab)  
NSC 3320-3120 (Learning and Behavior and Lab)  
NSC 3323-3123 (Sensation and Perception and Lab)
- C. Six hours from the following:  
NSC 3311 (Cognition)  
NSC 3320 (Learning and Behavior)  
NSC 3323 (Sensation and Perception)  
NSC 3370 (Affective Neuroscience)  
NSC 3375 (Sleep)  
NSC 4312 (Behavioral Medicine)  
NSC 4317 (Neuroscience Literature)  
NSC 4371 (Advanced Research in Neuroscience)  
NSC 4V96 (Special Topics in Neuroscience).  
**NOTE:** Course cannot count for both B and C requirements. Only 3 hours of 4V96 may count toward the 6 required in this category.
- D. Advanced Neuroscience (11 hours):  
NSC 4319-4119 (Clinical Neuroscience and Lab)  
NSC 4330-4130 (Advanced Principles of Neural Science and Lab)  
NSC 4356 (Neuropharmacology).
- E. A grade of "C" or better is required in all psychology and/or neuroscience courses used for the major.
- F. Students are strongly encouraged to enroll in NSC 1101 (New Student Experience) during their first semester on campus.

Required courses in other fields: A grade of "C" or better is required in each course.

- A. PSY 1305 (Psychological Science) and 4400 (Advanced Statistics I)
- B. BIO 1305-1105 and 1306-1106 (Modern Concepts in Biosciences I and II and Lab)
- C. CHE 1301-1101 and 1302-1102 (Basic Principles in Modern Chemistry I and II and Lab)
- D. MTH 1321 (Calculus I)
- E. STA 2381 (Introduction to Statistical Methods)
- F. PHY 1408 and 1409 (General Physics for Natural Behavioral Sciences I and II); or 1420 and 1430 (General Physics I and II; requires Calculus II {MTH 1322})

**NOTE:** A student who earns a D or F in a PSY or NSC course may repeat the course. However, **University policy prohibits students from taking a course more than three times. A withdrawal (W) counts as an attempt.** Keep this in mind for repeating courses!

For the above NSC courses, **do not** register for the cross-listed PSY course (e.g., PSY 3311 instead of NSC 3311) – **it will not count toward your degree!**

### ***What about the requirement for advanced hours?***

Advanced hours (also called upper-level electives) are achieved by taking any course that is at the “3000- 4000” level. The university specifies that you must have at least 36 hours of advanced coursework. All 3000 or 4000 level neuroscience and psychology hours count toward this university requirement. Please note that when you complete the requirements for the neuroscience major, you will have only taken 29 hours of advanced credit hours. You must take an additional 7 hours of advanced courses. To complete the advanced hour requirement, you may take any combination of additional courses inside or outside the department.

### ***What are the additional requirements specified by the University in order to graduate?***

1. A minimum of 60 hours must be completed at Baylor University. After you have taken 90 hours, you may no longer transfer in upper-level (3000 and 4000 level) courses.
2. You are required to have a 2.00 GPA overall.
3. You must complete a total of 124 credit hours.
4. You must complete 36 hours of upper level credit hours.

### ***Where do I go for advisement?***

1. Freshman and Sophomore pre-majors (less than 60 hours): University Advisement Office (710-7280). This office is located in the Paul L. Foster Success Center, Sid Richardson, Suite 230. Check BearWeb.
2. Junior pre-majors and majors: College of Arts and Sciences Advising office (CASA). This office is located in Sid Richardson, Suite 229, 710-1524. Check BearWeb. Senior majors must be advised if they are on Academic Probation or if they still qualify as pre-majors.
3. All majors and pre-majors: The neuroscience departmental advisor, Dr. Karenn Malavanti (Karenn\_Malavanti@baylor.edu); BSB A.310. Feel free to come by at any stage in your neuroscience career!
4. Pre-health students who are majoring in Neuroscience should pursue additional advisement from the Pre-health advising office located in the Baylor University Science Bldg., Room B.111 (710-3659)

***Are there any special recommendations about completing the requirements for the major?***

Yes. Here are some specific suggestions:

1. Introduction to Psychology (PSY 1305) and Introduction to Neuroscience (NSC 1306 and 1106) should be taken very early, preferably in your freshman year.
2. You should take Research Methods (NSC 2306) in your sophomore year.
3. Introduction to Neuroscience (NSC 1306/1106) is the prerequisite for most upper-level neuroscience courses, along with Calculus (MTH 1321).
4. Plan your schedule carefully so that you are not overburdened with too many laboratory courses in the same semester. The Advanced Neuroscience hours (NSC 4319-4119, 4330-4130, and 4356) are some of the most challenging, so be sure to plan accordingly. Advanced Principles of Neural Science and Lab (4330-4130) serves as a capstone course for the major; you'll want to take it as a senior.
5. As a junior and a senior, it is better to arrange your course schedule around neuroscience courses as it is usually easier to find available courses and sections outside of neuroscience. Pre-med students also need to consider scheduling of advanced science courses (such as Organic Chemistry), which may have fewer sections available.
6. Seek Academic Advisement every semester. Watch for advising or other types of registration "Holds". You will not be allowed to register until you remove all Holds.
7. Register as soon as you are able. Your registration time and date will be posted on BearWeb a few weeks before registration begins. If you wait to register, the neuroscience classes you need might already be filled. Have a plan, and have a backup plan.
8. To gain admittance into a closed class, you should get on the electronic waitlist. If you are graduating senior, you may contact the Neuroscience Department or Dr. Malavanti to discuss your options. Although the catalog says you may get consent of the instructor for prerequisite waivers, those decisions are made only by the department chair or a designee of the chair.

***What are the procedures for admittance into a closed class?***

The student must register for the course in BearWeb and the system will automatically put them on the electronic waitlist. Once a student is on this list, the system will notify the student by *Baylor email* if a spot is open for the course. *The student has exactly 24 hours from the time the email is sent in which to register for the course.* If the student does not register for the course in that exact 24-hour time frame, their name will be dropped from the electronic waiting list and the next person on the list will be notified through their Baylor email. It is important for the student to consistently check their Baylor email daily to see if they have been notified of an opening in a course that they are waitlisted. If they have been notified and missed the 24-hour window, the student must get back on the waitlist.

***How do I make sure I have all the courses I need to graduate?***

The degree plan is how the university determines your eligibility for graduation. Therefore, you should get a copy of your degree audit every semester (you can access it on BearWeb 24/7/365) to make sure you are meeting all your necessary requirements for graduation. Information about preparing for graduation and filing a graduation card are available through the University's website. In addition, you should make an appointment each semester with the academic advisor for your degree programs (Neuroscience Department, Honors College, BIC, and/or Pre-Health). Ask questions. Check BearWeb to determine who is designated as your academic advisor. Ultimately the responsibility to ensure you have completed all your requirements rests on you, not your advising team.



## Degree Requirement Guide - Bachelor of Science

A Suggested Sequence of Required Courses - BS Degrees 2022-2023

F r e s h m a n Y e a r					
Fall			Spring		
_____ 0	Core: Common Course (Chapel)		_____ 0	Core: Common Course (Chapel)	
_____ 0	Core: Common Requirement (Creative Arts)		_____ 0	Core: Common Requirement (Creative Arts)	
_____ 3	Core: Common Course		_____ 3	Core: Common Course	
_____ 3-4	Core: Distribution List (**Foreign Language)		_____ 3-4	Core: Distribution List (**Foreign Language)	
_____ 3	Core: Distribution List Course		_____ 1	Core: Lifetime Fitness	
_____ 3-4	Major (required courses in other fields)		_____ 3-4	Major (required courses in other fields)	
_____ 3-4	Major Course		_____ 3-4	Major Course	
Total: 15-18			Total: 13-16		
S o p h o m o r e Y e a r					
Fall			Spring		
_____ 0	Core: Common Requirement (Creative Arts)		_____ 0	Core: Common Requirement (Creative Arts)	
_____ 3	Core: Common Course		_____ 3	Core: Common Course	
_____ 3-4	Core: Distribution List (**Foreign Language)		_____ 3	Core: Common Course	
_____ 3	Core: Distribution List Course		_____ 3-4	Major (required courses in other fields)	
_____ 3-4	Major (required courses in other fields)		_____ 3-4	Major Course	
_____ 3-4	Major Course		_____ 3-4	Major Course	
Total: 15-18			Total: 15-18		
J u n i o r Y e a r					
Fall			Spring		
_____ 0	Core: Common Requirement (Creative Arts)		_____ 0	Core: Common Requirement (Creative Arts)	
_____ 3	Core: Distribution List Course		_____ 3	Core: Distribution List Course	
_____ 3	Major (required courses in other fields)		_____ 3	Major (required courses in other fields)	
_____ 3-4	Major (required courses in other fields)		_____ 3-4	Major (required courses in other fields)	
_____ 3-4	Major Course		_____ 3-4	Major Course	
_____ 3-4	Major Course		_____ 3-4	Major Course	
Total: 15-18			Total: 15-18		
S e n i o r Y e a r					
Fall			Spring		
_____ 3-4	Core: Distribution List Course		_____ 3-4	Core: Distribution List Course	
_____ 3-4	Major Course		_____ 3-4	Major Course	
_____ 3	Major Course		_____ 3	Major Course	
_____ 3	Elective (see below)		_____ 3	Elective (see below)	
_____ 3	Elective (see below)		_____ 3	Elective (see below)	
Total: 15-17			Total: 15-17		

**All students must graduate with a minimum of 124 hours,  
36 of which must be at the 3000/4000 level.**

### Notes about major requirements:

- This is a Degree Requirement Guide. It provides a general understanding of how the courses that fulfill a BS degree may be taken during your time at Baylor. Because every major under the BS degree will differ, it is important that you refer to your degree audit and catalog for the specific requirements for your chosen major. In addition, it is imperative that you meet with your assigned advisor each semester to make sure you are fulfilling all requirements for a timely graduation.  
**All students must graduate with a minimum of 124 hours, 36 of which must be at the 3000-4000 level.**
- **Core - Common Course:** These are common courses that are part of the general education requirements for all College of Arts and Sciences (A&S) degrees. All students in A&S must fulfill these requirements. Those areas within the Core that may require multiple semesters are indicated above. The 1000-level Core courses should be taken in the freshman or sophomore years and 2000-level Core courses should typically be taken in the sophomore year or later. Please refer to your degree audit or catalog for a full listing of courses. Please see your assigned advisor for a more detailed explanation.
- **Core - Distribution Lists (DL):** This portion of the A&S Core curriculum includes 9 separate sections with over 200 courses from which to choose. You must complete the specific requirements of each section. Those areas within the DLs that may require multiple semesters are indicated above. Please refer to your degree audit or catalog for a full listing of courses. Please see your assigned advisor for a more detailed explanation. **NOTE:** Three of the DL sections (Scientific Method I, II, and Critical Thinking) are covered by science classes from most BS majors. Please see your advisor to discuss if this will apply to your chosen major.
- **\*Core - Creative Arts Experience (CAE):** You must attend 12 approved CAE events as part of your general education requirements. You are encouraged to attend at least 2 approved CAE events per semester (or 4 within one academic year) in order to fulfill this requirement in a timely manner. Please see your assigned advisor for more information.
- **\*\*Core - Foreign Language:** The hours to complete your foreign language requirement may differ depending on which of the three options you choose from the DL or if you test into a higher level of language from the beginning. The hours could range from 8-12 hours. Please see your assigned advisor for more information.
- **Major Course:** These are the courses that are required for your major. Refer to the catalog or your degree audit for the exact number of hours required for your chosen major(s). The hours for each major will vary slightly. It will be critical that you work with your assigned academic advisor to understand the sequencing of these major courses.
- **Major (required courses in other fields):** These are courses that are required for your major, but are not in your major department. For example, the Biology major will require that you take courses in other areas such as Chemistry, Math and Physics. The number of courses required in this area will vary depending on your chosen major. Please refer to your degree audit or catalog for a full listing of courses. Please see your assigned advisor for a more detailed explanation.
- **Elective:** Because the number of electives that are available with most BS majors can vary significantly, you will want to discuss the possibility of adding a double major, secondary major, minor(s) or certificate(s) with your assigned advisor. Otherwise, these elective hours can be any 1000-4000 level course for which you qualify to register. Please refer to your catalog for a full listing of classes. Please see your assigned advisor for a more detailed explanation.