

# BS in Neuroscience

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The Bachelor of Neuroscience is designed to meet the modern demands of neuroscience and caters specifically to students interested in research or clinical careers. This degree is designed to place increased importance on the interdisciplinary nature of the field of neuroscience, and build professional and research skills along with knowledge. At the heart of this degree plan is the flexibility for students to pursue their own interests and customize their education to serve their career goals.

The BS in Neuroscience has two tracks: Biology and Psychology

## Marketable Skills

1. Communication: Reach mutual understanding through the effective exchange of information, ideas, and feelings.
2. Critical thinking: Analyze and evaluate issues in order to solve problems and develop informed opinions.
3. Organization: Use resources effectively and efficiently in order to stay focused on different tasks.
4. Problem-solving: Find solutions to difficult or complex issues.
5. Research: Be able to search, investigate and critically analyze information in response to a specific research question.
6. Time management: Prioritize goals and organize time to be more productive and efficient.

## Learning Outcomes

1. Factual Knowledge/Critical Thinking
2. Understanding and Applying Key Principles
3. Students are able to design experiments (or otherwise test scientific hypotheses)
4. Students are expected to carry out basic experiments or other hypothesis testing in the laboratory and/or the field.
5. Students will be able communicate orally, in writing, and develop collaborative skills.

## Fast Track

The Fast-Track Program (<http://catalog.utep.edu/admissions/undergraduate/fast-track/#text>) enables outstanding undergraduate UTEP students to receive both undergraduate and graduate credit for up to 15 hours of UTEP course work as determined by participating Master's and Doctoral programs.

Not all undergraduate programs have elected to participate in the Fast Track option, so students should see their departmental graduate advisor for information about requirements and guidelines. A list of courses that have been approved for possible use at the graduate level is found here (<http://catalog.utep.edu/admissions/undergraduate/fast-track/#fastrackcoursestext>).

## Any M.S. degree in the Biological Sciences department/Any Undergraduate degree implemented by the Biological Sciences Department

Code	Title	Hours
BIOL 5130	Seminar	1
BIOL 5131	Ethical, Soc/Pol Dimensions	1
BIOL 5301	Select Adv Topics Biol Science	3
BIOL 5305	Herpetology	3
BIOL 5307		3
BIOL 5308	Rsrch Funding & Prof Developmt	3
BIOL 5313	Biogeography	3
BIOL 5316	Biosystematics	3
BIOL 5318		3
BIOL 5322	Advances/Evolutionary Theory	3
BIOL 5323		3
BIOL 5324		3
BIOL 5326	Advances Immunological Concept	3
BIOL 5327	Advances in Ecological Theory	3
BIOL 5328	Biostatistics	3
BIOL 5329	Physiology of Bacterial Cell	3
BIOL 5340	Structure/Funct Macromolecules	3
BIOL 5342		3
BIOL 5343		3
BIOL 5344	Molecular Pathogenesis	3

BIOL 5346		3
BIOL 5351	Intro Bio I:Basic Seq. Comp.	3
BIOL 5352	Intro Bio II: Gene Find/Compar	3
BIOL 5354		3
BIOL 5360	Limnology	3

## Degree Plan

### Biology Track

Code	Title	Hours
<b>University Core <sup>C</sup></b>		<b>42</b>
<b>Designated Core <sup>C</sup></b>		
CS 1310	Intro-Computational Thinking	
MATH 1411	Calculus I	
PHYS 1403 & PHYS 1404	General Physics I and General Physics II	
<b>OR</b>		
PHYS 2320 & PHYS 2120	Introductory Mechanics and Laboratory for PHYS 2320	
and		
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	
PSYC 1301	Introduction to Psychology	
<b>Major Courses</b>		
Required:		
BIOL 1107	Topics in Study of Life I	1
BIOL 1305	General Biology	3
PSYC 1303 or STAT 2480	Statistical Methods Elementary Statistical Methods	3
PSYC 3101	Lab for Gen Exper Psyc	1
PSYC 3201	Gen Experimental Psychology	2
BIOL 2340 or PSYC 2324	Introductory Neuroscience Introductory Neuroscience	3
BIOL 4375 or PSYC 4375	Neuroscience Capstone Neuroscience Capstone	3
<b>Chemistry Courses</b>		
Required:		
CHEM 1105	Laboratory for CHEM 1305	1
CHEM 1106	Laboratory for CHEM 1306	1
CHEM 1305	General Chemistry	3
CHEM 1306	General Chemistry	3
CHEM 2124	Lab for Organic Chemistry 2324	1
CHEM 2324	Organic Chemistry	3
CHEM 3330	Biochem I:Struc & Function	3
<b>Biology Concentration</b>		
Required:		
BIOL 1108	Organismal Biology Laboratory	1
BIOL 1306	Organismal Biology	3
BIOL 3192	Professional Development Sem.	1
ZOOL 4384	Neurobiology	3
Hours in Biological Sciences		
Select eleven hours from the following:		11
BIOL 3314 & BIOL 3115	Molecular Cell Biology and Molecular Cell Biol Laboratory	

BIOL 3320	Genetics
BIOL 3321	Evolution
BIOL 4198	Special Problems
BIOL 4298	Special Problems
BIOL 4324	Genetic, Env & Evol - Anim Beh
BIOL 4388	Mammalian Physiology
BIOL 4395	Topics in Biology
BIOL 4398	Special Problems
CBCH 3316	Membrane Biology
CBCH 4414	Cellular Biochemistry
MICR 3343 & MICR 3144	Pathogenic Microbiology and Pathogenic Microbiology Lab
MICR 4351	General Virology
ZOOL 4181	Vertebrate Physiology Methods

**Interdisciplinary Major Electives**

Select twelve hours from the following, nine of which must be upper division: 12

CS 4320	Artificial Intelligence
EE 4385	Biomedical Instrumentation
HSCI 3305	Substance Use & Society
HSCI 4308	Independent Study in Health
PHIL 3301	Philosophy of Mind
PSYC 2312	Intro to Abnormal Psychology
PSYC 3320	Learning & Memory
PSYC 3330	Sensation and Perception
PSYC 3346	Drugs of Abuse and Behavior
PSYC 3347	Behavior Modification
PSYC 3348	Cognitive Psychology
PSYC 3350	Health Psychology
PSYC 4312	Advanced Abnormal Psychology
PSYC 4316	Language and Cognition
PSYC 4317	Advanced Statistics
PSYC 4324	Psychobiology
PSYC 4341	Motivation & Emotion
PSYC 4345	Seminar in Psychology
PSYC 4352	Independent Research
SPLP 4312	Neural Bases of Spch and Lang
STAT 3320	Probability and Statistics
WS 3390	Women's Studies:Special Topics

**Additional Coursework**

Select 12 hours in consultation with advisor, 4 hours must be upper division 12

**Total Hours** 120

C Course requires a grade of C or better

**Psychology Track**

Code	Title	Hours
<b>University Core <sup>C</sup></b>		<b>42</b>
<b>Designated Core <sup>C</sup></b>		
CS 1310	Intro-Computational Thinking	3
MATH 1411	Calculus I	4
PHYS 1403 & PHYS 1404	General Physics I and General Physics II	8
<b>OR</b>		

PHYS 2320 & PHYS 2120 and	Introductory Mechanics and Laboratory for PHYS 2320	3
PHYS 2321 & PHYS 2121	Introductory Electromagnetism and Laboratory for PHYS 2321	3
PSYC 1301	Introduction to Psychology	3
<b>Major Courses</b>		
Required:		
BIOL 1107	Topics in Study of Life I	1
BIOL 1305	General Biology	3
PSYC 1303 or STAT 2480	Statistical Methods Elementary Statistical Methods	3
PSYC 3101	Lab for Gen Exper Psyc	1
PSYC 3201	Gen Experimental Psychology	2
BIOL 2340 or PSYC 2324	Introductory Neuroscience Introductory Neuroscience	3
BIOL 4375 or PSYC 4375	Neuroscience Capstone Neuroscience Capstone	3
<b>Chemistry Courses</b>		
CHEM 1105	Laboratory for CHEM 1305	1
CHEM 1106	Laboratory for CHEM 1306	1
CHEM 1305	General Chemistry	3
CHEM 1306	General Chemistry	3
CHEM 2124	Lab for Organic Chemistry 2324	1
CHEM 2324	Organic Chemistry	3
CHEM 3330	Biochem I:Struc & Function	3
<b>Psychology Concentration</b>		
Required:		
PSYC 3102	Professional Development	1
Hours in Psychology		
Select eighteen hours from the following, of which fifteen must be upper-division:		18
PSYC 2312	Intro to Abnormal Psychology	
PSYC 3320	Learning & Memory	
PSYC 3330	Sensation and Perception	
PSYC 3346	Drugs of Abuse and Behavior	
PSYC 3347	Behavior Modification	
PSYC 3348	Cognitive Psychology	
PSYC 3350	Health Psychology	
PSYC 4312	Advanced Abnormal Psychology	
PSYC 4316	Language and Cognition	
PSYC 4317	Advanced Statistics	
PSYC 4324	Psychobiology	
PSYC 4341	Motivation & Emotion	
PSYC 4345	Seminar in Psychology	
PSYC 4352	Independent Research	
<b>Interdisciplinary Major Electives</b>		
Select twelve hours from the following, of which nine must be upper-division:		12
BIOL 2311 & BIOL 2111	Human Anat/Physiology I and Human Anat/Physio Lab I	
BIOL 3314 & BIOL 3115	Molecular Cell Biology and Molecular Cell Biol Laboratory	
BIOL 3321	Evolution	
BIOL 4198	Special Problems	

BIOL 4298	Special Problems
BIOL 4320	Endocrinology
BIOL 4324	Genetic, Env & Evol - Anim Beh
BIOL 4388	Mammalian Physiology
BIOL 4395	Topics in Biology
BIOL 4398	Special Problems
CBCH 3316	Membrane Biology
CBCH 4414	Cellular Biochemistry
CS 4320	Artificial Intelligence
EE 4385	Biomedical Instrumentation
HSCI 3305	Substance Use & Society
HSCI 4308	Independent Study in Health
MICR 2340 & MICR 2141	General Microbiology and Gen Microbiology Laboratory
MICR 3343 & MICR 3144	Pathogenic Microbiology and Pathogenic Microbiology Lab
MICR 4351	General Virology
PHIL 3301	Philosophy of Mind
SPLP 4312	Neural Bases of Spch and Lang
STAT 3320	Probability and Statistics
WS 3390	Women's Studies:Special Topics
ZOOL 4181	Vertebrate Physiology Methods
ZOOL 4384	Neurobiology

**Additional Coursework**

Select 12 hours in consultation with advisor, 3 hours must be upper division 12

**Total Hours** 120

C Course requires a grade of C or better

**4-Year Sample Degree Plan****BS Neuroscience - Psychology Concentration (Starting with Pre-Calculus)**

Code	Title	Hours
<b>BS NEUROSCIENCE- PSYCHOLOGY CONCENTRATION (STARTING WITH PRE-CALCULUS)</b>		
<b>FRESHMAN</b>		
<b>Fall</b>		
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	4
MATH 1508	Precalculus	5
RWS 1301	Rhetoric & Composition I	3
UNIV 1301	Seminar/Critical Inquiry	3
<b>Spring</b>		
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	4
MATH 1411	Calculus I	4
PSYC 1301	Introduction to Psychology	3
RWS 1302	Rhetoric & Composition 2	3
<b>SOPHOMORE</b>		
<b>Fall</b>		
ART 1300	Art Appreciation	3
BIOL 2340 or PSYC 2340	Introductory Neuroscience	3
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	4

PHIL 2306	Ethics	3
STAT 2480 or PSYC 1303	Elementary Statistical Methods Statistical Methods	3-4
<b>Spring</b>		
CHEM 2324 & CHEM 2124	Organic Chemistry and Lab for Organic Chemistry 2324	4
COMM 1301	Public Speaking	3
HIST 1301	History of U.S. to 1865	3
PHYS 1403	General Physics I	4
PSYC 3201 & PSYC 3101	Gen Experimental Psychology and Lab for Gen Exper Psc	3
<b>JUNIOR</b>		
<b>Fall</b>		
HIST 1302	History of U.S. Since 1865	3
PHYS 1404	General Physics II	4
POLS 2310	Introduction to Politics	3
Biology Elective		3
Psychology Elective		3
<b>Spring</b>		
CHEM 3330	Biochem I:Struc & Function	3
POLS 2311	American Gover & Politics	3
Biology Elective		3
Psychology Elective		3
Other Electives		4
<b>SENIOR</b>		
<b>Fall</b>		
BIOL 3192 or PSYC 3102	Professional Development Sem. Professional Development	1
Biology Elective		3
Psychology Elective		3
Psychology Elective		3
Elective		3
Elective		3
<b>Spring</b>		
BIOL 4375 or PSYC 4375	Neuroscience Capstone Neuroscience Capstone	3
Psychology Elective		3
Psychology Elective		3
Biology Electives		3
Elective		3
<b>Total Hours</b>		<b>125-126</b>

### BS Neuroscience - Psychology Concentration (Starting with Calculus)

Code	Title	Hours
<b>BS NEUROSCIENCE- PSYCHOLOGY CONCENTRATION (STARTING WITH CALCULUS)</b>		
<b>FRESHMAN</b>		
<b>Fall</b>		
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	4
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	4
RWS 1301	Rhetoric & Composition I	3
UNIV 1301	Seminar/Critical Inquiry	3

<b>Spring</b>		
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	4
CS 1310	Intro-Computational Thinking	3
MATH 1411	Calculus I	4
PSYC 1301	Introduction to Psychology	3
RWS 1302	Rhetoric & Composition 2	3
<b>SOPHOMORE</b>		
<b>Fall</b>		
ART 1300	Art Appreciation	3
BIOL 2340 or PSYC 2340	Introductory Neuroscience	3
CHEM 2324 & CHEM 2124	Organic Chemistry and Lab for Organic Chemistry 2324	4
PHIL 2306	Ethics	3
STAT 2480 or PSYC 1303	Elementary Statistical Methods Statistical Methods	3-4
<b>Spring</b>		
COMM 1301	Public Speaking	3
HIST 1301	History of U.S. to 1865	3
PHYS 1403	General Physics I	4
PSYC 3201 & PSYC 3101	Gen Experimental Psychology and Lab for Gen Exper Psyc	3
Biology Elective		3
<b>JUNIOR</b>		
<b>Fall</b>		
CHEM 3330	Biochem I:Struc & Function	3
HIST 1302	History of U.S. Since 1865	3
PHYS 1404	General Physics II	4
Biology Elective		3
Psychology Elective		3
<b>Spring</b>		
POLS 2310	Introduction to Politics	3
Biology Elective		3
Psychology Elective		3
Psychology Elective		3
Other Electives		4
<b>SENIOR</b>		
<b>Fall</b>		
BIOL 3192 or PSYC 3102	Professional Development Sem. Professional Development	1
POLS 2311	American Gover & Politics	3
Independent Study		3
Biology Elective		3
Psychology Elective		3
<b>Spring</b>		
BIOL 4375 or PSYC 4375	Neuroscience Capstone Neuroscience Capstone	3
Psychology Elective		3
Psychology Elective		3
Other Electives		3
<b>Total Hours</b>		<b>120-121</b>

**BS Neuroscience - Biology Concentration (Starting with Pre-Calculus)**

Code	Title	Hours
<b>BS NEUROSCIENCE- BIOLOGY CONCENTRATION (STARTING WITH PRE-CALCULUS)</b>		
<b>FRESHMAN</b>		
<b>Fall</b>		
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	4
MATH 1508	Precalculus	5
RWS 1301	Rhetoric & Composition I	3
UNIV 1301	Seminar/Critical Inquiry	3
<b>Spring</b>		
BIOL 1306 & BIOL 1108	Organismal Biology and Organismal Biology Laboratory	4
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	4
MATH 1411	Calculus I	4
PSYC 1301	Introduction to Psychology	3
RWS 1302	Rhetoric & Composition 2	3
<b>SOPHOMORE</b>		
<b>Fall</b>		
ART 1300	Art Appreciation	3
BIOL 2340 or PSYC 2340	Introductory Neuroscience	3
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	4
PHIL 2306	Ethics	3
STAT 2480 or PSYC 1303	Elementary Statistical Methods Statistical Methods	3-4
<b>Spring</b>		
CS 1310	Intro-Computational Thinking	3
HIST 1301	History of U.S. to 1865	3
PHYS 1403	General Physics I	4
PSYC 3201 & PSYC 3101	Gen Experimental Psychology and Lab for Gen Exper Psc	3
Interdis. Elective (upper division)		3
<b>JUNIOR</b>		
<b>Fall</b>		
BIOL 3192 or PSYC 3102	Professional Development Sem. Professional Development	1
CHEM 2324 & CHEM 2124	Organic Chemistry and Lab for Organic Chemistry 2324	4
HIST 1302	History of U.S. Since 1865	3
PHYS 1404	General Physics II	4
POLS 2310	Introduction to Politics	3
<b>Spring</b>		
CHEM 3330	Biochem I:Struc & Function	3
POLS 2311	American Gover & Politics	3
Biology Elective		3
Interdis. Elective (upper division)		3
Interdis. Elective (upper division)		3
<b>SENIOR</b>		
<b>Fall</b>		
ZOOL 4384	Neurobiology	3



Elective	3
Biology Elective	3
Biology Elective	3
Interdisciplinary Elective	3
<b>Spring</b>	
Elective	3
Elective	3
Elective	3
Biology Elective	3
<b>Total Hours</b>	<b>122-123</b>

## BS Neuroscience - Biology Concentration (Starting with Calculus)

Code	Title	Hours
<b>BS NEUROSCIENCE- BIOLOGY CONCENTRATION (STARTING WITH CALCULUS)</b>		
<b>FRESHMAN</b>		
<b>Fall</b>		
BIOL 1305 & BIOL 1107	General Biology and Topics in Study of Life I	4
CHEM 1305 & CHEM 1105	General Chemistry and Laboratory for CHEM 1305	4
RWS 1301	Rhetoric & Composition I	3
UNIV 1301	Seminar/Critical Inquiry	3
<b>Spring</b>		
BIOL 1306 & BIOL 1108	Organismal Biology and Organismal Biology Laboratory	4
CHEM 1306 & CHEM 1106	General Chemistry and Laboratory for CHEM 1306	4
CS 1310	Intro-Computational Thinking	3
MATH 1411	Calculus I	4
RWS 1302	Rhetoric & Composition 2	3
<b>SOPHOMORE</b>		
<b>Fall</b>		
ART 1300	Art Appreciation	3
BIOL 2340 or PSYC 2340	Introductory Neuroscience	3
CHEM 2324 & CHEM 2124	Organic Chemistry and Lab for Organic Chemistry 2324	4
PSYC 1301	Introduction to Psychology	3
STAT 2480 or PSYC 1303	Elementary Statistical Methods Statistical Methods	3-4
<b>Spring</b>		
HIST 1301	History of U.S. to 1865	3
PHIL 2306	Ethics	3
PHYS 1403	General Physics I	4
PSYC 3201 & PSYC 3101	Gen Experimental Psychology and Lab for Gen Exper Psyc	3
Interdis. Elective (upper division)		3
<b>JUNIOR</b>		
<b>Fall</b>		
BIOL 3192 or PSYC 3102	Professional Development Sem. Professional Development	1
COMM 1301	Public Speaking	3
HIST 1302	History of U.S. Since 1865	3

PHYS 1404	General Physics II	4
Interdis. Elective (upper division)		3
<b>Spring</b>		
CHEM 3330	Biochem I:Struc & Function	3
POLS 2310	Introduction to Politics	3
Upper-Division Biology Elective		3
Upper-Division Biology Elective		3
Interdis. Elective (upper division)		3
<b>SENIOR</b>		
<b>Fall</b>		
POLS 2311	American Gover & Politics	3
ZOOL 4384	Neurobiology	3
Upper-Division Elective		3
Interdisciplinary Elective		3
Biology Elective		3
<b>Spring</b>		
BIOL 4375	Neuroscience Capstone	3
or PSYC 4375	Neuroscience Capstone	
Upper-Division Elective		3
Biology Elective		3
Upper-Division Biology Elective		3
<b>Total Hours</b>		<b>120-121</b>