



BS in NEUROSCIENCE (285620) MAP Sheet

Neuroscience Center

For students entering the degree program during the 2016–2017 curricular year.

The neuroscience undergraduate program is an interdisciplinary program that allows students to seek advisement at the College of Family, Home, and Social Sciences Advisement Center or Life Sciences Student Services.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (64–68 total hours)																																																																						
UNIVERSITY CORE REQUIREMENTS				<p>The Neuroscience Center requires a minimum of 21 hours of neuroscience major credit to be taken in residence at BYU for this degree program. These hours may also go toward BYU's 30-hour residency requirement for graduation. Only 8 hours of Independent Study can be counted towards the Neuroscience major credit.</p> <p>Complete the following major core courses:</p> <table border="0"> <tr><td>Neuro 205</td><td>Neurobiology</td><td>3.0</td></tr> <tr><td>Neuro 360</td><td>Neuroanatomy</td><td>2.0</td></tr> <tr><td>Neuro 380</td><td>Behavioral Neuroscience</td><td>3.0</td></tr> <tr><td>Neuro 480</td><td>Advanced Neuroscience</td><td>3.0</td></tr> <tr><td>Neuro 481</td><td>Neuroscience Laboratory</td><td>1.0</td></tr> </table> <p>Complete the following life sciences courses:</p> <table border="0"> <tr><td>MMBio 240*</td><td>Molecular Biology</td><td>3.0</td></tr> <tr><td>PDBio 120*</td><td>Science of Biology</td><td>2.0</td></tr> <tr><td>PDBio 360</td><td>Cell Biology</td><td>3.0</td></tr> <tr><td>PDBio 362</td><td>Advanced Physiology</td><td>3.0</td></tr> <tr><td>PWS 340</td><td>Genetics</td><td>3.0</td></tr> </table> <p>Complete the following chemistry courses:</p> <table border="0"> <tr><td>Chem 105*</td><td>General College Chemistry</td><td>4.0</td></tr> <tr><td>Chem 106</td><td>General College Chemistry</td><td>3.0</td></tr> <tr><td>Chem 107</td><td>General College Chem Lab</td><td>1.0</td></tr> <tr><td>Chem 351</td><td>Organic Chemistry</td><td>3.0</td></tr> <tr><td>Chem 352</td><td>Organic Chemistry</td><td>3.0</td></tr> <tr><td>Chem 481</td><td>Biochemistry</td><td>3.0</td></tr> </table> <p>Complete one of the following physics course options:</p> <p>Either</p> <table border="0"> <tr><td>Phscs 105*</td><td>General Physics 1</td><td>3.0</td></tr> <tr><td>Phscs 106</td><td>General Physics 2</td><td>3.0</td></tr> <tr><td>Phscs 107</td><td>General Physics Lab 1</td><td>1.0</td></tr> <tr><td>Phscs 108</td><td>General Physics Lab 2</td><td>1.0</td></tr> </table> <p>Or</p> <table border="0"> <tr><td>Phscs 121*</td><td>Introduction to Newtonian Mechanics</td><td>3.0</td></tr> <tr><td>Phscs 123</td><td>Intro to Waves, Optics, & Thermodynamics</td><td>3.0</td></tr> <tr><td>Phscs 220</td><td>Introduction to Electricity & Magnetism</td><td>3.0</td></tr> </table>		Neuro 205	Neurobiology	3.0	Neuro 360	Neuroanatomy	2.0	Neuro 380	Behavioral Neuroscience	3.0	Neuro 480	Advanced Neuroscience	3.0	Neuro 481	Neuroscience Laboratory	1.0	MMBio 240*	Molecular Biology	3.0	PDBio 120*	Science of Biology	2.0	PDBio 360	Cell Biology	3.0	PDBio 362	Advanced Physiology	3.0	PWS 340	Genetics	3.0	Chem 105*	General College Chemistry	4.0	Chem 106	General College Chemistry	3.0	Chem 107	General College Chem Lab	1.0	Chem 351	Organic Chemistry	3.0	Chem 352	Organic Chemistry	3.0	Chem 481	Biochemistry	3.0	Phscs 105*	General Physics 1	3.0	Phscs 106	General Physics 2	3.0	Phscs 107	General Physics Lab 1	1.0	Phscs 108	General Physics Lab 2	1.0	Phscs 121*	Introduction to Newtonian Mechanics	3.0	Phscs 123	Intro to Waves, Optics, & Thermodynamics	3.0	Phscs 220	Introduction to Electricity & Magnetism	3.0
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<u>Requirements</u>	<u>#Classes</u>	<u>Hours</u>	<u>Classes</u>																																																																							
Religion Cornerstones																																																																										
Teachings & Doctrine, Book of Mormon	1	2.0	Rel A 275																																																																							
Jesus Christ & the Everlasting Gospel	1	2.0	Rel A 250																																																																							
Foundations of the Restoration	1	2.0	Rel C 225																																																																							
The Eternal Family	1	2.0	Rel C 200																																																																							
The Individual and Society																																																																										
Citizenship																																																																										
American Heritage	1–2	3–6.0	from approved list																																																																							
Global & Cultural Awareness	1	3.0	from approved list																																																																							
Skills																																																																										
Effective Communication																																																																										
First-Year Writing	1	3.0	from approved list																																																																							
Adv Written & Oral Communication	1	3.0	Engl 316																																																																							
Quantitative Reasoning	0–1	0–3.0	from approved list																																																																							
Languages of Learning (Math or Language)	1	3–4.0	Math 112* or Stat 121*																																																																							
Arts, Letters, and Sciences																																																																										
Civilization 1 and 2																																																																										
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Arts	1	3.0	from approved list																																																																							
Letters	1	3.0	from approved list																																																																							
Scientific Principles & Reasoning																																																																										
Biological Science	2	5.0	MMBio 240* & PDBio 120*																																																																							
Physical Science	2	7.0	Chem 105*, Phscs 105* or 121*																																																																							
Social Science	1	3.0	from approved list																																																																							
Core Enrichment: Electives																																																																										
Religion Electives	3–4	6.0	from approved list																																																																							
Open Electives	Variable	Variable	personal choice																																																																							
GRADUATION REQUIREMENTS:																																																																										
Minimum residence hours required		30.0																																																																								
Minimum hours needed to graduate		120.0																																																																								

*THESE CLASSES FILL BOTH UNIVERSITY CORE AND PROGRAM REQUIREMENTS (15–16 hours overlap)

Complete the following:

Math 112*	Calculus 1	4.0
Stat 121*	Principles of Statistics	3.0

Note: Students may substitute Math 113 for Math 112.

Complete three courses from three different departments from the following electives:

Bio 370	Bioethics	2.0
Chem 482	Mechanisms of Molecular Biology	3.0
ComD 334	Hearing Science and Acoustics	3.0
Me En 552**	Neuromechanics of Movement	3.0
Neuro 449R**	Undergrad Research Experience	3.0V
PDBio 363***	Advanced Physiology Lab	1.0
PDBio 561	Physiology of Drug Mechanisms	3.0
PDBio 565**	Endocrinology	3.0
PDBio 568**	Cellular Electrophys & Biophysics	3.0
Psych 370	Sensation and Perception	3.0
Psych 375	Cognition	3.0
Psych 377	Cognitive Neuroscience of Memory	3.0
Psych 382	Stress Psychobiology	3.0
Psych 388	Drugs, Reward & Addiction	3.0

Note: Students should carefully consult with faculty regarding which electives they should take to best support their postgraduate plans.

** These courses require instructor signature before enrolling.

*** This course is required for most students applying for graduate training in medicine, dentistry, ophthalmology, physician assistant school, or similar programs.

Recommended Courses:

In addition to the above courses, students may find the following courses helpful (see Pre-Professional Advisement Center, 3328 WSC):

Chem 353	Organic Chemistry Lab–Nonmajors	2.0V
Neuro 496R	Academic Internship	12.0V
PDBio 220	Human Anatomy (with lab)	3.0
StDev 170	Introduction to Health Professions	1.0
StDev 271	Preview of Dentistry	1.0
StDev 272	Preview of Medicine	1.0
StDev 273	Preview of Optometry	1.0
StDev 375	Dental School Prep Lab Experience	2.0
StDev 399R	Health Professions Internship	3.0V
StDev 470	Medical and Dental School Application	2.0

Note: StDev 470 is required for most students applying for graduate training in medicine, dentistry, ophthalmology, physician assistant school, or similar programs.

**BS in NEUROSCIENCE (285620)
2016–2017**

Suggested Sequence of Courses:

FRESHMAN YEAR

1st Semester

PDBio 120	2.0
Chem 105	4.0
First-year Writing	3.0
Social Science elective (Psych 111 recommended)	3.0
Religion Cornerstone course	2.0
Total Hours	14.0

2nd Semester

Chem 106	3.0
Chem 107	1.0
MMBio 240	3.0
A Htg 100	3.0
Religion Cornerstone course	2.0
General electives	3.0
Total Hours	15.0

SOPHOMORE YEAR

3rd Semester

Chem 351	3.0
PWS 340	3.0
Neuro 205	3.0
Religion Cornerstone course	2.0
General electives	4.0
Total Hours	15.0

4th Semester

Chem 352	3.0
Phscs 105	3.0
Phscs 107	1.0
Neuroscience elective	3.0
Religion Cornerstone course	2.0
General electives	3.0
Total Hours	15.0

Note: Students are encouraged to complete an average of 16 credit hours each semester or 32 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.

JUNIOR YEAR

5th Semester

Chem 481	3.0
Phscs 106	3.0
Phscs 108	1.0
Neuro 360	2.0
Civilization 1	3.0
Religion elective	2.0
Total Hours	14.0

6th Semester

PDBio 362	3.0
Neuroscience elective	1-3.0
Civilization 2	3.0
Arts or Letters elective	3.0
Religion elective	2.0
General elective	2.0
Total Hours	14–16.0

SENIOR YEAR

7th Semester

Engl 316	3.0
Neuro 380	3.0
PDBio 360	3.0
Math 112	4.0
Religion elective	2.0
General electives	1.0
Total Hours	16.0

8th Semester

Neuro 480	3.0
Neuro 481	1.0
Stat 121	3.0
Global & Cultural Awareness elective	3.0
Arts or Letters elective	3.0
Neuroscience elective	1-3.0
Total Hours	14-16.0

Neuroscience Center
S192 ESC
Brigham Young University, Provo, UT 84602
Telephone: (801) 422-1218
FAX: (801) 422-0601
email: neuroscience@byu.edu

THE DISCIPLINE:

Neuroscience is the field of study that encompasses the development, structure, and function of the central nervous system and its connection to influencing/regulating behavior. The study of neuroscience examines topics such as neuroanatomy, physiology of nervous system cells and circuits, molecular neuroscience, biochemistry, genetics, neuropharmacology, neuroimaging, systems and behavioral neuroscience, developmental neuroscience, social neuroscience, cognition, bioengineering, computational neuroscience, and neural dysfunction and disease. The interdisciplinary nature of neuroscience requires the tools provided by experience and training in biology, genetics, physiology, molecular biology, chemistry (general, organic, and biochemistry), physics, engineering, psychology (hormones and behavior, memory, cognition, sensation, and perception), statistics, calculus, and research design and analysis.

RESEARCH OPPORTUNITIES:

Neuroscience Center faculty members conduct research in a variety of neuroscience areas (for example, molecular neurobiology, developmental neuroscience, behavioral and cognitive neuroscience, cell and circuit electrophysiology, movement neuromechanics, neurochemistry and neuroimaging). Please contact the neuroscience office or individual faculty members for more information.

Family, Home, and Social Science
College Advisement Center
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Brigham Young University, Provo, UT 84602-5538
Telephone: (801) 422-3541
FAX: (801) 422-0226
email: fhssadvisement@byu.edu
Toll-free: 1-877-890-5295

CAREERS:

A major in neuroscience prepares students to pursue advanced degrees in neuroscience or biological or non-biological fields related to neuroscience or to enter into the pharmaceutical and biotechnology workforce. Neuroscience provides outstanding preparation for students seeking admittance into professional programs in medicine, dentistry, optometry, podiatry, or the chiropractic or pharmaceutical field. Neuroscience is an excellent preprofessional field of study for those interested in health professions, law, or business. Graduates of the program also have the academic skills for careers in business, consulting, global health, government and policy, non-profit programs, research, writing, and publishing.

FINANCING:

Various private, federal, and university sources of scholarships, fellowships, and grants are available. Some faculty have funds to hire undergraduates to help in their laboratories or with research.

Health Professions Advisement Center
3328 WSC
Brigham Young University, Provo, UT 84602
Telephone: (801)-422-3044
email: health_professions@byu.edu
Toll-free: 1-877-651-0293

Life Sciences Student Services Center
2060 Life Sciences Building
Brigham Young University, Provo, UT 84602
Telephone: (801) 422-3042
FAX: (801) 422-0048
web site: <http://lifesciences.byu.edu/student-services/>
email: LifeSciences@byu.edu
Toll-free: 1-877-651-0293