



## BS in Neuroscience (285620)

### 2020-2021 Program Requirements (62 - 69 Credit Hours)

<p><i>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.</i></p> <p><b>REQUIREMENT 1</b> Complete 4 courses</p> <p><b>MAJOR CORE COURSES:</b></p> <p>NEURO 205 - Neurobiology 3.0</p> <p>NEURO 360 - Neuroanatomy 2.0</p> <p>NEURO 380 - Behavioral Neuroscience 3.0</p> <p>NEURO 480 - Advanced Neuroscience 3.0</p> <p><b>REQUIREMENT 2</b> Complete 4 courses</p> <p><b>LIFE SCIENCES COURSES:</b></p> <p>MMBIO 240 - Molecular Biology 3.0</p> <p>PDBIO 120 - Science of Biology 3.0</p> <p>PDBIO 360 - Cell Biology 3.0</p> <p>PDBIO 362 - Advanced Physiology 3.0</p> <p><b>REQUIREMENT 3</b> Complete 2 courses</p> <p>*PSYCH 111 - Introduction to Psychological Science 3.0</p> <p>PSYCH 375 - Cognition 3.0</p> <p><b>REQUIREMENT 4</b> Complete 5 courses</p> <p><b>CHEMISTRY COURSES:</b></p> <p>*CHEM 105 - General College Chemistry 1 with Lab (Integrated) 4.0</p> <p>CHEM 106 - General College Chemistry 2 3.0</p> <p>CHEM 107 - General College Chemistry Laboratory 1.0</p> <p>CHEM 351 - Organic Chemistry 1 3.0</p> <p>CHEM 352 - Organic Chemistry 2 3.0</p> <p><b>REQUIREMENT 5</b> Complete 1 option</p> <p><b>COMPLETE ONE OF THE FOLLOWING PHYSICS COURSE OPTIONS:</b></p> <p><b>OPTION 5.1</b> Complete 2 courses</p> <p>PHSCS 105 - General Physics 1 3.0</p> <p>PHSCS 106 - General Physics 2 3.0</p> <p><b>OPTION 5.2</b> Complete 3 courses</p> <p>PHSCS 121 - Introduction to Newtonian Mechanics 3.0</p> <p>PHSCS 123 - Introduction to Waves, Optics, and Thermodynamics 3.0</p> <p>PHSCS 220 - Introduction to Electricity and Magnetism 3.0</p> <p><b>REQUIREMENT 6</b> Complete 2 courses</p> <p><b>NOTE: STUDENTS MAY SUBSTITUTE MATH 113 FOR MATH 112.</b></p> <p>MATH 112 - Calculus 1 4.0</p> <p>STAT 121 - Principles of Statistics 3.0</p>	<p><b>REQUIREMENT 7</b> Complete 1 hour from the following course(s)</p> <p><b>COMPLETE AT LEAST 1.0 HOUR OF THE FOLLOWING:</b></p> <p>NEURO 449R - Undergraduate Research Experience 3.0v</p> <p>NEURO 481 - Neuroscience Laboratory 1.0</p> <p>NEURO 496R - Neuroscience Academic Internship 12.0v</p> <p><b>REQUIREMENT 8</b> Complete 1 option</p> <p><b>ELECTIVES: COMPLETE THREE COURSES FROM THE FOLLOWING ELECTIVE LIST:</b></p> <p><b>OPTION 8.1</b> Complete 3 courses</p> <p>CHEM 481 - Biochemistry 3.0</p> <p>CHEM 482 - Mechanisms of Molecular Biology 3.0</p> <p>COMD 334 - Hearing Science and Acoustics 3.0</p> <p>ME EN 552 - Neuromechanics of Movement 3.0</p> <p>NEURO 390R - Special Topics in Neuroscience 3.0v</p> <p>NEURO 420R - Senior Practicum: Community Projects 3.0v</p> <p>PDBIO 561 - Physiology of Drug Mechanisms 3.0</p> <p>PDBIO 565 - Endocrinology 3.0</p> <p>PDBIO 568 - Cellular Electrophysiology and Biophysics 3.0</p> <p>PSYCH 342 - Abnormal Psychology 3.0</p> <p>PSYCH 370 - Sensation and Perception 3.0</p> <p>PSYCH 377 - The Cognitive Neuroscience of Memory 3.0</p> <p>PSYCH 382 - Stress Psychobiology 3.0</p> <p>PSYCH 388 - Drugs, Reward and Addiction 3.0</p> <p>PSYCH 513R - (Not currently offered)</p> <p>PWS 340 - Genetics 3.0</p> <p><b>Note 1: Students should carefully consult with faculty regarding which electives they should take to best support their postgraduate plans.</b></p> <p><b>Note 2: Me En 552, Neuro 449R, PDBio 565, and 568 require the instructor's signature before enrolling.</b></p> <p><b>Note 3: PDBio 363, Phscs 105 lab, and Phscs 106 lab are required for most students applying for graduate training in medicine, dentistry, ophthalmology, physician assistant school, or similar programs.</b></p> <p><b>Note 4: Double counting: No more than 6 credits (or two courses) may be double counted between the Neuroscience major and another major or minor.</b></p> <p><b>Note 5: It is strongly recommended that students take Neuro 316 to meet their GE Advanced Writing requirement rather than Engl 315 or 316.</b></p> <p><b>REQUIREMENT 9</b></p>	<p>Complete an exit interview.</p> <p><b>RECOMMENDED</b> Complete 2 options</p> <p><i>In addition to the above courses, students may find the following courses helpful if applying for graduate training in medicine, dentistry, physician assistant school or similar programs (see Pre-professional Advisement Center, 3328 WSC):</i></p> <p><b>RECOMMENDED</b> Complete 9 courses</p> <p><b>NOTE: STDEV 470 IS REQUIRED FOR MOST STUDENTS APPLYING FOR GRADUATE TRAINING IN MEDICINE, DENTISTRY, OPHTHALMOLOGY, PHYSICIAN ASSISTANT SCHOOL, OR SIMILAR PROGRAMS.</b></p> <p>CHEM 353 - Organic Chemistry Laboratory--Nonmajors 2.0v</p> <p>PDBIO 220 - Human Anatomy (with lab) 4.0</p> <p>STDEV 170 - Introduction to Health Professions 1.0</p> <p>STDEV 271 - Preview of Dentistry 1.0</p> <p>STDEV 272 - Preview of Medicine 1.0</p> <p>STDEV 273 - Preview of Optometry 1.0</p> <p>STDEV 375 - Dental School Preparation Laboratory Experience 2.0</p> <p>STDEV 399R - Health Professions Internship 3.0v</p> <p><i>You may take this course up to 1 time.</i></p> <p>STDEV 470 - Health Professions Application 2.0</p> <p><b>THE DISCIPLINE:</b></p> <p>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 (behavior, memory, cognition, sensation, and perception), statistics, calculus, and research design and analysis.</p> <p><b>RESEARCH OPPORTUNITIES:</b></p> <p>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</p>
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and neuroimaging). Please contact the neuroscience office or individual faculty members for more information.

### 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.

### MAP DISCLAIMER

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

### DEPARTMENT INFORMATION

#### Neuroscience Center

Brigham Young University  
192-S ESC  
Provo, UT 84602  
Telephone: 801-422-1218  
FAX: 801-422-0601  
email: neuroscience@byu.edu

### ADVISEMENT CENTER INFORMATION

#### Liberal Arts Advisement and Careers

Brigham Young University  
1041 JFSB  
Provo, UT 84602  
Telephone: 801-422-3541  
email: liberalarts@byu.edu

#### Life Sciences Student Services Center

Brigham Young University  
2060 Life Sciences Building  
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

#### Health Professions Advisement Center

Brigham Young University  
3328 WSC  
Provo, UT 84602  
Telephone: 801-422-3044  
email: health\_professions@byu.edu  
Toll-free: 1-877-651-0293