



SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS
New Specialization

UNIVERSITY:	University of South Dakota
TITLE OF PROPOSED SPECIALIZATION:	Molecular and Cellular Neuroscience
NAME OF DEGREE PROGRAM IN WHICH SPECIALIZATION IS OFFERED:	B.S., Neuroscience
INTENDED DATE OF IMPLEMENTATION:	8/26/2019
PROPOSED CIP CODE:	26.1501
UNIVERSITY DEPARTMENT:	Psychology
UNIVERSITY DIVISION:	Arts & Sciences

University Approval

To the Board of Regents and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.

Elizabeth M. Freeburg

Institutional Approval Signature

President or Chief Academic Officer of the University

4/1/19

Date

1. Level of the Specialization:

Baccalaureate Master's Doctoral

2. What is the nature/purpose of the proposed specialization?

The University of South Dakota is proposing a Bachelor of Science degree in neuroscience interdisciplinary program which will utilize current courses and faculty from the Departments of Psychology and Biology and the Division of Basic Biomedical Sciences. The development of a neuroscience major/minor aligns with existing strengths at USD. USD's Center for Brain and Behavior Research (CBBRe) currently includes over 60 faculty across five colleges and 17 departments. The Center has successfully grown the neurobehavioral research enterprise at USD in terms of external funding to individual and teams of faculty as well as equipment and research infrastructure both at the main campus and at the Yankton and Sioux Falls clinical campuses. This will also provide opportunities for student-driven research. Neurobehavioral research by USD undergraduates is already supported by a grant from the NIH, the Summer Program for Undergraduate Research in Addiction (SPURA).

Molecular and cellular neuroscience involves significant connection with biology and physiology, and focuses on the mechanisms that control construction and maintenance of molecular and cellular circuits. Providing a specialization in this area will allow students with a particular interest in molecular and cellular neuroscience to focus on specific coursework in preparation for graduate study or careers in this area.

3. Provide a justification for the specialization, including the potential benefits to students and potential workforce demand for those who graduate with the credential.¹

There is a clear need for neuroscience training in the state and region, based on the demand for graduate study, workforce need, and anticipated growth. The Bureau of Labor Statistics reports that growth in the national job outlook for medical scientists for 2016-2026 will be 13% (Faster than average) and that the median annual salary in 2017 was \$82,090.² The South Dakota Department of Labor and Regulations estimates a projected growth in employment by 2024 for Medical and Clinical Laboratory Technicians of 12.7%, and of Medical Scientists, Except Epidemiologists of 14%, both of which indicate strong demand for employees with training in programs such as the proposed B.S. in interdisciplinary neuroscience.³ Moreover, the ability to pursue a specialization in molecular and cellular neuroscience will allow students to pursue more specific career and educational opportunities related to their academic interests and strengths.

4. List the proposed curriculum for the specialization (including the requirements for completing the major – *highlight courses in the specialization*):

Required Support Courses Outside the Major

(Not general education or institutional graduation requirements)

Prefix	Number	Course Title	Credit Hours	New (yes, no)
PSYC	101	General Psychology	3	No
BIOL	151	General Biology I	4	No
BIOL	151L	General Biology I Laboratory	0	No
BIOL	153	General Biology II	4	No
BIOL	153L	General Biology II Laboratory	0	No
BIOL	280	Inquiry and Analysis in Biology	1	No
BIOL	280L	Inquiry and Analysis in Biology Laboratory	1	No
One of the following:				
BIOL	420	Introduction to Biostatistics & Computational Biology	3	No
BIOL	420L	Introduction to Biostatistics & Computational Biology Laboratory	0	No
OR				
PSYC	371	Statistics in Psychological Research	3	No
One of the following sequences:				
CHEM	112	General Chemistry I	3	No
CHEM	112L	General Chemistry I Laboratory	1	No
CHEM	114	General Chemistry II	3	No
CHEM	114L	General Chemistry II Laboratory	1	No
OR				

¹ For workforce related information, please provide data and examples; data sources may include but are not limited to the South Dakota Department of Labor, the US Bureau of Labor Statistics, Regental system dashboards, etc.

² “Medical Scientists,” Bureau of Labor Statistics, Occupational Outlook Handbook, <https://www.bls.gov/ooh/life-physical-and-social-science/medical-scientists.htm>

³ “Employment Projections by Occupation,” South Dakota Department of Labor & Regulation, http://dlr.sd.gov/lmic/menu_projections_occupation.aspx

CHEM	112	General Chemistry I	3	No
CHEM	112L	General Chemistry I Laboratory	1	No
CHEM	116	Honors Principles of Chemistry	3	No
CHEM	116L	Honors Principles of Chemistry Laboratory	1	No
One of the following:				
PHYS	111	Introduction to Physics I	3	No
PHYS	111L	Introduction to Physics I Laboratory	1	No
OR				
PHYS	211	University Physics I	4	No
PHYS	211L	University Physics I Laboratory	1	No
Subtotal			28-29	

Note: The above supporting coursework will complete the Interdisciplinary Science Minor or may be applied toward another minor or second major.

Major Requirements

Prefix	Number	Course Title (add or delete rows as needed)	Credit Hours	New (yes, no)
BIOL/PSYC	150	Exploring Neuroscience	3	Yes
PSYC	301	Sensation and Perception	3	No
PSYC	301L	Sensation and Perception Laboratory	1	No
BIOL	430	Neurobiology	3	No
NSCI	400	Seminar	1	Yes
NSCI	489	Neurobehavioral Research Techniques	3	Yes
Subtotal			14	

Additional Requirements for the Molecular and Cellular Specialization

Prefix	Number	Course Title (add or delete rows as needed)	Credit Hours	New (yes, no)
BIOL	426	Endocrinology	3	No
BIOL	432	Behavioral Neuroscience	3	No
BIOL	445	Cellular Neuroscience	3	Yes
Subtotal			9	

Major Electives:

Choose 9 credits from among the following courses:

Prefix	Number	Course Title (add or delete rows as needed)	Credit Hours	New (yes, no)
BIOL	402/L	Animal Behavior	3	No
BIOL	425	Cellular Physiology	3	No
BIOL	441	Histology	3	No
BIOL	443	Cell Biology	3	No
CHEM	310/L	Fundamental Organic Chemistry	4/1	No
CHEM	326/L	Organic Chemistry I with Laboratory	4/1	No
CHEM	330	Structure and Function of Biomolecules	3	No
DCOM	221	Introduction to Audiology	3	No
DCOM	224	Speech Science	3	No

PSYC	408	Psycholinguistics	3	No
PSYC	302	Principles of Learning and Memory	3	No
PSYC	302L	Principles of Learning and Memory Laboratory	1	No
PSYC	406	Cognitive Psychology	3	No
PSYC	411	Physiological Psychology	3	No
PSYC	413	Evolutionary Psychology	3	No
PSYC	423	Research in Aging	3	No
PSYC	433	Psychology of Human Performance	3	No
PSYC	438	Psychoacoustics	3	No
		Subtotal	9	

Total number of hours required for completion of specialization

18

Total number of hours required for completion of major

42-43

Total number of hours required for completion of degree

120

5. Delivery Location⁴

A. Complete the following charts to indicate if the university seeks authorization to deliver the entire program on campus, at any off campus location (e.g., UC Sioux Falls, Capital University Center, Black Hills State University-Rapid City, etc.) or deliver the entire program through distance technology (e.g., as an on-line program)?

	Yes/No	Intended Start Date
On campus	Yes	Fall 2019

	Yes/No	If Yes, list location(s)	Intended Start Date
Off campus	No		

	Yes/No	If Yes, identify delivery methods ⁵	Intended Start Date
Distance Delivery (online/other distance delivery methods)	No		

B. Complete the following chart to indicate if the university seeks authorization to deliver more than 50% but less than 100% of the certificate through distance learning (e.g., as an on-line program)?⁶

	Yes/No	If Yes, identify delivery methods	Intended Start Date
Distance Delivery (online/other distance delivery methods)	No		

⁴ The Higher Learning Commission (HLC) and Board of Regents policy requires approval for a university to offer programs off-campus and through distance delivery.

⁵ Delivery methods are defined in [AAC Guideline 5.5](#).

⁶ This question responds to HLC definitions for distance delivery.