



SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS
New Baccalaureate Degree Minor

UNIVERSITY:	University of South Dakota
TITLE OF PROPOSED MINOR:	Neuroscience
DEGREE(S) IN WHICH MINOR MAY BE EARNED:	B.S., B.A., B.B.A., B.F.A., B.S.N., B.S.Ed., B.M., B.M.A.
EXISTING RELATED MAJORS OR MINORS:	Psychology, Biology
INTENDED DATE OF IMPLEMENTATION:	Fall 2019
PROPOSED CIP CODE:	26.1501
UNIVERSITY DEPARTMENT:	Psychology
UNIVERSITY DIVISION:	College of 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.

President of the University Date

1. **Do you have a major in this field?**
Yes No

2. **If you do not have a major in this field, explain how the proposed minor relates to your university mission.**
 The program proposal for the new major accompanies this request.

3. **What is the nature/purpose of the proposed minor?**
 In conjunction with the proposed new Bachelor of Science in Neuroscience, the College of Arts & Sciences proposed a new interdisciplinary minor in Neuroscience. This program would provide essential background in neuroscience for students majoring in other disciplines, including Biology, Medical Biology, Psychology, Chemistry, Health Sciences, among others.

4. **How will the proposed minor benefit students?**
 A transcribed minor in Neuroscience will provide students with evidence of a basic grounding in the core knowledge areas of neuroscience, including the cellular and molecular function of neurons, basic neuroanatomy, behavior and cognition, sensory and motor systems, and the development and plasticity of the nervous system. This background will complement existing majors in related disciplines and will provide graduates with up-to-date understanding of the foundation concepts in neuroscience.

5. **Describe the workforce demand for graduates in related fields, including national demand and demand within South Dakota.**
 There is a clear need for academic programs in neuroscience 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 \$82,090.¹ 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 interdisciplinary neuroscience.²

6. Provide estimated enrollments and completions in the table below and explain the methodology used in developing the estimates (replace “XX” in the table with the appropriate year).

This conservative estimate is based on recent enrollments in several core courses, including BIOL 430 Neurobiology, BIOL 432 Behavioral Neuroscience, and PSYC 301 Sensation and Perception, substantial attention to the growing discipline, and the success of similar programs at other institutions.

	Fiscal Years*			
	1 st	2 nd	3 rd	4 th
<i>Estimates</i>	FY 20	FY 21	FY 22	FY 23
Students enrolled in the minor (fall)	5	10	15	20
Completions by graduates		3	7	10

*Do not include current fiscal year.

7. What is the rationale for the curriculum? Demonstrate/provide evidence that the curriculum is consistent with current national standards.

A working group of faculty from Basic Biomedical Sciences, Biology, and Psychology collaborated on the development of the curriculum, which was created after identifying existing courses and research strengths at USD, consulting with colleagues at USD and at other institutions, and researching programs at other institutions. The group also consulted several recent articles on undergraduate education in neuroscience from the *Journal of Undergraduate Neuroscience Education* (JUNE), including the following:

Kerchner, M., Hardwick, J.C., & Thornton, J.E. (2012). Identifying and using “core competencies” to help design and assess undergraduate neuroscience curricula.

Journal of Undergraduate Neuroscience Education, 11(1), A27-A37.

Pinard-Welyczko, K.M., Garrison, A.C.S., Ramos, R.L., & Carter, B.S. (2017).

Characterizing the undergraduate neuroscience major in the U.S.: an examination of course requirements and institution-program associations. *Journal of Undergraduate Neuroscience Education*, 16(1):A60-A67.

Wiertelak, E.P. & Julio J. Ramirez, J.J. (2008). Undergraduate neuroscience education: blueprints for the 21st century. *Journal of Undergraduate Neuroscience Education*, 6(2):A34-A39

Based on extensive research and consultation, and the development of core competencies specific to this program, this proposal draws upon existing courses and research opportunities available at USD to meet the learning outcomes identified in #10, below.

¹ “Medical Scientists,” Bureau of Labor Statistics, Occupational Outlook Handbook, “<https://www.bls.gov/ooh/life-physical-and-social-science/medical-scientists.htm>”

² “Employment Projections by Occupation,” South Dakota Department of Labor & Regulation, http://dlr.sd.gov/lmic/menu_projections_occupation.aspx

8. Complete the tables below. Explain any exceptions to Board policy requested.

The proposed minor exceeds the typical 18 credit total due to the inclusion of lab-required courses and the inclusion of prerequisite courses in Biology and Psychology required to enroll in core neuroscience courses. Since these prerequisite courses (BIOL 151/L and 153/L and PSYC 101) also fulfill System General Education Requirements in Natural Science and Social Sciences, however, these requirements should not result in excessive credits toward each student's total requirement for graduation.

A. Distribution of Credit Hours

Neuroscience Minor	Credit Hours	Percent
Requirements in minor	17	83%
Electives in minor	3-4	17%
Total	20-21	

B. Required Courses in the Minor

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/PSYC	150	Exploring Neuroscience	3	Yes
BIOL	430	Neurobiology	3	No
Subtotal			17	

Students majoring Biology, Medical Biology, or Psychology may not double-count major and minor requirements, but may substitute elective courses for the above requirements, for a minimum of 18 credits for the minor.

9. Elective Courses in the Minor: List courses available as electives in the program. Indicate any proposed new courses added specifically for the minor.

Prefix	Number	Course Title <i>(add or delete rows as needed)</i>	Credit Hours	New (yes, no)
BIOL	426	Endocrinology	3	No
BIOL	432	Behavioral Neuroscience	3	No
BIOL	445	Cellular Neuroscience	3	Yes
PSYC	301	Sensation and Perception	3	No
PSYC	301L	Sensation and Perception Laboratory	1	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	413	Evolutionary Psychology	3	No

10. What are the learning outcomes expected for all students who complete the minor? How will students achieve these outcomes?

Students will demonstrate the following discipline-specific core competencies related to interdisciplinary study of neuroscience:

- Understanding of basic neuroanatomy.
- Familiarity with neuroanatomy’s relationships with behavior, cognition, sensation, perception, and motor systems.
- Understanding of issues and problems in contemporary neuroscience.

Students will achieve these outcomes through successful completion of the curriculum.

11. What instructional approaches and technologies will instructors use to teach courses in the minor? This refers to the instructional technologies and approaches used to teach courses and NOT the technology applications and approaches expected of students.

Laboratory experience and research projects will be closely integrated with lectures, seminars, and discussion-based coursework. Teamwork, problem-solving, and written and oral presentations are central components of the curriculum.

12. Delivery Location³

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 online 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 ⁴	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 online program)?⁵

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

³ The accreditation requirements of the Higher Learning Commission (HLC) require Board approval for a university to offer programs off-campus and through distance delivery.

⁴ Delivery methods are defined in [AAC Guideline 5.5](#).

⁵ This question responds to HLC definitions for distance delivery.

13. Does the University request any exceptions to any Board policy for this minor? Explain any requests for exceptions to Board Policy. If not requesting any exceptions, enter "None."
None

14. Cost, Budget, and Resources: Explain the amount and source(s) of any one-time and continuing investments in personnel, professional development, release time, time redirected from other assignments, instructional technology & software, other operations and maintenance, facilities, etc., needed to implement the proposed minor. Address off-campus or distance delivery separately.

No additional costs are associated with the implementation of this minor program.

15. New Course Approval: New courses required to implement the new minor may receive approval in conjunction with program approval or receive approval separately. Please check the appropriate statement (place an "X" in the appropriate box).

YES,

the university is seeking approval of new courses related to the proposed program in conjunction with program approval. All New Course Request forms are included as Appendix C and match those described in section 7.

NO,

the university is not seeking approval of all new courses related to the proposed program in conjunction with program approval; the institution will submit new course approval requests separately or at a later date in accordance with Academic Affairs Guidelines.