SOUTH DAKOTA BOARD OF REGENTS

Academic and Student Affairs
Consent

AGENDA ITEM: 6 – D (3)
DATE: December 7-8, 2022

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SUBJECT

New Program Request – USD – BS in Physiology, Cell, and Molecular Biology

CONTROLLING STATUTE, RULE, OR POLICY

BOR Policy 2:23 – New Programs, Program Modifications, Curricular Requests, and Inactivation/Termination

BACKGROUND / DISCUSSION

The University of South Dakota (USD) requests permission to offer a BS program in Physiology, Cell, and Molecular Biology. The proposed program will replace a current specialization within the current BS in Biology, and will make it a standing major. With all the necessary changes for each current specialization within the biology major, navigating the major has become cumbersome for students and often students are not even aware the specialization exists until coming to USD. The formal separation of this specialization into a free-standing degree will potentially increase enrollment in the major at USD while also better reflecting the focus of study for the student.

The Intent to Plan for this program was approved by the Executive Director in August, per BOR Policy 2:23.

IMPACT AND RECOMMENDATION

A summary of the program proposal has been included as Attachment I. Additional information on this proposal is available from the Board office by request.

ATTACHMENTS

Attachment I – New Program Request Full Proposal Summary: USD – BS in Physiology, Cell, and Molecular Biology

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DRAFT MOTION 20221207_6-D(3):

I move to authorize USD to offer a BS in Physiology, Cell, and Molecular Biology, as presented.

Full Proposal – BS Physiology, Cell and Molecular Biology
University of South Dakota

BOR Recommendation: Board of Regents Academic Affairs and the Executive Director support the program request. Whereas this program is currently offered as a specialization within the BS in Biology, approving this program will allow students to highlight their focus of study in the name of their major.

Program Description:

The Physiology, Cell & Molecular Biology major will study cells and their function at basic molecular levels and how they organize into more complex groups. Students will also gain in-depth knowledge of underlying molecular processes that govern how organisms function. This program allows students to take part in cutting-edge research with faculty members studying topics such as hormonal stress response and metabolic aging. Hands-on learning combines with the highest quality classroom instruction to prepare graduates to work in bio-science research and the pharmaceutical industry and to attend graduate or professional schools in biomedicine, health-related fields, agriculture, genetics and immunology.

The proposed degree is to replace a current specialization within the current B.S. in Biology with a free-standing B.S. in Physiology, Cell and Molecular Biology. This degree will continue its current courses with support from current faculty but will allow students to highlight their focus of study.

Strategic Impact:

USD Strategic Impact: This program is aligned with the institutional mission of educating students who are well-prepared for a global and complex world with classroom experiences that are robust, experiential, and practical. Within the mission of the College of Arts and Sciences, this undergraduate major will support our mission of producing graduates who will solve the future's most pressing challenges. These problems extend greatly into conserving local resources and protecting biodiversity. Training in this program allows students to obtain the necessary skills and knowledge to begin successful careers in this field.

BOR Strategic Impact: The proposed program aligns with the Board of Regents Strategic Plan 2022-2027, Goal 3: Academic Excellence, Student Outcomes, Educational Attainment, and Goal 4: Workforce and Economic Development. USD is committed to four key priority areas – student success, academic quality and performance, research and economic development, and affordability and accountability – and ties each to a firm set of outcomes. This program will connect to the BOR's strategic plan and is aligned with the institutional mission of educating students who are well-prepared for a global and complex world with classroom experience that is robust, experiential, and practical.

Program Summary:

The Classification of this Program will be 26.0406 (Cell/Cellular and Molecular Biology) with a degree of Bachelor of Science. The intended start date will be Fall 2023. This program will be assigned to the College of Arts and Sciences and the Department of Biology. This program is proposed to be an on-campus program not delivered through distance education.

Students currently refer to themselves as "Physiology, Cell, and Molecular Biology Majors." Having a degree specifically named for students' intended careers will allow better opportunity for students to progress. Additionally, focusing the major on a subtopic of biology reduces requirements in topics of biology that might not directly benefit the topic of interest. These changes

have already been implemented successfully in the specialization over the years but have made navigating degree requirements more complicated for students and advisors. Creating a standing major will significantly streamline course requirements and allow students a clear path to graduation.

Duplication and Competition:

This degree will replace the existing "Physiology, Cell and Molecular Biology Specialization" within the USD Biology degree. This proposal was shared with the Academic Affairs Council with no objections to the proposal.

No duplication within SD

University of South Dakota Competitive Peer Research

Research suggests that the student demand with competitor peers supports the addition of this program for the University of South Dakota. Student demand is one of the critical elements for meeting the needs of the student population while increasing the pipeline for workforce demands. The Board of Regents strategic plan Goal 4 supports the increase of programming that will be additive to educational attainment in the Stem field.

Outside of South Dakota Competitor University Peers to Institution:

University	**Conferred Degrees in Related Fields**	**Total Number of UG Conferrals (All University)**
University of Minnesota – *Human Physiology*	121	9414
Minnesota State University Moorehead – *Cellular and Molecular Biology*	1	1064
University of North Dakota – *Molecular and Integrative Biology*	6	2097
North Dakota State – *Biochemistry and Molecular Biology*	19	2568
University of Montana – *Human Biological Sciences*	67	1365
Montana State University – *Cell Biology and Neuroscience*	74	2638
University of Wyoming – *Physiology*	74	2364
University of Wyoming – *Molecular Biology*	19	2364

Workforce Outlook/State Need:

To meet the demands of the job market to serve our students, this specialization has been updated over the past decade. With all the necessary changes for each current specialization within the biology major, navigating the major has become cumbersome for students and often students are not even aware the specialization exists until coming to USD. The formal separation of this specialization into a free-standing degree will potentially increase enrollment in the major at USD while also better reflecting the focus of study for the student. A recent analysis of this job market shows a steady need for professionals in this field with a projected growth of 0.3% over the next 10 years (per EMSI data 3/4/22).

Student Learning Outcomes:

Individual Student Outcome (Same as in the text of the proposal)	**Program Courses that Address the Outcomes**					
	BIOL 151	**BIOL 153**	**BIOL 475**	**BIOL 280/L**	**BIOL 443**	**Capstone**
Students will demonstrate the ability to apply knowledge of biological concepts to solve novel problems or develop hypotheses appropriate to biology.				X		X
Students will demonstrate the ability to identify, use, and cite scientific literature appropriate for the biological thesis being studied.			X	X	X	X
Students will demonstrate the ability to collect and appropriately analyze data associated with a theoretical or applied biological questions.				X		
Students will understand the core concepts relevant to an understanding of biology as a discipline.	X	X	X		X	X

High Impact Practice – Capstone Strategic Plan Goal 3:

Ample research documents the relationship between high-impact practices (such as capstone experiences, internships, undergraduate research, service-learning, global learning, first-year seminars, and learning communities) and increased student retention, engagement, and degree completion (Kuh 2008; Eynon & Gambino 2016; AAC&U n.d.). The proposed program in Physiology, Cell and Molecular Biology includes multiple high-impact student learning opportunities including a capstone course. USD writes that the Physiology, Cell and Molecular Biology capstone course "requires students to integrate knowledge across a variety of topics and apply it with a scientific approach."

Projected Enrollment:

ESTIMATES	FISCAL YEARS* 1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year
Students new to the university	3	4	10	12	12	12
Students from other university programs	2	3	8	8	8	8
Students off-campus or distance	--	--	--	--	--	--
continuing students	70	59	50	52	56	60
Total students in the program (fall)	**75**	**66**	**68**	**72**	**76**	**80**
Program credit hours (major Courses)**	686	599	619	652	695	738
Graduates	16	16	16	16	16	16

**Do not include current fiscal year.*

***This is the total number of credit hours generated by students in the program in the required or elective program courses. Use the same numbers in Appendix B – Budget.*

Projected Revenue/Expenses:

FINANCIAL HEALTH SUMMARY	1st FY24	2nd FY25	3rd FY26	4th FY27	5th FY28	6th FY29
TUITION & FEE REVENUES	186,354	162,720	168,154	177,118	188,799	200,480
PROGRAM EXPENSES	144,974	145,644	146,335	147,046	147,779	148,533
NET (T&F REVENUES LESS PROGRAM EXPENSES)	**41,381**	**17,076**	**21,819**	**30,072**	**41,021**	**51,947**
OTHER SUPPORTING REVENUES	-	-	-	-	-	-
NET AFTER OTHER SUPPORTING REVENUES	**41,381**	**17,076**	**21,819**	**30,072**	**41,021**	**51,947**