SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS

New Undergraduate Degree Program

Use this form to propose a new undergraduate degree program. An undergraduate degree program includes a new major, a new degree, or both. The Board of Regents, Executive Director, and/or their designees may request additional information about the proposal. After the university President approves the proposal, submit a signed copy to the Executive Director through the system Chief Academic Officer. Only post the New Undergraduate Degree Program Form to the university website for review by other universities after approval by the Executive Director and Chief Academic Officer.

UNIVERSITY:	**Northern State University**
MAJOR:	**Biochemistry**
EXISTING OR NEW MAJOR(S):	**New**
DEGREE:	**Bachelor of Science (BS)**
EXISTING OR NEW DEGREE(S):	**Existing**
INTENDED DATE OF IMPLEMENTATION:	**Fall 2021**
PROPOSED CIP CODE:	**26.0202 (Biochemistry)**
SPECIALIZATIONS:	**N/A**
IS A SPECIALIZATION REQUIRED (Y/N):	**No**
DATE OF INTENT TO PLAN APPROVAL:	**4/1/2020**
UNIVERSITY DEPARTMENT:	**Science and Mathematics**
BANNER DEPARTMENT CODE:	**NBIO**
UNIVERSITY DIVISION:	**College of Arts and Sciences**
BANNER DIVISION CODE:	**5A**

☒ **Please check this box to confirm that:**

- The individual preparing this request has read AAC Guideline 2:9, which pertains to new undergraduate degree program requests, and that this request meets the requirements outlined in the guidelines.
- This request will not be posted to the university website for review of the Academic Affairs Committee until it is approved by the Executive Director and Chief Academic Officer.

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.

Michael Warnes — President (or Designee) of the University

1/5/2021 — Date

1. **What is the nature/purpose of the proposed program? Please include a brief (1-2 sentence) description of the academic field in this program.**

The purpose of Northern State University's (Northern's) Bachelor of Science (BS) in Biochemistry program is to provide students with foundational and practical knowledge and skills related to areas of chemistry and biochemistry (general, analytical, physical, and organic). Students in this program will acquire the critical, analytical, and quantitative skills necessary to analyze, comprehend, and synthesize solutions to complex scientific problems. Northern's BS in Biochemistry program will prepare students for a graduate or professional degree program (medical, dental, veterinary, pharmaceutical, and other clinical or health professions) or a career in biotechnology, biochemical research, biomedical research, or chemistry research.

Northern's BS in Biochemistry degree program builds on existing courses and faculty expertise within the department. The academic field of Biochemistry merges the chemical, biological, and physical sciences to explain biological processes on a molecular-level. It is a field that can be applied in numerous areas including the health professions, pharmaceuticals, plant and animal agriculture, the environment, energy fields, and food industries and professions. Knowledge gained from this critical field allows students to function and succeed in these well-established and continually evolving fields.

2. **How does the proposed program relate to the university's mission and strategic plan, and to the current Board of Regents Strategic Plan 2014-2020?**

Northern's BS in Biochemistry program supports Northern State University's mission to:

> create, provide and facilitate diverse academic, civic, social and cultural opportunities that prepare students for their future endeavors, while also enriching the local and regional community.[1]

The proposed degree program also supports the Northern State University mission as provided in Board of Regents Policy 1, which sates:

> The legislature established Northern State University to meet the needs of the State, the region, and nation by providing undergraduate and graduate programs in education and other courses or programs as the Board of Regents may determine. . . . The Board implemented SDCL 13-59-1 by authorizing graduate and undergraduate programs in education to promote excellence in teaching and learning, to support research, scholarly and creative activities, and to provide service to the State of South Dakota, the region, and the nation.

The proposed program will promote "excellence in teaching and learning." Additionally, the curriculum of this program will "support research, creative, and scholarly activities." Northern's BS in Biochemistry will also "provide service to the State of South Dakota, the region, and the nation," as stated in item three of this proposal.

[1] Northern State University Mission, Vision, and Values https://www.northern.edu/about/office-president/mission

Northern's new undergraduate degree program in Biochemistry supports the Board of Regents Strategic Plan 2014-2020 by growing the number of approved undergraduate programs, documenting that academic programs are of high quality.

3. **Describe the workforce demand for graduates of the program, including national demand and demand within South Dakota.** *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. Please cite any sources in a footnote.*

Northern's current BS in Chemistry and BS in Biology programs are traditional degrees that do not include a sufficient level of the biochemical coursework required for students intending to enter a graduate or professional degree program (medical, dental, veterinary, pharmaceutical, genetic counseling, and other clinical or health professions) or a career in biochemical research or biomedical research. Providing this program for our students is vital if we want to give them the opportunity to be more competitive in diverse 21st century scientific and medical spheres, whether in South Dakota, the region, or the nation.

The U.S. Bureau of Labor Statistics provides the following occupational growth expectancy for jobs in which a biochemistry degree would be suitable:

Occupation	Expected Growth 2018-2028	Growth Rate Compared to All Occupations	Source Link
Genetic Counselor	27% increase	much faster than average	https://www.bls.gov/ooh/healthcare/genetic-counselors.htm
Physician Assistant	31% increase	much faster than average	https://www.bls.gov/ooh/healthcare/physician-assistants.htm
Physical Therapist	22% increase	much faster than average	https://www.bls.gov/ooh/healthcare/physical-therapists.htm
Dentist	7% increase	faster than average	https://www.bls.gov/ooh/healthcare/dentists.htm
Physician and Surgeon	7% increase	faster than average	https://www.bls.gov/ooh/healthcare/physicians-and-surgeons.htm
Veterinarian	18% increase	much faster than average	https://www.bls.gov/ooh/healthcare/veterinarians.htm
Biomedical Engineer	4% increase	as fast as average	https://www.bls.gov/ooh/architecture-and-engineering/biomedical-engineers.htm
Biochemist	6% increase	as fast as average	https://www.bls.gov/ooh/life-physical-and-social-science/biochemists-and-biophysicists.htm
Chemical Engineer	6% increase	as fast as average	https://www.bls.gov/ooh/architecture-and-engineering/chemical-engineers.htm
Nurse Practitioner	26% increase	much faster than average	https://www.bls.gov/ooh/healthcare/nurse-anesthetists-nurse-midwives-and-nurse-practitioners.htm
Analytical Chemist	4% increase	as fast as average	https://www.bls.gov/ooh/life-physical-and-social-science/chemists-and-materials-scientists.htm

Clinical Researcher	8% increase	faster than average	https://www.bls.gov/ooh/life-physical-and-social-science/medical-scientists.htm
Forensic Science Technician	14% increase	much faster than average	https://www.bls.gov/ooh/life-physical-and-social-science/forensic-science-technicians.htm

Additionally, according to the *US News and World Report*, biochemist is listed as number 3 in the 2019 top 100 Best Science Jobs, number 27 in the top 100 Best STEM Jobs, and number 74 in the top 100 Best Jobs overall.[2] In that same report, biomedical engineer is listed as number 6 in the 2019 top 100 Best Engineering Jobs, number 30 in the top 100 Best STEM Jobs, and number 93 in the top 100 Best Jobs overall.[3]

4. How will the proposed program benefit students?

Graduates of Northern's BS in Biochemistry program will be prepared to enter advanced degree programs such as medical, dental, or pharmacy schools or graduate programs in biochemistry, chemistry, or biology. Northern State University anticipates collaborative opportunities with other BOR institutions, like University of South Dakota and South Dakota State University, with regard to graduate school preparation. Northern's goal is to work collaboratively with institutions to prepare students for their career goals, particularly in the health sciences fields. Northern is primarily an undergraduate institution with a strong focus on undergraduate research. Through the BS in Biochemistry program, Northern will deepen its relationships with USD and SDSU by preparing even more undergraduate students to enter professional programs in physical therapy, physician's assistant, or medical school at the University of South Dakota or pharmacy school at South Dakota State University. Additionally, graduates will be prepared for immediate employment in medical, industrial, and government positions as scientists, lab technicians, research assistants, and chemists.

Through its BS in Biochemistry program, Northern will attract more undergraduate students from the state and region who want to pursue health sciences careers. Northern's BS in Biochemistry program will provide students with effective preparation and training for health sciences fields. Such training often happens at the graduate level (e.g. physician's assistant, medicine, physical therapy, and pharmacy), but it can also happen at the undergraduate level (e.g. nursing). Northern is eager to pursue and consider agreements or relationships with USD and SDSU that intentionally provide the health sciences career training our students need. Northern has collaborated with SDSU to create a Direct Admit agreement for Northern graduates to be "directly admitted" into the South Dakota State University accelerated nursing program housed at Northern. Northern will pursue similar agreements with other professional programs at USD and SDSU like physician's assistant, physical therapy, medicine, and/or pharmacy. Northern's nationally-recognized Honors Program and its well-developed and growing undergraduate research program, along with the comprehensive coursework in the BS in Biochemistry program, will further and more fully prepare Northern students, particularly those interested in health sciences fields, for relevant graduate programs and career opportunities. Northern's BS in Biochemistry program also provides a pivotal opportunity to collaborate with other universities within the BOR system.

[2] U.S. News and World Report. https://money.usnews.com/careers/best-jobs/biochemist (accessed Sept 25, 2019).
[3] U.S. News and World Report. https://money.usnews.com/careers/best-jobs/biomedical-engineer (accessed Sept 25, 2019).

5. Program Proposal Rationale:

A. If a new degree is proposed, what is the rationale? *This question refers to the type of degree, not the program. For example, if your university has authorization to offer the Bachelor of Science and the program requested is a Bachelor of Science, then the request is not for a new degree.*

A new degree is not proposed. This request is for a Bachelor of Science (BS) degree, and Northern State University is authorized to confer the Bachelor of Science degree.

B. What is the rationale for the curriculum?

Northern State University's BS in Biochemistry will maximize opportunities for hands-on lab experiences and undergraduate research in the University's state of the art $25 million Jewett Regional Science Education Center.

Northern's BS in Biochemistry program uses existing faculty to offer a combination of existing unique and common courses. This approach to Northern's BS in Biochemistry curriculum is both efficient and effective.

Efficient: Biochemistry is a combination of biology and chemistry degrees. Existing courses within the biology and chemistry programs are embedded in Northern's curriculum. Several courses in the program are shared across the biology, chemistry, and biochemistry degrees, which is an efficient use of Northern's faculty resources.

Effective: Anecdotal evidence from recent Northern graduates currently in the medical program at University of South Dakota, particularly Tiffany Kopetsky (2017), Annika Van Oosbree (2018) and Tori Marcellus (formerly Biach) (2016), indicate that a BS in Biochemistry program would give Northern students a functional perspective on life and chemical sciences. While biology and chemistry degrees focus primarily on the structural perspective, biochemistry focuses on the functional perspective. For example, anatomy is structural and physiology is functional; organic chemistry is structural and biochemistry is functional. Students who choose to go into health care, particularly medical or physician's assistant school, will be much better prepared for the Medical College Admission Test (MCAT) with the functional perspective of Northern's BS in Biochemistry program.

Audience: Northern's BS in Biochemistry program will prepare students for a graduate or professional degree program (medical, dental, veterinary, pharmaceutical, and other clinical or health professions) or a career in biotechnology, biochemical research, biomedical research, or chemistry research.

Offering undergraduate BS degrees in Biology, Chemistry, and Biochemistry, provides Northern students with the opportunity to tailor their undergraduate curriculum towards their individual career interests and aspirations. Northern's BS in Biochemistry curriculum provides students with the fundamental skills and education to effectively compete on a variety of levels as they pursue graduate and career opportunities.

C. Demonstrate/provide evidence that the curriculum is consistent with current national standards. *Complete the tables below and explain any unusual aspects of the proposed curriculum?*

Northern State University is pursing accreditation by the American Chemical Society (ACS). To obtain ACS accreditation, Northern State University (or any university for that matter) needs to staff five full time faculty with a chemical sciences background, house certain instrumentation within a sciences facility, and offer a recognized curriculum. Northern currently has four chemists that are strictly trained in chemistry and one biochemist that is trained in biology and chemistry. These five faculty qualify Northern's staffing for ACS accreditation. Northern also has the space equipment required for ACS accreditation. Northern's state of the art Jewett Regional Science Education Center is equipped with six chemistry labs, extensive chemistry research spaces, an instrumental lab, and a nuclear magnetic resonance (NMR) spectroscopy room. Establishing Northern's BS in Biochemistry is the final step needed for Northern to meet the curriculum requirements for national accreditation.

The curriculum for Northern's BS in Biochemistry includes core requirements with an overall objective of providing students with a comprehensive, interdisciplinary, learning opportunity to bridge the disciplines of the physical sciences with biology and chemistry. Biochemical skills and content required by the major curriculum include a holistic understanding of general, organic, and physical chemistry together with general biology, genetics, microbiology, and developmental biology. Research skills are emphasized, combining comprehensive laboratory exercises with the independent nature of real-world, applied novel research. All combine to meet the curriculum standards of the ACS.

D. Summary of the degree program (complete the following tables):

B.S. in Biochemistry	**Credit Hours**	**Credit Hours**	**Percent**
System General Education Requirements	30		
Subtotal, Degree Requirements		30	25%
Required Support Courses (not included above)	16 (-12)*		
Major Requirements	41		30%
Major Electives	19-24		20%
Subtotal, Program Requirements		60-65	50%
Free Electives		25-30	25%
Degree Total		120	100%

***** 12 credits of required support coursework applies toward System General Education and B.S. degree requirements.

Required Support Courses Outside the Major

(Not general education requirements)

Prefix	**Number**	**Course Title** *(add or delete rows as needed)*	**Credit Hours**	**New (yes, no)**
BIOL	151/151L	General Biology I and Laboratory	4	No
BIOL	153/153L	General Biology II and Laboratory	4	No
CHEM	112/112L	General Chemistry I and Laboratory	4	No
CHEM	114/114L	General Chemistry II and Laboratory	4	No
			16	

Note: 12 credits of required support coursework applies toward System General Education and B.S. degree requirements. The above coursework will support a minor in Biology or Chemistry, if the student chooses to earn a minor.

Major Requirements

Prefix	Number	Course Title *(add or delete rows as needed)*	Credit Hours	New (yes, no)
BIOL/CHEM	130	Success in Science	1	No
IDL	190	First Year Seminar	2	No
BIOL	281	Introduction to Statistics	3	No
CHEM	326/326L	Organic Chemistry I + lab	4	No.
CHEM	328/328L	Organic Chemistry II + lab	4	No
CHEM	332/332L	Analytical Chemistry + lab	4	No
CHEM	464/464L	Biochemistry I + lab	4	No
CHEM	465/465L	Biochemistry II + lab	4	No
CHEM	498	Undergraduate Research/Scholarship (Research experience in Biochemistry)	3	No
MATH	123	Calculus I	3	No
PHYS	211/211L	Physics I + lab	4	No
PHYS	213/213L	Physics II + lab	4	No
BIOL/CHEM	490	Senior Seminar (Senior Capstone)	1	No
		Subtotal	41	

Major Electives: List courses available as electives in the program. Indicate any proposed new courses added specifically for the major.

Prefix	Number	Course Title *(add or delete rows as needed)*	Credit Hours	New (yes, no)
Quantitative Elective - Choose 1 of the following:				
BIOL	250/250L	Introduction to Bioinformatics and Proteomics + lab	3	No
BIOL	282	Introduction to Statistics II	3	No
BIOL	414	Basic R Programming	1	No
MATH	125	Calculus II	4	No
Advanced Biology Elective - Choose 3 of the following:				
BIOL	331/331L	Microbiology + lab	4	No
BIOL	343/343L	Cell and Molecular Biology + lab	4	No
BIOL	371/371L	Genetics + lab	4	No
BIOL	382/382L	Virology + lab	4	No
BIOL	422/422L	Immunology + lab	4	No
BIOL	483/483L	Developmental Biology + lab	4	No
Advanced Chemistry Elective - Choose 2 of the following:				
CHEM	342	Physical Chemistry I	3	No
CHEM	344	Physical Chemistry II	3	No
CHEM	434/434L	Instrumental Analysis	4	No
CHEM	452/452L	Inorganic Chemistry + lab	4	No
CHEM	482	Environmental Chemistry	3	No
		Subtotal	19-24	

Student Outcomes and Demonstration of Individual Achievement

E. What specific knowledge and competencies, including technology competencies, will all students demonstrate before graduation? *The knowledge and competencies should be specific to the program and not routinely expected of all university graduates, and must relate to the proposed assessments in B and C below. Complete the table below to list specific learning outcomes—knowledge and competencies—for courses in the proposed program in each row. Label each column heading with a course prefix and number. Indicate required courses with an asterisk (*). Indicate with an X in the corresponding table cell for any student outcomes that will be met by the courses included. All students should acquire the program knowledge and competencies regardless of the electives selected. Modify the table as necessary to provide the requested information for the proposed program.*

	Program Courses that Address the Outcomes								
Individual Student Outcomes (Same as in the text of the proposal) Corresponding BOR Cross-Curricular Skill in bold	*BIOL 371/L BIOL 422/L BIOL 483/L*	*BIOL 331/L BIOL 343/L *PHYS 211/L *PHYS 213/L*	**CHEM 326/L *CHEM 328/L CHEM 452/L IDL 190*	**CHEM 332/L CHEM 434/L BIOL 382/L*	*CHEM 342 CHEM 344 CHEM 482*	**MATH 123 MATH 125 BIOL 250/L *BIOL 281 BIOL 282*	*BIOL 414 *CHEM 464/L *CHEM 465/L*	**CHEM 498*	**BIOL/CHEM 130 BIOL/CHEM 490*
Demonstrate ability to design, understand and discuss scientific data; demonstrate ability to breakdown discipline specific problems into multiple steps, resulting in an informed conclusion. ***(Inquiry and Analysis)***.	X		X	X		X	X	X	
Effectively communicate scientific results orally and in writing using methods related to science; effectively communication mathematical ideas in writing. ***(Critical and Creative Thinking)***		X		X			X		
Identify appropriate scientific sources; analyze and interpret data; apply mathematical principles to solve applied chemistry/mathematics problems. ***(Information Literacy)***						X	X		
Demonstrate ability to work as a team while completing research/project related endeavors. ***(Teamwork)***	X		X						
Demonstrate the ability to design and conduct scientific research. ***(Problem Solving)***	X				X			X	
Establish fundamental skills in core disciplines of biology and chemistry.	X	X		X	X				X

F. Are national instruments (i.e., examinations) available to measure individual student achievement in this field? If so, list them.

Yes. The American Chemical Society (ACS) Division of Chemical Education Examinations Institute has a national examination that is standardized and designed for use at the end of a 2-semester sequence of biochemistry instruction.

G. How will individual students demonstrate mastery? Describe the specific examinations and/or processes used, including any external measures (including national exams, externally evaluated portfolios, or student activities, etc.). What are the consequences for students who do not demonstrate mastery?

Students will demonstrate mastery through proficient fulfillment of all learning outcomes with successful completion of the curriculum. No grade below a "C" will be accepted in a course taken to fulfill the major requirements and major electives. Student learning will be assessed through both direct and indirect measures at every level of the curriculum, including utilization of the American Chemical Society course-specific exams.

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

Northern State University Biochemistry and Chemistry faculty will use the state-of-the-art technologies and laboratories in the Jewett Regional Science Education Center to teach course in the BS in Biochemistry program. Instructional approaches will explore the inter-relationships of the sciences in ways that extend beyond current disciplinary course structures. Laboratory experiences and case studies will be closely integrated with lecture material, while data collection in the laboratory is paired with statistical and computational methods of data analysis and interpretation. Teamwork, written and oral presentations, and problem solving are central components throughout the curriculum. Of equal importance is a senior capstone undergraduate research project designed to enable students to critically apply their learned biochemistry skills toward a novel research project that incorporates multiple disciplines.

7. **Did the University engage any developmental consultants to assist with the development of the curriculum? Did the University consult any professional or accrediting associations during the development of the curriculum? What were the contributions of the consultants and associations to the development of curriculum?** *(Developmental consultants are experts in the discipline hired by the university to assist with the development of a new program, including content, courses, and experiences, etc. Universities are encouraged to discuss the selection of developmental consultants with Board staff.)*

No outside consultants were engaged. The curriculum was developed by departmental faculty with academic backgrounds in biochemistry, chemistry, and biotechnology. No professional or accrediting associations were consulted during the development of the curriculum. Information and guidance from a recent chemistry 7-year program, which included an external review, and ACS standards and published guidance were considered when designing Northern's BS in Biochemistry program.

8. **Are students enrolling in the program expected to be new to the university or redirected from other existing programs at the university? Complete the table below and explain the methodology used in developing the estimates.** *If question 12 includes a request for authorization for off-campus or distance delivery, add lines to the table for off-campus/distance students, credit hours, and graduates.*

	Fiscal Years*			
	1st	**2nd**	**3rd**	**4th**
Estimates	FY 22	FY 23	FY 24	FY 25
Students new to the university	6	8	10	12
Students from other university programs[4]	8	8	8	8
Continuing students		14	20	38
=Total students in the program (fall)	14	30	38	58
Program credit hours (major courses)** [5]	280	600	760	1,160
Graduates			14	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.

[4] It is anticipated that these students would be current Biology or Chemistry majors who find this degree is more suitable to their career trajectory or who choose to add the BS in Biochemistry as a double major.

[5] This figure assumes that students in this program will take an average of 10 credit hours per semester (22 credit hours per year) in the required or elective courses for this major.

Northern expects to capture some students from the Biology degree program, which is a saturated major, who are interested in pursuing careers in the health care field, because Northern's BS Biochemistry degree would better suit these students rather than them pursuing a general degree in Biology. Some of these students will be far enough along in their Biology degree that they will choose the BS in Biochemistry as a second major.

Northern's faculty in Chemistry and Biology meet frequently with prospective students through the Admissions office and will immediately start to promote Northern's BS in Biochemistry to high school students interested in careers in health sciences. The strength of Northern's current science programs, the outstanding faculty in the science department, the established rigor in the Biology and Chemistry curricula, the Northern's nationally-recognized Honors Program, and the University's state-of-the-art facilities and instrumentation are recruiting strengths for Northern's BS in Biochemistry. Through active recruiting efforts, Northern will grow the number of individual undergraduate students in the sciences with the addition of the BS in Biochemistry.

9. Is program accreditation available? If so, identify the accrediting organization and explain whether accreditation is required or optional, the resources required, and the University's plans concerning the accreditation of this program.

Yes. Northern's BS in Biochemistry can be accredited by the American Society for Biochemistry and Molecular Biology (ASBMB). ASBMB accreditation is a national, independent, outcomes-based evaluation mechanism that recognizes excellence in BS or BA degree programs in biochemistry and molecular biology and related disciplines. Additional American Chemical Society (ACS) professional certification can be obtained through an ACS Plan specific for biochemistry for students completing Northern's BS in Biochemistry program. Northern is currently investigating the necessary requirements to become ACS and ASBMB accredited.

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

No exceptions are requested.

11. Delivery Location

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

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 *-while the entire program will be offered on campus with courses in fall, spring, and summer, some courses may be fulfilled through already established online offerings at NSU or other regental schools.*	**Yes**	**Fall 2021**

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

	Yes/No	*If Yes, identify delivery methods* *Delivery methods are defined in AAC Guideline 5.5.*	*Intended Start Date*
Distance Delivery (online/other distance delivery methods)	**No**		
Does another BOR institution already have authorization to offer the program online?	**No**	**If yes, identify institutions:**	

B. Complete the following chart to indicate if the university seeks authorization to deliver more than 50% but less than 100% of the program through distance learning (e.g., as an online program)? *This question responds to HLC definitions for distance delivery.*

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

12. 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 major. Address off-campus or distance delivery separately. *Complete Appendix B – Budget and briefly summarize to support Board staff analysis.*

This program requires no additional personnel. The program consists entirely of courses already offered or approved and that are all staffed by existing faculty. The current faculty possess the workload capacity to take on the required major coursework for this program as part of their in-load. *See Appendix B (included with this program proposal).*

13. Is the university requesting or intending to request permission for a new fee or to attach an existing fee to the program (*place an "X" in the appropriate box*)? *If yes, explain.*

☒ Yes ☐ No

Northern State University will attach a $52.51 discipline fee to this program to purchase lab supplies for the courses in Biochemistry and Chemistry. This fee is the same as USD and SDSU's discipline fee for courses in Chemistry with the annual rate calibrated to fall 2021 when Northern's program in Biochemistry will begin.

14. New Course Approval: New courses required to implement the new undergraduate degree program may receive approval in conjunction with program approval or receive approval separately. Please check the appropriate statement:

N/A - no new courses are required for this degree program.

15. Additional Information:

N/A

Northern State University, B.S. in Biochemistry

1. Assumptions		1st FY17	2nd FY18	3rd FY19	4th FY20
Headcount & hours from proposal					
Fall headcount (see table in proposal)		14	30	38	58
Program FY cr hrs, On-Campus		280	600	760	1,160
Program FY cr hrs, Off-Campus		0	0	0	0
Faculty, Regular FTE	See p. 3	*0.50*	*0.50*	*0.75*	*0.75*
Faculty Salary & Benefits, average	See p. 3	$79,340	$79,340	$79,340	$79,340
Faculty, Adjunct - number of courses	See p. 3	0	0	0	0
Faculty, Adjunct - per course	See p. 3	$1,000	$1,000	$1,000	$1,000
Other FTE (see next page)	See p. 3	*0.00*	*0.00*	*0.00*	*0.00*
Other Salary & Benefits, average	See p. 3	$8,470	$8,470	$8,470	$8,470

2. Budget				
Salary & Benefits				
Faculty, Regular	$39,670	$39,670	$59,505	$59,505
Faculty, Adjunct (rate x number of courses)	$0	$0	$0	$0
Other FTE	$0	$0	$0	$0
S&B Subtotal	$39,670	$39,670	$59,505	$59,505
Operating Expenses				
Travel	$0	$0	$0	$0
Contractual Services	$0	$0	$0	$0
Supplies & materials	$0	$1,000	$5,000	$5,000
Capital equipment	$0	$5,000	$1,000	$1,000
OE Subtotal	$0	$6,000	$6,000	$6,000
Total	**$39,670**	**$45,670**	**$65,505**	**$65,505**

3. Program Resources					
Off-campus support tuition/hr, HEFF net	UG	$300.94	$300.94	$300.94	$300.94
Off-campus tuition revenue	hrs x amt	$0	$0	$0	$0
On-campus support tuition/hr, HEFF net	UG	$215.32	$215.32	$215.32	$215.32
On-campus tuition revenue	hrs x amt	$60,290	$129,192	$163,643	$249,771
Program fee, per cr hr (if any)	$52.51	$14,703	$31,506	$39,908	$60,912
Delivery fee, per cr hr (if any)	$0.00	$0	$0	$0	$0
University redirections		$0	$0	$0	$0
Community/Employers		$0	$0	$0	$0

Grants/Donations/Other	$0	$0	$0	$0
Total Resources	**$74,992**	**$160,698**	**$203,551**	**$310,683**
Resources Over (Under) Budget	**$35,322**	**$115,028**	**$138,046**	**$245,178**

Provide a summary of the program costs and resources in the new program proposal.

Estimated Salary & Benefits per FTE		Faculty	Other
Estimated salary (average) - explain below		$61,820	$0
University's variable benefits rate	(see below)	0.1464	0.1464
Variable benefits		$9,050	$0
Health insurance/FTE, FY18		$8,470	$8,470
Average S&B		$79,340	$8,470

Explain faculty used to develop the average salary & fiscal year salaries used. Enter amount above.

The FY20 salaries of the 10 faculty in the Science and Math department who teach courses required in the program of study for Northern's BS in Biochemistry were averaged. These are the faculty who will regularly teach the courses and sections associated with this program.

Explain adjunct faculty costs used in table:

0 courses per year to be taught by adjuncts at $0,000 per course.

Explain other [for example, CSA or exempt] salary & benefits. Enter amount above.

Not applicable.

Summarize the operating expenses shown in the table:

As enrollment increases in the program over time, additional lab equipment and materials will be needed.

Summarize resources available to support the new program (redirection, donations, grants, etc).

Northern State University will dedicate the $52.51 discipline fee for this program to purchase lab supplies for the courses in Biochemistry and Chemistry.

State-support: Change cell on page 1 to use the UG or GR net amount.

Off-Campus Tuition, HEFF & Net	FY19 Rate	HEFF	Net	
Undergraduate	$340.05	$39.11	**$300.94**	*Change cell on page 1*
Graduate	$450.90	$51.85	**$399.05**	*to point to your net*
Externally Supported	$40.00			

State-support: Change cell on page 1 to use the UG or GR net amount for your university.

	On-Campus Tuition, HEFF & Net	FY19 Rate	HEFF	Net	
	UG Resident - DSU, NSU	$243.30	$27.98	**$215.32**	*Change cell on page 1*
	UG Resident - SDSU, USD	$248.35	$28.56	**$219.79**	
	UG Resident - BHSU	$254.20	$29.23	**$224.97**	*to point to your net*
	UG Resident - SDSMT	$249.70	$28.72	**$220.98**	
	GR Resident - DSU,NSU	$319.40	$36.73	**$282.67**	*Change cell on page 1*
	GR Resident - SDSU, USD	$326.05	$37.50	**$288.55**	
	GR Resident - BHSU	$328.20	$37.74	**$290.46**	*to point to your net*
	GR Resident - SDSMT	$324.85	$37.36	**$287.49**	
	UG Nonresident - DSU,NSU	$342.40	$39.38	**$303.02**	*Change cell on page 1*
	UG Nonresident - BHSU	$355.70	$40.91	**$314.79**	*to point to your net*
	UG Nonresident - SDSU, USD	$360.50	$41.46	**$319.04**	
	UG Nonresident - SDSMT	$391.10	$44.98	**$346.12**	
x	GR Nonresident - DSU,NSU	$596.30	$68.57	**$527.73**	*Change cell on page 1*
x	GR Nonresident - BHSU	$612.40	$70.43	**$541.97**	*to point to your net*
x	GR Nonresident - SDSU, USD	$626.85	$72.09	**$554.76**	
x	GR Nonresident - SDSMT	$652.00	$74.98	**$577.02**	
	UG Sioux Falls Associate Degree	$275.40	$31.67	**$243.73**	*Change cell on page 1 to point to your net*

Variable Benefits Rates

University	FY19
BHSU	14.64%
DSU	14.36%
NSU	14.31%
SDSM&T	14.20%
SDSU	14.38%
USD	14.34%

Change the benefits rate cell in the table on page 2 to point to the rate for your university.

Rates updated February 2019 (JP)