SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS

New Baccalaureate Degree Minor

Use this form to propose a new baccalaureate degree minor (the minor may include existing and/or new courses. An academic minor within a degree program enables a student to make an inquiry into a discipline or field of study beyond the major or to investigate a particular content theme. Minors provide a broad introduction to a subject and therefore develop only limited competency. Minors consist of a specific set of objectives achieved through a series of courses. Course offerings occur in a specific department or may draw from several departments (as in the case of a topical or thematic focus). In some cases, all coursework within a minor proscribed; in others cases, a few courses may form the basis for a wide range of choices. Regental undergraduate minors typically consist of 18 credit hours. Proposals to establish new minors as well as proposals to modify existing minors must recognize and address this limit. 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 Baccalaureate Degree Minor Form to the university website for review by other universities after approval by the Executive Director and Chief Academic Officer.

UNIVERSITY:	NSU
TITLE OF PROPOSED MINOR:	**Actuarial Science**
DEGREE(S) IN WHICH MINOR MAY BE EARNED:	**All baccalaureate degrees**
EXISTING RELATED MAJORS OR MINORS:	**Math**
INTENDED DATE OF IMPLEMENTATION:	**Fall 2024**
PROPOSED CIP CODE:	**27.0101**
UNIVERSITY DEPARTMENT:	**Science and Math**
BANNER DEPARTMENT CODE:	**NSCM**
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 2.3.2.2.D, which pertains to new baccalaureate degree minor 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 Warous — President (or Designee) of the University

4/26/2024 — Date

Note: In the responses below, references to external sources, including data sources, should be documented with a footnote (including web addresses where applicable).

1. **Do you have a major in this field (*place an "X" in the appropriate box*)?** ☐ *Yes* ☒ *No*

2. **If you do not have a major in this field, explain how the proposed minor relates to your university mission and strategic plan, and to the current Board of Regents Strategic Plan 2014-2020.**
   Links to the applicable State statute, Board Policy, and the Board of Regents Strategic Plan are listed below for each campus.

BHSU:	*SDCL § 13-59*	*BOR Policy 1.2.1*
DSU:	*SDCL § 13-59*	*BOR Policy 1.2.2*
NSU:	*SDCL § 13-59*	*BOR Policy 1.2.3*
SDSMT:	*SDCL § 13-60*	*BOR Policy 1.2.4*
SDSU:	*SDCL § 13-58*	*BOR Policy 1.2.5*
USD:	*SDCL § 13-57*	*BOR Policy 1.2.6*

Board of Regents Strategic Plan

Northern's minor in Actuarial Science prepares students for the professional exams required to attain the credentials necessary for a career in the growing field of actuarial science.

Northern's minor in Actuarial Sciences aligns with Goal 4 of the SD Board of Regents Strategic Plan to prepare students for workforce needs and "place a special emphasis on STEM, Teacher Education, Nursing and Healthcare, and Business undergraduate completion."[1]

Students in the BS in Mathematics are required to earn a minor or a second major, and the Actuarial Science minor is a excellent choice in a Minor for Mathematics majors. The availability of the Actuarial Science minor will be a recruiting opportunity for the Mathematics program. The Actuarial Science minor is suitable and beneficial for any students who are majoring in a field that can utilize the analysis of risk factors, including Criminal Justice, Accounting, and Finance.

Northern's Actuarial Sciences minor adequately prepares students to take their first actuarial professional exam administered by the Society of Actuaries, which is sufficient for obtaining employment in the field. For ongoing professional development purposes, actuaries routinely take courses and professional exams throughout their careers, and once they complete their second professional exam, they will use this set of courses on their Northern State University pt to seek Validation for Educational Experience (VEE) to become certified in the field.

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

   Actuarial Science is the study of risk factors, using statistical and mathematical data to research past trends and their probable implication on future events. Actuarial Science is utilized in the financial and insurance industries, and is also applicable in the fields of healthcare, criminal justice, and sociology where predictive data is a valuable resource.

[1] "Goal 4: Workforce and Economic Development." South Dakota Board of Regents Strategic Plan 2022-2027, page 15, https://sdbor.edu/wp-content/uploads/2023/09/StrategicPlan_22_27.pdf

4. How will the proposed minor benefit students?

Actuaries are in demand, and the purpose of Northern's Actuarial Science minor is driven by the needs of the workforce. Students will have the necessary mathematical, statistical, accounting, economic, and business background to be prepared for employment in the growing field of actuarial science with high workforce demand.

The Society of Actuaries administers credentialing exams for actuaries. Once a student passes the first exam (Exam P), they qualify for paid internships and entry level employment as an actuary. Actuaries take a series of exams and courses through professional organizations over the course of their careers. Northern's minor in Actuarial Science prepares students for the first exam and entry into the profession.

Once a student has their initial job, employers often pay for additional exams and study materials and provide study time during the work week. Once a student passes their second exam, then they can apply for or complete Validation by Education Experience (VEE) credit to advance their career. The three academic topics required for students to complete the ASA / CERA designation through the VEE process are 1) Economics 2) Accounting and Finance and 3) Mathematical Statistics.

The courses in Northern's minor are designed to satisfy these three topics required for VEE credit.

5. Describe the workforce demand for graduates in related fields, including national demand and demand within South Dakota..

According to the U.S. Bureau of Labor Statistics, employment in the field of Actuarial Science is projected to grow 23% from 2022 to 2032, "much faster than the average for all occupations. About 2,300 openings for actuaries are projected each year, on average, over the decade," [2] with a median salary over $113,000 in 2022.[3] There is no projected workforce data available on the U.S. Bureau of Labor Statistics for the State of South Dakota.[4] Occupational wage and employment statistics provided by the U.S. Bureau of Labor Statistics indicates the following industries have the highest levels of employment of actuaries: [5]

Industry	Employment	Percent of industry employment	Hourly mean wage	Annual mean wage
Insurance Carriers	13,410	1.11	$ 60.68	$ 126,220
Agencies, Brokerages, and Other Insurance Related Activities	4,900	0.38	$ 64.29	$ 133,720

[2] Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Actuaries, https://www.bls.gov/ooh/math/actuaries.htm. (visited February 19, 2024).
[3] Bureau of Labor Statistics. U.S. Department of Labor. Career One Stop, Actuaries, https://www.careeronestop.org/Toolkit/Careers/Occupations/occupation-profile.aspx?keyword=Actuaries&onetcode=15201100&location=United%20States. (visited February 19, 2024).
[4] Occupational Information Network (O*NET), U.S. Department of Labor/Employment and Training Administration (USDO/ETA), Actuaries. https://www.onetonline.org/link/localtrends/15-2011.00?st=SD (visited February 19, 2024).
[5] Bureau of Labor Statistics, U.S. Department of Labor, Occupational Wage and Employment Statistics, Actuaries, https://www.bls.gov/oes/current/oes152011.htm. (visited February 19, 2024).

Management, Scientific, and Technical Consulting Services	2,880	0.16	$ 59.54	$ 123,830
Management of Companies and Enterprises	1,190	0.04	$ 55.12	$ 114,650
State Government, excluding schools and hospitals (OEWS Designation)	550	0.03	$ 48.43	$ 100,720

While Actuarial Science/Actuaries is not specifically listed in the South Dakota Occupational Employment Projections 2020-2030, workforce projections for related careers that would be supplemented by this minor/top occupational fields in which actuaries are utilized are expected to grow, including Financial Managers (projected increase of 21.85%), Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists (projected increase of 11.3%), and Data Scientists and Mathematical Science Occupations (projected increase of 36.84%).[6] National and regional projections point toward considerable growth in the Actuarial Science field.

6. Provide estimated enrollments and completions in the table below and explain the methodology used in developing the estimates.

	Fiscal Years*			
	1st	**2nd**	**3rd**	**4th**
Estimates	**FY 25**	**FY 26**	**FY 27**	**FY 28**
Students enrolled in the minor (fall)	**5**	**10**	**15**	**20**
Completions by graduates	**0**	**0**	**5**	**10**

*Do not include current fiscal year.

It is anticipated that there will be strong interest in this minor among students with majors in mathematics, criminal justice, sociology, finance, accounting, and business.

The above enrollment estimates are based on 10% of the average student enrollment in the Mathematics (BS/BSEd), Criminal Justice, and Sociology majors as of fall 2023 for year 4. Additional students in the program will enroll from the BS in Accounting and the BS in Finance. Because the demand for actuaries is expected to grow much faster than average by 2032 (see item 5 above), it is expected that enrollment in the minor will increase.

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

The coursework required for the Actuarial Science Minor is selected to meet the required Validation by Educational Experience (VEE) requirements listed with the Society of Actuaries (SOA). After students have completed two of the actuarial exams, they can use these courses to apply for credit toward their VEE requirements. All courses in the minor satisfy VEE requirements and will count toward SOA certification.

[6] South Dakota Department of Labor and Regulation, Statewide South Dakota Employment Projections by Occupation 2020-2030, https://dlr.sd.gov/lmic/menu_projections_occupation_statewide.aspx. (visited February 19, 2024)

8. Complete the tables below. Explain any exceptions to Board policy requested.
Minors by design are limited in the number of credit hours required for completion. Minors typically consist of eighteen (18) credit hours, including prerequisite courses. In addition, minors typically involve existing courses. If the curriculum consists of more than eighteen (18) credit hours (including prerequisites) or new courses, please provide explanation and justification below.

A. Distribution of Credit Hours

[Insert title of proposed minor]	Credit Hours	Percent
Requirements in minor	26	100%
Requirements in minor that can be taken to fulfill a SDBOR general education goal	(6)	0%
Electives in		
Total	26 (20)	100%

B. Required Courses in the Minor

Prefix	Number	Course Title *(add or delete rows as needed)*	Prerequisites for Course *Include credits for prerequisites in subtotal below.*	Credit Hours	New (yes, no)
ACCT	210	Principles of Accounting I		3	No
ACCT	211	Principles of Accounting II	ACCT 210 (3 cr.)	3	No
BADM	310	Business Finance	ACCT 211(3 cr.)	3	No
ECON	201	Principles of Microeconomics		3	No
ECON	202	Principles of Macroeconomics		3	No
MATH	123	Calculus I		4	No
MATH	125	Calculus II	MATH 123 (4 cr.)	4	No
MATH	381	Introduction to Probability and Statistics	MATH 125 (4 cr.)	3	No
			Subtotal	26 (20)	

NOTE: Students pursuing actuary credentials will complete two actuarial exams through the Society of Actuaries and use the courses within this minor to meet the Validation by Educational Experience (VEE) credentialing requirements.

Explanation and justification for more than 18 credit hours, including prerequisites:

ACCT 210 is a pre-req for ACCT 211, and ACCT 211 is a pre-req for BADM 310. BADM 310 is an essential course in the minor and is required in similar actuarial science minors at other universities. The pre-requisite for MATH 381 is MATH 125 Calculus II, and MATH 123 is a pre-req for MATH 125. All 3 of these MATH courses are required in similar actuarial science minors at other universities.

Students who are BS Mathematics majors do not have any ECON, BADM, or ACCT courses required in their degree; so, those 5 courses will not overlap with their BS Mathematics degree.

Northern State University seeks an exception to the overlap with the major for the Actuarial Sciences Minor. Students who are majoring in Finance, Accounting, or any Business field who decide to complete the Minor in Actuarial Sciences are required to take 3 MATH courses beyond the level of Math required for their degree. While the overlap between Business majors and the

Actuarial Science minor is greater than 6 credits, the 11 credits required in Math are at a level of rigor needed to understand Actuarial Sciences at a basic level. Additionally, the Business courses required in the minor are set by the Society of Actuarial Sciences, and Business students who complete the Minor in Actuarial Sciences are workforce ready.

Students pursuing the Actuarial Science Minor will be guided by their academic advisor to take MATH 123 to fulfill their SDBOR Goal #5 and ECON 201 to fulfill their SDBOR Goal #3 in the general education requirements so that students can earn the minor with 20 additional credits instead of 26.

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

None.

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

	Program Courses that Address the Outcomes					
Individual Student Outcome (Same as in the text of the proposal)	ACCT 210	ACCT 211 and BADM 310	ECON 201	ECO N 202	MATH 381	MATH 123, 125
Apply concepts of differential and integral calculus to actuarial problems.					X	X
Apply common probability distributions and fundamental probabilistic concepts to risk analysis problems.			X		X	
Formulate and analyze idealized problems of risk in insurance and financial mathematics.		X		X		
Select the appropriate premium calculation principle and calculate premiums using standard principles.	X					
Assess risk for different types of products.		X			X	

Faculty in Mathematics and the School of Business collaborated to map the learning outcomes over the courses required in the minor. Students will achieve these outcomes through weekly coursework, quizzes, and exams.

10. 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.*

The instructional technologies used for the courses within this minor will be consistent with those available and utilized for other NSU courses. The majority of courses will be offered via face-to-face delivery with some options for HyFlex or online delivery.

The instructional approaches used will include lecture, discussion, application assignments, and written exercises.

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., USD Community Center for Sioux Falls, Black Hills State University-Rapid City, Capital City Campus, etc.) or deliver the entire program through distance technology (e.g., as an online program)?

	Yes/No	***Intended Start Date***
On campus	Yes	**Fall 2024**

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

	Yes/No	***If Yes, identify delivery methods*** *Delivery methods are defined in AAC Guideline 2.4.3.B.*	***Intended Start Date***
Distance Delivery (online/other distance delivery methods)	Yes	X01 (Face-to-Face) X02 (Hyflex) X03 (Hyflex Synchronous) X15 (Online Asynchronous)	**Fall 2024**
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 minor 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		**Fall 2024**

12. 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."*

Northern State University requests an exception to Board policy to run this minor with 26 required credits including prerequisites. As the response to item 8 above indicates, students enrolled in this minor can use MATH 123 and ECON 201 to fulfill their general education requirements, which reduces the unique credits in the minor to 20.

NSU requests an exception in minor course overlap for Finance, Accounting, and Business majors. The field of Actuarial Sciences is in demand and students will be employable in an additional career field after taking 11 credits in MATH above those required for their major.

NSU Math faculty are in the process of submitting all courses required in the proposed minor for VEE credit to streamline the credentialing process for Northern students.

13. **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.*

    Faculty are currently teaching these courses. There are no additional costs to creating a pertinent minor, one that will help prepare students for the workforce and increase enrollments.

14. **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.

15. **Additional Information:** *Additional information is optional. Use this space to provide pertinent information not requested above. Limit the number and length of additional attachments. Identify all attachments with capital letters. Letters of support are not necessary and are rarely included with Board materials. The University may include responses to questions from the Board or the Executive Director as appendices to the original proposal where applicable. Delete this item if not used.*

    N/A