



SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS
 New Certificate

UNIVERSITY:	University of South Dakota
TITLE OF PROPOSED CERTIFICATE:	Science, Technology, Math Pedagogy
INTENDED DATE OF IMPLEMENTATION:	August 2017
PROPOSED CIP CODE:	13.1202
UNIVERSITY DEPARTMENT:	Curriculum and Instruction- Elementary / Secondary Education
UNIVERSITY DIVISION:	School of Education

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.

<i>Elizabeth M. Freeburg</i>	5/9/2017
_____ Institutional Approval Signature <i>President or Chief Academic Officer of the University</i>	_____ Date

1. Is this a graduate-level certificate or undergraduate-level certificate?

Undergraduate Certificate Graduate Certificate

2. What is the nature/purpose of the proposed certificate? The University of South Dakota seeks permission to offer a new certificate in Science, Technology, and Math (STEM) Pedagogy. These students would like this content in the form of a certificate. This certificate is responsive to the direction of the field of teaching, student learning, and educational leadership.

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

There is a growing need for STEM teachers in the state of South Dakota and in the nation. Practicing teachers need to be prepared to teach the STEM subjects in an integrative way given the current trend(s) in STEM education. Additionally, 18 schools in the first round and 25 districts in the second round in South Dakota received a STEM classroom innovation grant which provides funding for teacher training and customized learning tools. This STEM Certificate would provide the teachers in these schools, state and nation with the effective skills for integrating STEM into their subjects. The US Department of Education has identified a shortage in STEM teachers in South Dakota.² “The 2020 Vision: The South Dakota Science and Innovation Strategy” calls for creating programs to encourage STEM education at all educational levels.³

4. Who is the intended audience for the certificate program (including but not limited to the majors/degree programs from which students are expected)? Practicing elementary, middle, secondary teachers. This certificate may be stackable to the MA in Elementary Education and

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 <https://www2.ed.gov/about/offices/list/ope/pol/tsa.pdf>

³ <http://sdepscor.org/sdepscorHome/wp-content/uploads/2015/07/2020-Vision.pdf>; page 25-26

the MA in Secondary Education programs as well as the non-thesis pathways in both MS in Biology and the MS in Basic Biomedical Sciences.

5. List the courses required for completion of the certificate in the table below:⁴

Prefix	Number	Course Title	Credit Hours	New
ELED/SEED	700	STEM Methods I	3	Yes*
ELED/SEED	710	STEM Methods II	3	Yes*
ELED/SEED	720	Designing Projects & Environments in STEM Education	3	Yes*
ELED/SEED	794	Internship	3	Yes*
Subtotal			12	

The new courses in the certificate are needed due to redesign of Science, Technology, and Mathematics courses to integrate the needed concepts. Standalone content courses in each of these areas are being deleted. The new courses will also be part of modifications to the current specialization in the MA program.

6. Student Outcome and Demonstration of Individual Achievement.⁵

A. 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.*

Students will 1) demonstrate understanding of the historical and theoretical foundations of STEM education; 2) evaluate STEM pedagogy research to determine best practices in STEM education, 3) create STEM project-based learning experiences; and 4) formulate STEM project-based learning experiences.

B. Complete Appendix A – Outcomes using the system form. *Outcomes discussed below should be the same as those in Appendix A.*

See attached Appendix A.

7. Complete the following charts to indicate if the university intends to seek authorization to deliver the entire certificate at any off-campus location (e.g., UC Sioux Falls, Capital University Center, Black Hills State University-Rapid City, etc.) or intends to seek authorization to deliver the entire certificate through distance technology (e.g., as an on-line program)?⁶

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

	Yes	No	If Yes, identify delivery methods	Intended Start Date
Distance Delivery	X			August 2017

⁴ Regental system certificate programs typically are a subset of the curriculum offered in degree programs, include existing courses, and involve 9-12 credits for completion. Deviations from these guidelines require justification and approval.

⁵ Board Policy 2:23 requires certificate programs to “have specifically defined student learning outcomes.”

⁶ The accreditation requirements of the Higher Learning Commission (HLC) require Board approval for a university to offer programs off-campus and through distance delivery.

8. Additional Information:

A request to create these courses is concurrently being submitted along with this proposal.

From: Lien, Joelle L
Sent: Tuesday, May 2, 2017 9:03 AM
To: Freeburg, Beth M <Beth.Freeburg@usd.edu>; LaFave, Alan <Alan.LaFave@northern.edu>
Cc: Moran, Jim D <Jim.Moran@usd.edu>; Perry, Jay <Jay.Perry@sdbor.edu>; Turman, Paul <Paul.Turman@sdbor.edu>
Subject: Re: USD-Certificate in STM Pedagogy

Good morning, Beth.

NSU supports USD’s development of the Certificate in STM Pedagogy.

See you soon!

Joelle

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Dr. Joelle L. Lien
Associate Vice President for Academic Affairs
Director of Graduate Studies

Northern State University
205-B Spafford Hall
1200 South Jay Street
Aberdeen, South Dakota 57401

Phone: 605.626.7958
Email: Joelle.Lien@northern.edu

From: "Freeburg, Beth M" <Beth.Freeburg@usd.edu>
Subject: USD-Certificate in STM Pedagogy

Dear Provost LaFave and Associate Provost Lien,

The University of South Dakota seeks permission to offer a new certificate in Science, Technology, and Math (STM) Pedagogy. While USD has offered a specialization in Science, Technology, and Math (STM) in both our MA in Elementary Education and our MA in SEED in Secondary Education programs since 2012, school districts, our alumni, and prospective students would like this content in the form of a certificate. This certificate is responsive to the direction of the field of teaching, student learning, and educational leadership. I have attached the certificate request for your review.

NSU was granted approval for a certificate program in Science, Technology, Engineering, and Math at the December 2016 SDBOR meeting. While both of our certificate programs are in STEM, we will serve different markets. Due to the shortage for teachers in STEM, we have partnered with local school districts to work together to address the STEM shortage crisis.

Please let me know if you have any questions or concerns.

Thank you,

Elizabeth McKay Freeburg, Ed.S., Ph.D.