

**SOUTH DAKOTA BOARD OF REGENTS**

**Academic and Student Affairs**  
**Consent**

**AGENDA ITEM: 4 – E (3)**

**DATE: December 6-8, 2016**

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**SUBJECT: New Certificate: NSU Graduate STEM Certificate**

Northern State University (NSU) requests authorization to offer a graduate STEM certificate. The certificate targets K-12 educators in gaining additional expertise in science, technology, engineering, and math integration, curriculum design, and project-based learning. The certificate aligns with demonstrated needs in South Dakota related to shortages in teachers trained in STEM fields. The certificate consists of 12 credit hours; six of the credits are transferable to the master's in Education and all 12 transfer to the master's in Educational Studies.

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**DRAFT MOTION 20161206\_4-E(3):** I move to approve NSU's graduate STEM Certificate as described in Attachment I.



## SOUTH DAKOTA BOARD OF REGENTS ACADEMIC AFFAIRS FORMS

### New Certificate

Use this form to propose a certificate program at either the undergraduate or graduate level. A certificate program is a sequence, pattern, or group of academic credit courses that focus upon an area of specialized knowledge or information and develop a specific skill set. Certificate programs typically are a subset of the curriculum offered in degree programs, include previously approved courses, and involve 9-12 credit hours including prerequisites. In some cases, standards for licensure will state explicit requirements leading to certificate programs requiring more than 12 credit hours (in such cases, exceptions to course or credit requirements must be justified and approved). 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 Certificate Form to the university website for review by other universities after approval by the Executive Director and Chief Academic Officer.

<b>UNIVERSITY:</b>	<b>Northern State University</b>
<b>TITLE OF PROPOSED CERTIFICATE:</b>	<b>STEM Certificate</b>
<b>INTENDED DATE OF IMPLEMENTATION:</b>	<b>Spring 2017</b>
<b>PROPOSED CIP CODE:</b>	<b>13.1206</b>
<b>UNIVERSITY DEPARTMENT:</b>	<b>Teacher Education</b>
<b>UNIVERSITY DIVISION:</b>	<b>School of Education</b>

#### 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.*

*Alan D. Ja Fave*

9/20/16

Institutional Approval Signature

Date

*President or Chief Academic Officer of the University*

1. Is this a graduate-level certificate or undergraduate-level certificate (place an "X" in the appropriate box)?

Undergraduate Certificate

Graduate Certificate

2. What is the nature/purpose of the proposed certificate?

The NSU STEM Certificate will offer K-12 teachers in all subject areas professional development focused on STEM integration, curriculum design, and project-based learning. NSU has been in consultation with the SD Department of Education who feels we are aligning this certificate with current efforts to promote STEM education in the state.

Six of the 12 credits in this certificate will be transferrable to an NSU M.S.Ed. education degree offerings and all 12 credits could be utilized in the M.S.Ed. in Educational Studies. We feel this will promote participants continuing on for a master's degree.

**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.<sup>1</sup>**

K-12 STEM education promotes the processes of critical thinking, analysis, and collaboration. Students integrate these processes in the real world contexts of science, technology, engineering and math.

The real world skills that employers state they want new employees to possess are emphasized. Teachers who instruct utilizing the foundation of a STEM focus ensure that their students have the skills to construct explanations, understand patterns, structure and functions, and can engage in arguments supported by evidence.

This STEM certificate aligns with the major changes occurring in education and with the SD State Standards. Five courses will be offered that will focus on the pedagogy and technology skills needed by classrooms teachers to approach their work in a manner that fosters a classroom atmosphere that promotes creative problem solving, inquiry, teamwork, and innovation.

The 2020 Vision: The SD Science and Innovation Strategy speaks specifically to the need for K-12 schools to promote innovative programs that emphasize collaborative learning and knowledge-based inquiry. Twenty-first century learning skills will be promoted in the STEM coursework as an alignment to the skills needed by business and industry to strengthen SD's future economy.

(SDEPSCoR, 2013, <http://sdepacor.org/sdepacorHome/wp-content/uploads/2015/07/2020-Vision.pdf>)

Data from the US Bureau of Labor Statistics reports that employment in occupations related to STEM are projected to grow to more than 9 million positions by 2022. This is an increase of approximately 1 million jobs over the 2012 levels

(<http://www.bls.gov/opub/mlr/2013/article/occupational-employment-projections-to-2022.htm>).

Of the top 10 fastest growing professions listed by the South Dakota's Department of Labor, all have a tie to the areas of science, technology, engineering and math

([http://dlr.sd.gov/lmic/industry\\_projections.aspx](http://dlr.sd.gov/lmic/industry_projections.aspx)). All sectors of business, industry and education have demonstrated the need for a highly educated and skilled work force.

**4. Who is the intended audience for the certificate program (including but not limited to the majors/degree programs from which students are expected)?**

**Intended Audience:** Current PreK-Grade 12 classroom teachers

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<sup>1</sup> 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.

5. List the courses required for completion of the certificate in the table below:<sup>2</sup>

Prefix	Number	Course Title <i>(add or delete rows as needed)</i>	Credit Hours	New (yes, no)
EPSY	741	Psychology of Learning	3	No
ELRN	750	Teaching and Learning with Digital Technology	3	No
Elementary teachers will choose the 3 ELED courses listed below. Secondary teachers will choose 3 of the 4 SEED prefix courses listed below.				
ELED/SEED	792	*Math and Engineering Applications in the Elementary/Secondary Classroom	2	Yes
ELED/SEED	792	*Science Applications in the Elementary/Secondary Classroom	2	Yes
ELED/SEED	792	*Reading and Writing in the STEM Classroom	2	Yes
SEED	792	*Art and Music Applications in the STEM Classroom	2	Yes
Subtotal			12	

The new courses will be designed to incorporate the philosophy behind STEM—that teachers need to teach content while changing how content is shared. Classroom activities that can be utilized will be shared, but more importantly the philosophy behind this new teaching approach will be modeled, discussed, and emphasized.

\*Secondary-level teachers will have the option of choosing 6 credits from the SEED 792 two-credit offerings available.

6. Complete the following charts to indicate if the university intends to seek authorization to deliver the entire certificate at any off-campus location or intends to seek authorization to deliver the entire certificate through distance technology (e.g., as an on-line program)?<sup>3</sup>

	Yes	No	If Yes, list location(s)	Intended Start Date
<b>Off-campus</b>	X		Area schools entering into MOU's with NSU: Roncalli School, 1400 N. Dakota St. Aberdeen, SD 57401	Spring 2017

	Yes	No	If Yes, identify delivery methods	Intended Start Date
<b>Distance Delivery</b>	X		Combination of online delivery and on site	Summer 2017

<sup>2</sup> 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.

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

**7. Additional Information:**

The NSU School of Education feels this certificate will be an excellent feeder into our Master's in Teaching and Learning and our M.S.Ed. in Leadership and Administration. Six of the twelve credits are required courses for NSU M.S.Ed. education degrees. All 12 credits can be transferred into our M.S.Ed.-Educational Studies degree.

NSU received an initial inquiry from a school district in the northeastern portion of the state requesting creation and delivery of a STEM certificate. We believe this is something we can market to other schools in our area which will in turn increase our graduate student enrollments.