

SOUTH DAKOTA BOARD OF REGENTS
ACADEMIC AFFAIRS FORMS

New Certificate

UNIVERSITY:	BHSU, DSU, NSU, SDSM&T, SDSU, USD
TITLE OF PROPOSED CERTIFICATE :	Advanced Graduate Mathematics Certificate
INTENDED DATE OF IMPLEMENTATION :	8/26/2019
PROPOSED CIP CODE	27.0101
UNIVERSITY DEPARTMENT:	BHSU: DSU: DMATH NSU: SDMS&T: SDSU:

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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

1. Is this a graduate-level certificate or undergraduatelevel certificate (*reg'cp '5Zö'kp 'lj g'*) appropriate b)X

Undergraduate Certific

Graduate Certifica •

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

Dakota State University

The goal of the proposed program is very similar ~~in that it~~ to provide credentials to program completers ~~to be~~ concurrent ~~with~~ credit mathematics teachers.

In addition to requiring a total ~~of six~~ (18 credit hours) ~~they~~ also require students to complete one course from the areas of analysis, algebra, topology/geometry, applications and probability/statistics.

There are other programs ~~which~~ are similar in nature and below is a list ~~of these~~ programs with links to their programs.

Indiana University Wesleyan https://www.indwes.edu/graduate/programs/graduate_certificate/math/requirements

George Washington University <https://math.columbian.gwu.edu/graduate/mathematics>

Villanova University https://www1.villanova.edu/villanova/artsci/mathematics/academic_programs/certificate.html

Texas Tech University <https://www.depts.ttu.edu/elearning/certificate/mathematics/>

The common theme for these certificate programs is bluntly stated on the Texas Tech certificate page:³

school that has a high school math teacher with 18 graduate credit hours of math content coursework. This is a workforce development proposal.

In the August 1, 2014, a blog from the Association of School Boards of South Dakota (http://asbsd.org/index.php?option=com_content/...) was reported that 29 of the 62 spring mathematics teaching jobs in the state were still vacant as of 2/28/14. Mathematics is identified as a discipline in 2014-2017 having teacher shortages per information from DOE, SD. (<https://doe.sd.gov/oatg/shortageareas>) The June 12, 2014 blog post (http://asbsd.org/index.php?option=com_content/...) of 3 superintendents responding to the survey believed the applicant pool was inadequate.

In recent years there have been certification rule modifications which has created a larger pool of teachers that are certified to teach high school mathematics. The first of those rule changes allowed secondary math education majors to take the middle school Math Praxis exam and the most recent changes removed the Praxis exam altogether for applicants with a content major in mathematics.

This is a program that would enhance the qualifications of high school mathematics teachers.

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

The Advanced Graduate Mathematics Certificate is a program designed for current high school mathematics teachers.

B. Complete Appendix A ±Outcomes using the system formOutcomes discussed below should be the same as those in Appendix A.

7. Complete the following charts to indicate if the university intends to seek authorization to deliver the entire certificate at any offcampus 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)?⁴

	Yes/No	If Yes, list location(s), including the physical address	Intended Start Date
Off-campus	No		Click here to enter a date

	Yes/No	If Yes, identify delivery methods	Intended Start Date
DistanceDelivery	Yes		

Appendix A

Individual Student Outcomes and Program Courses

List specific individual student outcomes, knowledge and competencies in each row. Label each column with a course prefix and number. Indicate required courses with an asterisk (*). Indicate with an X the courses that will provide the student with an opportunity to acquire the knowledge or competency listed in the row. 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.

Individual Student Outcomes and Program Courses

List specific individual student outcomes

South Dakota Board of Regents
Collaborative Graduate Math Certificates Administration Guidelines

1. Collaborative Purpose

The ability to offer Graduate Certificates in Mathematics (Graduate Math and Advanced Graduate Math Certificate) students in South Dakota is of critical interest to the South Dakota Board of Regents (SDBOR). As a result, the SDBOR has established a framework within both policy and guidelines to encourage institutions to identify collaborative opportunities that will allow for the sharing of faculty resources, expertise and infrastructure to improve efficiencies and reduce unnecessary duplication. Specifically, Academic Program Certificates and Section 52 policies and guidelines have created exemptions to foster an environment for faculty across institutions to collaborate on common programs. With this purpose, the Collaborative Certificates in Mathematics provide a framework for the common delivery of graduate math courses for the graduate math certificate (both face-to-face and via distance) by Black Hills State University, Dakota State University, Northern State University, South Dakota School of Mines and Technology, South Dakota State University, and the University of South Dakota.

2. Partners & Institutional Leads

- 2.1. Participating Institutions: Black Hills State University, Dakota State University, Northern State University, South Dakota School of Mines and Technology, South Dakota State University, and the University of South Dakota.
- 2.2. Each participating institution will identify a designated institutional representative appointed by the Chief Academic Affairs Officer who will be responsible for coordinating activities with other partner institutions pursuant to the terms of this agreement.
- 2.3. Changes to the agreement may be made from time to time and must be agreed upon by the majority of designated institutional representatives.

3. Common Learning Outcomes

- 3.2.1. Participating institutions agree to develop similar assessment for each course component in the certificate programs.
- 3.2.2. The

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Graduate Math Certificate

9 graduate math credits

Required Courses (6 hours):

Abstract Component: 3 credit hours.

The following courses taught in the BOR system meet this requirement

MATH 513

MATH 514

MATH 536

MATH 537

MATH 561

MATH 713

MATH 714

MATH 716

Analytic Component: 3 credit hours.

The following courses taught in the BOR system meet this requirement

MATH 523

MATH 524

MATH 571

MATH 622

MATH 625

MATH 721

MATH 723

MATH 724

MATH 741

MATH 751

Elective Requirements (3 hours):

Any MATH or STAT content course 500 level or higher not used as the Abstract or Applied Mathematics course for this Certificate.

Advanced Graduate Math Certificate:

9 graduate math credits

Required Courses (6hours):

Abstract Component: 3 credit hours.

Approved Course Rotation for Online & On-Campus Courses

Fall Semesters:

	Fall 19	Fall 20	Fall 21	Fall 22	Fall 23
BHSU					
DSU	MATH 561(online) MATH 537(online)	MATH 513(online) MATH 537(online)	MATH 561(online) MATH 537(online)	MATH 513(online) MATH 537(online)	MATH 561(online) MATH 537(online)
NSU	MATH 512(on campus)			MATH 512(on campus)	
SDSMT					
SDSU	MATH 571 (on campus) MATH 625 (on campus) STAT 601 (online)	MATH 571 (on campus) MATH 625 (on campus) STAT 601 (online)	MATH 571 (on campus) MATH 625 (on campus) STAT 601 (online)	MATH 571 (on campus) MATH 625 (on campus) STAT 601 (online)	MATH 571 (on campus) MATH 625 (on campus) STAT 601 (online)
USD	MATH 513(on campus) MATH 524(on campus) MATH 723(on campus)	MATH 513(on campus) MATH 713(on campus)	MATH 513(on campus) MATH 524(on campus) MATH 723(on campus)	MATH 513(on campus) MATH 713(on campus)	MATH 513(on campus) MATH 524(on campus) MATH 3(on campus*)

Spring Semesters:

	Spring 19	Spring 20	Spring 21	Spring 22	Spring 23
BHSU			MATH 523(online)	MATH 513(online)	MATH 523(online)
DSU	MATH 536(online)	MATH 536(online)	MATH 536(online)	MATH 536(online)	MATH 536(online)
NSU			MATH 512(on campus)		
SDSMT					
SDSU	MATH 741 (on campus) STAT 602 (online)				

Summer Sessions:

	Summer 19	Summer 20	Summer 21	Summer 22	Summer 23
BHSU					
DSU			MATH 622(online)		MATH 622 (online)
NSU					