



**SOUTH DAKOTA BOARD OF REGENTS  
ACADEMIC AFFAIRS FORMS**

**Institutional Substantive Program Modification Requests**

**Institution:** Dakota State University **Date:** 08/14/2018

Institutional representatives should provide direct links to PDF documents for each of the program modification requests represented below. All requests should be posted on the campus Curriculum and Instruction website one week prior to the Academic Affairs Council meeting where the program modification request is being considered.

<i>Program Title</i>	<i>Approval</i>
Mathematics Education (B.S.Ed.) & Mathematics for Information Systems (B.S.)	PT

Program modifications referenced above for approval have been reviewed by the Academic Affairs Council and the System Vice President for Academic Affairs and may be advanced forward for entry in Colleague. For those program modifications listed above that did not receive approval, additional clarification or justification will be necessary and should be re-routed through the review process on a separate “Institutional Substantive Program Modification Requests” form once all issues have been resolved.

*Paul Turner*  
**Signature: System Vice President for Academic Affairs**

10/15/2018  
**Date**



**SOUTH DAKOTA BOARD OF REGENTS  
ACADEMIC AFFAIRS FORMS**

**Substantive Program Modification Program**

Use this form to request minor changes in existing programs (majors, minors, certificates, or specializations).

<b>UNIVERSITY:</b>	DSU
<b>CURRENT PROGRAM TITLE:</b>	Mathematics Education & Mathematics for Information Systems
<b>CIP CODE:</b>	27.0101
<b>UNIVERSITY DEPARTMENT:</b>	DMATH
<b>UNIVERSITY DIVISION:</b>	College of Arts and Sciences

**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.*

\_\_\_\_\_  
Vice President for Academic Affairs or  
President of the University

3/23/2018

\_\_\_\_\_  
Date

**1. This modification addresses a change in (place an "X" in the appropriate box):**

- Total credits required within the discipline       Total credits of supportive course work
- Total credits of elective course work                       Total credits required for program
- Program name     Existing specialization
- CIP Code     Other (explain below)

**Other:** In this Substantive Program Modification form, DSU is proposing collapsing two majors, 1) Math Education and 2) Math for Information Systems into one major (Mathematics) with four specializations: 1) Cryptography; 2) Intermediate Education; 3) Secondary Education; and 4) Information Systems. Further explanation is provided in question 7.

**2. Effective date of change:** Fall 2018

**3. Program Degree Level (place an "X" in the appropriate box):**

- Associate       Bachelor's       Master's       Doctoral

**4. Category (place an "X" in the appropriate box):**

Certificate  Specialization  Minor  Major

**5. If a name change is proposed, the change will occur (place an "X" in the appropriate box):**

- On the effective date for all students
- On the effective date for students new to the program (enrolled students will graduate from existing program)

**Proposed new name: Mathematics**

*Reminder: Name changes may require updating related articulation agreements, site approvals, etc.*

**6. Primary Aspects of the Modification (add lines or adjust cell size as needed):**

<i>Existing Curriculum</i>				<i>Proposed Curriculum (highlight changes)</i>			
Pref.	Nu m.	Title	Cr. Hrs.	Pref.	Nu m.	Title	Cr. Hrs.
<b>System Wide General Education Requirement</b>			<b>30</b>	<b>System Wide General Education Requirement</b> (All students are required to take MATH 123 as part of the general education requirements)			<b>30</b>
<b>Mathematics Core Requirements</b>			<b>12</b>	<b>Mathematics Core Requirements</b>			<b>12</b>
MATH	201	Introduction to Discrete Math	3	MATH	201	Introduction to Discrete Math	3
MATH	281	Introduction to Statistics	3	MATH	281	Introduction to Statistics	3
MATH	315	Linear Algebra	3	MATH	315	Linear Algebra	3
MATH	316	Discrete Mathematics	3	MATH	316	Discrete Mathematics	3
<b>Information Systems Specialization</b>				<b>Information Systems Specialization</b>			
<b>Mathematics Component</b>			<b>16</b>	<b>Mathematics Component</b>			<b>16</b>
MATH	125	Calculus II	4	MATH	125	Calculus II	4
Choose 12 credits from the following			12	Choose 12 credits from the following			12
MATH	225	Calculus III	4	MATH	225	Calculus III	4
MATH	282	Mathematics of Games	3	MATH	282	Mathematics of Games	3
MATH	318	Adv. Discrete Mathematics	3	MATH	318	Adv. Discrete Mathematics	3
MATH	321	Differential Equations	3-4	MATH	321	Differential Equations	3-4
MATH	361	Modern Geometry	3	MATH	361	Modern Geometry	3
MATH	381	Intro to Probability and Stats	3-4	MATH	381	Intro to Probability and Stats	3-4
MATH	413	Abstract Algebra I	3	MATH	413	Abstract Algebra I	3
MATH	418	Mathematical Modeling	3	MATH	418	Mathematical Modeling	3
				MATH	436	Number Theory and Cryptography	3
				MATH	437	Cryptography and Codes	3
MATH	471	Numerical Analysis I	3	MATH	471	Numerical Analysis I	3
MATH	475	Operations Research	3	MATH	475	Operations Research	3
MATH	492	Topics	1-6*	MATH	492	Topics	1-6*
MATH	498	Undergrad Research/Scholarship	1-6	MATH	498	Undergrad Research/Scholarship	1-6
*May be repeated provided student does not enroll in the same topics course.				*May be repeated provided student does not enroll in the same topics course.			
<b>Computer Information Systems Minor</b>			<b>24</b>	<b>Computer Information Systems Minor</b>			<b>24</b>
<b>Minor (Biology, Business Administration, Chemistry, Computer Forensics, Cyber Operations, Computer Science, Physics)</b>			<b>18-21</b>	<b>Minor (Biology, Business Administration, Chemistry, Computer Forensics, Cyber Operations, Computer Science, Physics)</b> (Non-teaching majors must choose one of the above minors)			<b>18-21</b>
<b>Electives</b>			<b>17-20</b>	<b>Electives</b>			<b>17-20</b>

Students obtaining a degree in Computer Science, Computer Game Design, Physical Science, Biology, or Biology Education only need to complete the Mathematics component of the program to obtain a second major in Mathematics with a specialization in Computational Sciences.


**Secondary Education Specialization**

<b>Mathematics Component</b>			<b>23</b>
MATH	125	Calculus II	4
MATH	341	Math Concepts for Teachers I	3
MATH	342	Math Concepts for Teachers II	3
MATH	361	Modern Geometry	3
MATH	413	Abstract Algebra	3
MATH	488	Capstone	1
Choose 6 credits from the following			6
MATH	225	Calculus III	4
MATH	282	Mathematics of Games	3
MATH	318	Adv. Discrete Mathematics	3
MATH	321	Differential Equations	3-4
MATH	381	Intro to Probability and Stats	3-4
MATH	418	Mathematical Modeling	3
MATH	471	Numerical Analysis I	3
MATH	475	Operations Research	3
MATH	492	Topics	1-6*
MATH	498	Undergrad Research/Scholarship	1-6

\*May be repeated provided student does not enroll in the same topics course.

**K-12 Educational Technology Minor**          **18-19**

Students obtaining a degree in Computer Science, Computer Game Design, Cyber Operations, Physical Science, or Biology need only complete the Mathematics Core (12 cr.) and the Mathematics Component (16 cr.) with a specialization in Information Systems to earn this as a second major.

**Cryptography Specialization**

<b>Mathematics Component</b>			<b>25</b>
MATH	125	Calculus II	4
MATH	381	Intro to Probability and Stats	3-4
MATH	413	Abstract Algebra I	3
MATH	436	Number Theory and Cryptography	3
MATH	437	Cryptography and Codes	3
Choose 9 credits from the following			6
MATH	225	Calculus III	4
MATH	282	Mathematics of Games	3
MATH	318	Adv. Discrete Mathematics	3
MATH	321	Differential Equations	3-4
MATH	361	Modern Geometry	3
MATH	471	Numerical Analysis I	3
MATH	475	Operations Research	3
MATH	492	Topics	1-6*
MATH	498	Undergrad Research/Scholarship	1-6

\*May be repeated provided student does not enroll in the same topics course.

**Computer Science Minor**          **18**  
**Cyber Operations Minor**      **18**  
**Electives**                              **20**

Students obtaining a degree in Computer Science or Cyber Operations need only complete the Mathematics Core (12 cr.) and the Mathematics Component of the Cryptography Specialization (25 cr.) to earn math as a second major.

**Secondary Education Specialization**

(Student must take EPSY 210 & INED 211 as part of the general education requirements)

<b>Mathematics Component</b>			<b>23</b>
MATH	125	Calculus II	4
MATH	341	Math Concepts for Teachers I	3
MATH	342	Math Concepts for Teachers II	3
MATH	361	Modern Geometry	3
MATH	413	Abstract Algebra	3
MATH	488	Capstone	1
Choose 6 credits from the following			6
MATH	225	Calculus III	4
MATH	282	Mathematics of Games	3
MATH	318	Adv. Discrete Mathematics	3
MATH	321	Differential Equations	3-4
MATH	381	Intro to Probability and Stats	3-4
MATH	418	Mathematical Modeling	3
MATH	436	Number Theory and Cryptography	3
MATH	437	Cryptography and Codes	3
MATH	471	Numerical Analysis I	3
MATH	475	Operations Research	3
MATH	492	Topics	1-6*
MATH	498	Undergrad Research/Scholarship	1-6

\*May be repeated provided student does not enroll in the same topics course.

**K-12 Educational Technology Minor**          **18-19**

CSC	105	Introduction to Computers	3	CSC	105	Introduction to Computers	3
CIS	350	Computer Hardware, Data Communications and Networking	3	CIS	350	Computer Hardware, Data Communications and Networking	3
EDFN	365	Computer-Based Technology & Learning	3	EDFN	365	Computer-Based Technology & Learning	3
SEED	401	Methods of Educational Tech	1	SEED	401	Methods of Educational Technology	1
Choose one course from the following				Choose one course from the following			
CIS	123	Problem Solving and Programming	3	CIS	123	Problem Solving and Programming	3
CIS	130	Visual Basic Programming					
CSC	150	Computer Science I					
Choose three courses from the following				Choose three courses from the following			
CIS	206	Advanced Applications:	3	CIS	206	Advanced Applications:	3
CIS	207	Advanced Applications: Spreadsheet					
CIS	208	Advanced Applications: Database					
CIS	209	Advanced Applications: SAS					
CIS	210	Quickbooks					
Choose one course from the following				Choose one course from the following			
SEED	301	Technology for Math Teachers	2-3	SEED	301	Technology for Math Teachers	2-3
EDER	415	Educational Assessment					
ELED	422	K-8 Science and Math Technology					
<b>Education Component</b>			<b>27</b>	<b>Education Component</b>			<b>27</b>
SPED	100	Introduction to Persons with Exceptionalities	3	SPED	100	Introduction to Persons with Exceptionalities	3
EDFN	338	Foundations of American Ed	2	EDFN	338	Foundations of American Ed	2
EDFN	475	Human Relations	3	EDFN	475	Human Relations	3
EPSY	302	Educational Psychology	3	EPSY	302	Educational Psychology	3
SEED	295	Practicum	1	SEED	295	Practicum	1
SEED	302	Secondary/Middle/Content Area Major	2	SEED	302	Secondary/Middle/Content Area Major	2
SEED	440	Classroom Management	2	SEED	440	Classroom Management	2
SEED	450	Reading and content Literacy	3	SEED	450	Reading and content Literacy	3
SEED	488	7-12 Student Teaching	8	SEED	488	7-12 Student Teaching	8
<b>Electives</b>			<b>9-10</b>	<b>Electives</b>			<b>9-10</b>
				<b>Intermediate Education Specialization</b> (Student must take EPSY 210 & INED 211 as part of the general education requirements)			
				<b>Mathematics Component</b>			
				<b>16</b>			
SEED	301	Technology for Math Teachers	3	SEED	301	Technology for Math Teachers	3
MATH	341	MATH Concepts for Teachers I	3	MATH	341	MATH Concepts for Teachers I	3
MATH	342	Math Concepts for Teachers II	3	MATH	342	Math Concepts for Teachers II	3
MATH	361	Modern Geometry	3	MATH	361	Modern Geometry	3
ELED	422	K-8 Science and Math Technology	3	ELED	422	K-8 Science and Math Technology	3
MATH	488	Capstone	1	MATH	488	Capstone	1
				<b>K-12 Educational Technology Minor</b>			
				<b>18</b>			
CSC	105	Introduction to Computers	3	CSC	105	Introduction to Computers	3
EDER	415	Educational Assessment	2	EDER	415	Educational Assessment	2
CIS	350	Computer Hardware, Data Communications and Networking	3	CIS	350	Computer Hardware, Data Communications and Networking	3
EDFN	365	Computer-Based Technology & Learning	3	EDFN	365	Computer-Based Technology & Learning	3
SEED	401	Methods of Educational Technology	1	SEED	401	Methods of Educational Technology	1
Choose one of the following courses				Choose one of the following courses			
CIS	123	Problem Solving and Programming	3	CIS	123	Problem Solving and Programming	3
CIS	130	Visual Basic Programming					
CSC	150	Computer Science I					
Choose three of the following courses				Choose three of the following courses			
CIS	206	Advanced Applications	3	CIS	206	Advanced Applications	3
CIS	207	Advanced Applications Spreadsheet					
CIS	208	Advanced Applications: Database					
CIS	209	Advanced Applications: SAS					

					CIS	210	QuickBooks	
					<b>Education Component</b>			<b>28</b>
					SPED	100	Introduction to Persons with Exceptionalities	3
					EDFN	338	Foundations of American Ed	2
					EDFN	475	Human Relations	3
					EPSY	300	Survey of Middle Level Education	1
					EPSY	302	Educational Psychology	3
					SEED	295	Practicum	1
					SEED	302	Secondary/Middle/Content Area Major	2
					SEED	440	Classroom Management	2
					SEED	450	Reading and content Literacy	3
					SEED	488	7-12 Student Teaching	8
							<b>Electives</b>	<b>16</b>

### 7. Explanation of the Change:

The current Mathematics for Information Systems and Mathematics Education programs are both programs that constitute a major in mathematics, a computer related minor and the equivalent of a second minor. Therefore we propose merging the programs under the Mathematics title and distinguish them through specializations. The purpose of the additional specialization in Intermediate Education is to retain students wanting to teach mathematics but at another level. Currently the only viable option to teach high school mathematics besides getting a secondary math degree, is to become certified as a teacher in the state (major in a non-math related degree program), then take the middle school Praxis exam to earn the Intermediate Math Education endorsement to complement their initial certification. This alternative program will also enable the department of education to bolster the requirements to earn an intermediate math endorsement in the future if they so choose. The goal of the additional specialization in Cryptography is to increase the number of students majoring in Computer Science to earn a double major in Mathematics.