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|  | **SOUTH DAKOTA BOARD OF REGENTS**  ACADEMIC AFFAIRS FORMS |
| Minor Program Modification |
|  |  |

Use this form to request minor changes in existing programs (majors, minors, certificates, or specializations). The university Vice President for Academic Affairs approves minor program modifications and they are included in the Annual Minor Program Modification Summary form.

|  |  |
| --- | --- |
| **UNIVERSITY:** | DSU |
| **PROGRAM TITLE:** | Mathematics, BS |
| **CIP CODE:** | 27.0101 |
| **UNIVERSITY DEPARTMENT:** | College of Arts and Science |
| **BANNER DEPARTMENT CODE:** | DAS |
| **UNIVERSITY DIVISION:** | Science |
| **BANNER DIVISION CODE:** | DSCI |

**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.*

|  |  |  |
| --- | --- | --- |
| A picture containing text  Description automatically generated |  | 5/4/2023 |
| Vice President of Academic Affairs or President of the University |  | Date |

|  |
| --- |
|  |

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

|  |  |  |  |
| --- | --- | --- | --- |
|  | Course *deletions* that do not change the nature of the program, or distribution of courses in the program, or change of total credit hours required |  | Course *additions* that do not change the nature of the program, or distribution of courses in the program, or change of total credit hours required |
|  |  |  |  |
|  | Revised courses in the program. |  |  |

1. **Effective date of change: 5/8/2023**
2. **Program Degree Level (*place an “X” in the appropriate box*):**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Associate |  | Bachelor’s |  | Master’s |  | Doctoral |  |

1. **Category (*place an “X” in the appropriate box*):**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Certificate |  | Specialization |  | Minor |  | Major |  |

1. **Is the program associated with a current articulation agreement?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yes |  |  | No |  |

* 1. **If yes, will the articulation agreement need to be updated with the partner institution as a result of this minor program modification? Why or why not?**

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Existing Curriculum* | | | |  | *Proposed Curriculum (highlight changes)* | | | |
| **Pref.** | **Num.** | **Title** | **Cr. Hrs.** |  | **Pref.** | **Num.** | **Title** | **Cr. Hrs.** |
|
| **System Wide General Education Requirement**  (All students are required to take MATH 123 as part of the general education requirements) | | | **30** |  | **System Wide General Education Requirement**  (All students are required to take MATH 123 as part of the general education requirements) | | | **30** |
|  | | | |  |  | | | |
| **Mathematics Core Requirements** | | | **12** |  | **Mathematics Core Requirements** | | | **12** |
| 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 |
|  | | |  |  |  | | |  |
| **Information Systems Specialization** | | |  |  | **Information Systems Specialization** | | |  |
|
| Mathematics Component | | | 16 |  | Mathematics Component | | | 16 |
| 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 | 436 | Number Theory and Cryptography | 3 |
| MATH | 437 | Cryptography and Codes | 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 | 6-Jan |  | MATH | 498 | Undergrad Research/Scholarship | 6-Jan |
| \*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. | | | |
| **Computer Information Systems Minor** | | | **24** |  | **Computer Information Systems Minor** | | | **24** |
| **Minor (Biology, Business Administration, Chemistry, Computer Forensics, Cyber Operations, Computer Science, Physics)** | | | **18-21** |  | **Minor (Biology, Business Administration, Chemistry, Computer Forensics, Cyber Operations, Computer Science, Physics)** | | | **18-21** |
|  | **Electives** | | **17-20** |  |  | **Electives** | | **17-20** |
| ~~Students obtaining a degree in Computer Science, Computer Game Design, Cyber Operations, Physical Science, or Biology only need to complete the Mathematics Core and the Mathematics component of the Mathematics with a specialization in~~ **~~Information Systems~~** ~~major to earn this as a second major.~~ | | | |  | Students obtaining a Bachelor’s degree from DSU only need to complete the Mathematics Core and the Mathematics component of the Mathematics with a specialization in Information Systemsmajor to earn this as a second major. | | | |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Cryptography Specialization** | | |  |  | **Cryptography Specialization** | | |  |
|
| **Mathematics Component** | | | **25** |  | **Mathematics Component** | | | **25** |
| MATH | 125 | Calculus II | 4 |  | MATH | 125 | Calculus II | 4 |
| 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 | 436 | Number Theory and Cryptography | 3 |  | MATH | 436 | Number Theory and Cryptography | 3 |
| MATH | 437 | Cryptography and Codes | 3 |  | MATH | 437 | Cryptography and Codes | 3 |
| Choose 9 credits from the following | | | 9 |  | Choose 9 credits from the following | | | 9 |
| MATH | 225 | Calculus III | 4 |  | MATH | 225 | Calculus III | 4 |
| 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 | 418 | Mathematical Modeling | 3 |  | MATH | 418 | Mathematical Modeling | 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. | | | |
|  | **Computer Science Minor** | | **18** |  |  | **Computer Science Minor** | | **18** |
|
|  | **Cyber Operations Minor** | | **18** |  |  | **Cyber Operations Minor** | | **18** |
|
|  | **Electives** | | **17** |  |  | **Electives** | | **17** |
| ~~Students obtaining a degree in Computer Science or Cyber Operations only need to complete the Mathematics Core and the Mathematics component of the Mathematics with a specialization in Cryptography major to earn this as a second major.~~ | | | |  | Students obtaining a Bachelor’s degree from DSU only need to complete the Mathematics Core and the Mathematics component of the Mathematics with a specialization in Cryptography major to earn this as a second major. | | | |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Secondary Education Specialization** | | |  |  | **Secondary Education Specialization** | | |  |
| (Student must take EPSY 210 & INED 211 as part of the general education requirements) | | | (Student must take EPSY 210 & INED 211 as part of the general education requirements) | | |
|  | **Mathematics Component** | | **23** |  |  | **Mathematics Component** | | **23** |
| MATH | 125 | Calculus II | 4 |  | MATH | 125 | Calculus II | 4 |
| 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 |
| MATH | 413 | Abstract Algebra | 3 |  | MATH | 413 | Abstract Algebra | 3 |
| MATH | 488 | Capstone | 1 |  | MATH | 488 | Capstone | 1 |
| Choose 6 credits from the following | | | 6 |  | Choose 6 credits from the following | | | 6 |
| 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 | 381 | Intro to Probability and Stats | 3-4 |  | MATH | 381 | Intro to Probability and Stats | 3-4 |
| MATH | 418 | Mathematical Modeling | 3 |  | MATH | 418 | Mathematical Modeling | 3 |
| MATH | 436 | Number Theory and Cryptography | 3 |  | MATH | 436 | Number Theory and Cryptography | 3 |
| MATH | 437 | Cryptography and Codes | 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. | | | |
|  |  |  |  |  |  |  |  |  |
| **K-12 Educational Technology Minor** | | | **18-19** |  | **K-12 Educational Technology Minor** | | | **18-19** |
| CSC | 105 | Introduction to Computers | 3 |  | CSC | 105 | Introduction to Computers | 3 |
| Choose one course from the following | | | 3 |  | Choose one course from the following | | | 3 |
| CIS | 123 | Problem Solving and Programming |  | CIS | 123 | Problem Solving and Programming |
| CIS | 130 | Visual Basic Programming |  | CIS | 130 | Visual Basic Programming |
| CSC | 150 | Computer Science I |  | CSC | 150 | Computer Science I |
| Choose three courses from the following | | | 3 |  | Choose three courses from the following | | | 3 |
| CIS | 206 | Advanced Applications: |  | CIS | 206 | Advanced Applications: |
| CIS | 207 | Advanced Applications: Spreadsheet |  | CIS | 207 | Advanced Applications: Spreadsheet |
| CIS | 208 | Advanced Applications: Database |  | CIS | 208 | Advanced Applications: Database |
| CIS | 209 | Advanced Applications: SAS |  | CIS | 209 | Advanced Applications: SAS |
| CIS | 210 | Quickbooks |  | CIS | 210 | Quickbooks |
| Choose one course from the following | | | 2-3 |  | Choose one course from the following | | | 2-3 |
| SEED | 301 | Technology for Math Teachers |  | SEED | 301 | Technology for Math Teachers |
| EDER | 415 | Educational Assessment |  | EDER | 415 | Educational Assessment |
| ELED | 422 | K-8 Science and Math Technology |  | ELED | 422 | K-8 Science and Math Technology |
| 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 |
|  |  |  |  |  |  |  |  |  |
| **Education Component** | | | **27** |  | **Education Component** | | | **27** |
| 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 |
| **Electives** |  |  | **9-10** |  | **Electives** |  |  | **9-10** |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Intermediate Education Specialization** | | |  |  | **Intermediate Education Specialization** | | |  |
| (Student must take EPSY 210 & INED 211 as part of the general education requirements) | | | (Student must take EPSY 210 & INED 211 as part of the general education requirements) | | |
| **Mathematics Component** | | | **16** |  | **Mathematics Component** | | | **16** |
| 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 |
|  |  |  |  |  |  |  |  |  |
| **K-12 Educational Technology Minor** | | | **18** |  | **K-12 Educational Technology Minor** | | | **18** |
| CSC | 105 | Introduction to Computers | 3 |  | CSC | 105 | Introduction to Computers | 3 |
| Choose one of the following courses | | | 3 |  | Choose one of the following courses | | | 3 |
| CIS | 123 | Problem Solving and Programming |  | CIS | 123 | Problem Solving and Programming |
| CIS | 130 | Visual Basic Programming |  | CIS | 130 | Visual Basic Programming |
| CSC | 150 | Computer Science 1 |  | CSC | 150 | Computer Science 1 |
| Choose three of the following courses | | | 3 |  | Choose three of the following courses | | | 3 |
| CIS | 206 | Advanced Applications: |  | CIS | 206 | Advanced Applications: |
| CIS | 207 | Advanced Applications Spreadsheet |  | CIS | 207 | Advanced Applications Spreadsheet |
| CIS | 208 | Advanced Applications: Database |  | CIS | 208 | Advanced Applications: Database |
| CIS | 209 | Advanced Applications: SAS |  | CIS | 209 | Advanced Applications: SAS |
| CIS | 210 | Quickbooks |  | CIS | 210 | Quickbooks |
| 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 |
| 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 |
|  |  |  |  |  |  |  |  |  |
| **Education Component** | | | **28** |  | **Education Component** | | | **28** |
| 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 | 300 | Survey of Middle Level Education | 1 |  | EPSY | 300 | Survey of Middle Level Education | 1 |
| 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 |
|  |  |  |  |  |  |  |  |  |
|  | **Electives** |  | **16** |  |  | **Electives** |  | **16** |
|  |  |  |  |  |  |  |  |  |
|  |  | |  |  |  |  | |  |

1. **Explanation of the Change:**

The current Information Systems specialization of the mathematics degree allows a student to double major in Mathematics (Information Systems specialization) and Computer Science, Computer Game Design, Cyber Operations, Physical Science, or Biology provided they complete the Mathematics Core and the Mathematics components of the Information Systems specialization within the Mathematics degree.

Moreover, the current Cryptography specialization of the mathematics degree allows a student to double major in Mathematics (Cryptography specialization) and Computer Science or Cyber Operations provided they complete the Mathematics Core and the Mathematics components of the Cryptography specialization within the Mathematics degree.

To account for new degree programs (e.g., AI) and termination of degree programs (e.g., Physical Science/Analytical Science) as well as streamline the language, any student is eligible to double major in Mathematics (Information System or Cryptography specialization) provided they complete the degree requirements of their major and the Mathematics Core and Mathematics components of the Information Systems or Cryptography specialization within the Mathematics degree.