Action Requested:


Create New (SCHEV approval required except for minors) Inactivate Existing
Modify Existing (check all that apply)
Title (SCHEV approval required except for minors)

| $x$ |
| :---: |
| x |
|  |
|  | Concentration (Choose one): $\square$ Add $\square$ Delete $\quad \mathrm{x}$ Modify Degree Requirements

$\square$
Admission Standards/ Application Requirements
Other Changes: $\qquad$

Type (Check one):


Ph.D.
Undergraduate Certificate*
Graduate Certificate*
Other:

College/School: Submitted by: $\square$
2015
Please note: For students to be admitted to a new degree, minor, certificate or concentration, the program must be fully approved, entered into Banner, and published in the University Catalog.

Justification: (attach separate document if necessary)

1. Option of MATH 302 or MATH 312
2. Adding "Mason Core and Elective Credits" and "Mason Core" sections in order to have the catalog listing clearly show how the degree equals 120 credits and how the Mason Core requirements can be fulfilled.

Program Title: (Required) Title must identify subject matter. Do not include name of college/school/dept. Concentration(s):

Admissions Standards / Application Requirements: (Required only if different from those listed in the University Catalog)

## Degree Requirements:

Consult University Catalog for models, attach separate document if necessary using track changes for modifications

Courses offered via distance: (if applicable)

TOTAL CREDITS REQUIRED:

| Existing | New/Modified |
| :---: | :---: |
| Mathematics, BS |  |
| 1. MTHE |  |
| 1. MATH 302 <br> 2. $\quad$ [Mason Core and Electives section not <br> included] | 1. MATH 302 or MATH 312 <br> 2. <br> listing attached. |

*For Certificates Only: Indicate whether students are able to pursue on a
Full-time basis
Approval Signatures

| Department | Date | College/School | Date | Provost's Office <br> Required for Minors and Interdisciplinary Programs |
| :--- | :--- | :--- | :--- | :--- |

If this program may impact another unit or is in collaboration with another unit at Mason, the originating department must circulate this proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.

| Unit Name | Unit Approval Name | Unit Approver's Signature | Date |
| :--- | :--- | :--- | :--- |
|  |  |  |  |
|  |  |  |  |

## For Graduate Programs Only

## Program Proposal Submitted to the College of Science Curriculum Committee (COSCC)

The form above is processed by the Office of the University Registrar. This second page is for the COSCC's reference.
Please complete the applicable portions of this page to clearly communicate what the form above is requesting.

FOR ALL PROGRAMS (required)
Program Title: Mathematics, BS

Date of Departmental Approval: 3/11/2015

## FOR INACTIVATED PROGRAMS (required if inactivating a program)

- Reason for Inactivation:


## FOR MODIFIED PROGRAMS (required if modifying a program)

- Summary of the Modification: Option of MATH 302 or MATH 312 and adding "Mason Core and Elective Credits" and "Mason Core" sections.
- Text before Modification (title, degree requirements, etc.): Sections weren't included.
- Text after Modification (title, degree requirements, etc.): See attached.
- Reason for the Modification: In order to have the catalog listing clearly show how the degree equals 120 credits and how the Mason Core requirements can be fulfilled.

FOR NEW PROGRAMS (required if creating a new program)

- Reason for the New Program:
- Relationship to Existing Programs:
- Relationship to Existing Courses:
- Semester of Initial Offering:
- Insert Tentative SCHEV Proposal Below


## 2015-2016 University Catalog \{working\}

## Mathematics, BS

## Banner Code: SC-BS-MATH

This program of study is offered by the Department of Mathematical Sciences in the College of Science.
Students may select an optional concentration in actuarial mathematics (ACTM), applied mathematics (AMT), mathematics education (MTHE) or mathematical statistics (MTHS). Students who do not select a concentration study traditional mathematics.

Students must fulfill all requirements for bachelor's degrees including the Mason Core. In addition, students majoring in mathematics must satisfy the requirements listed below. These courses satisfy the Mason Core requirements in 'Quantitative Reasoning' and 'Natural Sciences'. A maximum of 6 credits of grades below 2.00 in coursework designated MATH may be applied toward the major.

MATH 290 meets the writing intensive requirement for this major.
The department recommends proficiency in French, German, or Russian.
Note: Students intending to enter graduate school in mathematics are strongly advised to take MATH 315 and MATH 321.
This undergraduate program offers students the option of applying to the Mathematics, BS/ Mathematics, Accelerated MS or the Mathematics, BA or BS/ Curriculum and Instruction, Accelerated MEd, (Secondary Education Mathematics Concentration); see each listing for specific requirements.

Students should carefully read the General Notes on Undergraduate MATH Courses section of this catalog before registering for courses.

## Degree Requirements

## Mathematics Core (23 credits)

- MATH 113 - Analytic Geometry and Calculus I Credits: 4 (Mason Core: Quantitative Reasoning course)
- MATH 114 - Analytic Geometry and Calculus II Credits: 4
- MATH 203 - Linear Algebra Credits: 3
- MATH 213 - Analytic Geometry and Calculus III Credits: 3 or MATH 215 - Analytic Geometry and Calculus III (Honors) Credits: 3
- MATH 214 - Elementary Differential Equations Credits: 3 or MATH 216 - Theory of Differential Equations Credits: 3
- MATH 290 - Introduction to Advanced Mathematics Credits: 3 (fulfills writing intensive requirement)
- MATH 322 - Advanced Linear Algebra Credits: 3


## Science (8 credits)

All students in the major choose a one-year sequence of a laboratory science from the following Mason Core: Natural Science courses:

Chemistry Sequence:

- CHEM 211- General Chemistry Credits: 4
- CHEM 212 - General Chemistry Credits: 4 Geology Sequence:
- GEOL 101- Introductory Geology I Credits: 4
- GEOL 102 - Introductory Geology II Credits: 4

Physics Sequence:

- PHYS 160 - University Physics I Credits: 3 and PHYS 161- University Physics I Laboratory Credits: 1
- PHYS 260 - University Physics II Credits: 3 and PHYS 261- University Physics II Laboratory Credits: 1


## Computational Skills (4 credits)

All students in the major take:

- CS 112 - Introduction to Computer Programming Credits: 4


## BS without Concentration (28-32 credits)

In addition to the mathematics core, science, and computational skills requirements listed above, students who are not choosing a concentration must complete the following coursework:

## Traditional Mathematics

- MATH 125 - Discrete Mathematics I Credits: 3 (Mason Core: Quantitative Reasoning course)
- MATH 315 - Advanced Calculus I Credits: 3
- MATH 316 - Advanced Calculus II Credits: 3
- MATH 321- Abstract Algebra Credits: 3 or MATH 431- Topology Credits: 3
- 12 additional credits of MATH courses numbered above 300 (excluding MATH 400)


## Additional Science

Select additional science credits from one of the following three options:

1. A second sequence from the choices under "Science ( 8 credits)" above
2. 6 credits from more advanced courses in chemistry, geology, or physics (but only courses acceptable for credit toward a natural science major)
3. The 4-credit option of PHYS 262 - University Physics III Credits: 3 and PHYS 263 - University Physics III Laboratory Credits: 1

Without Concentration Total: 28-32 credits

## BS with Concentration (28-47 credits)

In addition to the mathematics core, science, and computational skills requirements listed above, students may select an optional concentration in actuarial mathematics (ACTM), applied mathematics (AMT), mathematical statistics
(MTHS), or mathematics education (MTHE).

## ^ Concentration in Actuarial Mathematics (ACTM)

- MATH 351- Probability Credits: 3
- MATH 352 - Statistics Credits: 3
- MATH 551- Regression and Time Series Credits: 3
- MATH 554 - Financial Mathematics Credits: 3
- MATH 555-Actuarial Modeling I Credits: 3
- MATH 556 - Actuarial Modeling II Credits: 3
- ACCT 203 - Survey of Accounting Credits: 3
- ECON 103-Contemporary Microeconomic Principles Credits: 3
- ECON 306 - Intermediate Microeconomics Credits: 3 or ECON 310 - Money and Banking Credits: 3 or FNAN 321-Financial Institutions Credits: 3
For mathematics majors, the Department of Economics has agreed to waive the ECON 104 prerequisite for ECON 306
- STAT 362 - Introduction to Computer Statistical Packages Credits: 3

Select two from the following three courses:

- MATH 441- Deterministic Operations Research Credits: 3
- MATH 442 - Stochastic Operations Research Credits: 3
- MATH 446 - Numerical Analysis I Credits: 3


## ACTM Concentration Total: $\mathbf{3 6}$ credits

© Concentration in Applied Mathematics (AMT)

- MATH 125 - Discrete Mathematics I Credits: 3 (Mason Core: Quantitative Reasoning course)
- MATH 315 - Advanced Calculus I Credits: 3
- MATH 351- Probability Credits: 3
- MATH 413 - Modern Applied Mathematics I Credits: 3
- MATH 414 - Modern Applied Mathematics II Credits: 3
- MATH 446 - Numerical Analysis I Credits: 3
- 6 credits of MATH courses numbered above 300 (excluding MATH 400)
- Select additional science credits from one of the following three options:

1. A second sequence from the choices under "Science (8 credits)" above
2. 6 credits from more advanced courses in chemistry, geology, or physics (but only courses acceptable for credit toward a natural science major)
3. The 4-credit option of PHYS 262 - University Physics III Credits: 3 and PHYS 263 - University Physics III Laboratory Credits: 1

## AMT Concentration Total: 28-32 credits

## Concentration in Mathematical Statistics (MTHS)

- MATH 125 - Discrete Mathematics I Credits: 3 (Mason Core: Quantitative Reasoning course)
- MATH 315 - Advanced Calculus I Credits: 3
- MATH 351- Probability Credits: 3
- MATH 352 - Statistics Credits: 3
- MATH 453 - Advanced Mathematical Statistics Credits: 3
- MATH 551- Regression and Time Series Credits: 3
- STAT 362 - Introduction to Computer Statistical Packages Credits: 3

Select two from the following courses:

- STAT 455 - Experimental Design Credits: 3
- STAT 463 - Introduction to Exploratory Data Analysis Credits: 3
- STAT 474 - Introduction to Survey Sampling Credits: 3
- Select additional science credits from one of the following three options:

1. A second sequence from the choices under "Science ( 8 credits)" above
2. 6 credits from more advanced courses in chemistry, geology, or physics (but only courses acceptable for credit toward a natural science major)
3. The 4-credit option of PHYS 262 - University Physics III Credits: 3 and PHYS 263 - University Physics III Laboratory Credits: 1

## MTHS Concentration Total: 31-35 credits

## © Concentration in Mathematics Education (MTHE)

A grade of ' $C$ ' or better is required for all licensure coursework.

- MATH 125 - Discrete Mathematics I Credits: 3 (Mason Core: Quantitative Reasoning course)
- MATH 302 - Foundations of Geometry Credits: 3 or MATH 312 - Geometry Credits: 3
- MATH 315 - Advanced Calculus I Credits: 3
- MATH 321- Abstract Algebra Credits: 3
- MATH 351- Probability Credits: 3
- EDCI 372 - Teaching Mathematics in the Secondary School Credits: 3
- EDCI 472 - Advanced Methods for Teaching Mathematics in the Secondary School Credits: 3
- EDCI 490 - Student Teaching in Education Credits: 6 (Mason Core: Synthesis course)
- EDRD 419 - Literacy in the Content Areas Credits: 3
- EDUC 372 - Human Development, Learning, and Teaching Credits: 3 (Mason Core: Social and Behavioral Science course)
- EDUC 422 - Foundations of Secondary Education Credits: 3
- One 3-credit MATH course numbered above 300 (excluding MATH 400)
- Select additional science credits from one of the following three options:

1. A second sequence from the choices under "Science (8 credits)" above
2. 6 credits from more advanced courses in chemistry, geology, or physics (but only courses acceptable for credit toward a natural science major)
3. The 4-credit option of PHYS 262 - University Physics III Credits: 3 and PHYS 263 - University Physics III Laboratory Credits: 1

## MTHE Concentration Total: 43-47 credits

## Mason Core and Elective Credits (38-57 credits)

Core requirements (outlined below). Once those and all requirements for bachelor's degrees are met, any remaining credits may be completed by elective courses. Students are strongly encouraged to consult with their advisor to ensure that they fulfill all requirements.

- Without concentration: 53-57 credits
- ACTM concentration: 49 credits
- AMT concentration: 53-57 credits
- MTHS concentration: 50-54 credits
- MTHE concentration: 38-42 credits


## Mason Core

Please note that some Mason Core requirements may already be fulfilled by the major requirements listed above.
Expand each item below for a link to specific course lists for each category:

## Foundation Requirements (15-19 credits)

- Mason Core UWCU - Written Communication Credits: 6
- Mason Core UOC - Oral Communication Credits: 3
- Mason Core UQR - Quantitative Reasoning Credits: 3
- Mason Core UITC - Information Technology Credits: 3-7


## Core Requirements (22 credits)

- Mason Core UFA - Arts Credits: 3
- Mason Core UGU - Global Understanding Credits: 3
- Mason Core ULIT - Literature Credits: 3
- Mason Core UNSL - Natural Science Credits: 7
- Mason Core USBS - Social and Behavioral Sciences Credits: 3
- Mason Core UWC - Western Civilization/Western History Credits: 3


## Synthesis/Capstone Requirement (minimum 3 credits)

- Mason Core USYN - Synthesis/ Capstone Credits: minimum 3


## Degree Total: Minimum 120 credits

