Program Change Request

Date Submitted: 11/08/19 10:35 am

Viewing: SC-BS-MATH : Mathematics, BS

Last approved: 03/27/19 9:11 am

Last edit: 11/08/19 10:34 am

Changes proposed by: jbazaz

Catalog Pages Using this Program

Mathematics, BS

Are you completing this form on someone else's behalf?

Yes

Requestor:

Name	Extension	Email
Igor Griva	4511	igriva

Effective Catalog: 2020-2021

Program Level: Undergraduate

Program Type: Bachelor's

Degree Type: Bachelor of Science

Title: Mathematics, BS

Banner Title: Mathematics, BS

Registrar/OAPI Use Only – SCHEV Status Approved

Registrar's Office Use Only – Program Start Term

Registrar/OAPI Use Only – SCHEV

In Workflow

1. **MATH Chair**
2. **SC Curriculum Committee**
3. SC Associate Dean
4. SC CAT Editor
5. Assoc Provost-Undergraduate
6. Registrar-Programs: Duration
7. Registrar-Programs

Approval Path

1. 11/13/19 3:21 pm David Walnut (dwalnut): Approved for MATH Chair

History

1. Nov 21, 2017 by clmig-jwehrheim
2. Nov 21, 2017 by clmig-jwehrheim
3. Jan 17, 2018 by Rebekah Zacharias (rzachari)

Letter

Concentration(s):

4. Feb 7, 2018 by Rebekah Zacharias (rzachari)
5. Mar 1, 2018 by Jennifer Bazaz Gettys (jbazaz)
6. Feb 8, 2019 by Jennifer Bazaz Gettys (jbazaz)
7. Mar 27, 2019 by Tory Sarro (vsarro)

	Associated Concentrations	Registrar's Office Use Only: Concentration Code
1	Actuarial Mathematics	ACTM
2	Applied Mathematics	AMT
3	Mathematical Statistics	MTHS

Registrar/IRR Use Only – Concentration CIP Code

College/School: College of Science

Department / Academic Unit: Mathematical Sciences

Jointly Owned Program? No

Justification Modifying the degree requirements for the Mathematical Statistics concentration:
- Adding the requirement to choose STAT 260, 350, or 360.
- Requiring 3-4 science credits in the second year.
- Requiring 2 courses from a list of STAT courses.

Total Credits Required: Total credits: minimum 120

Registrar's Office Use Only - Program Code:

SC-BS-MATH

Registrar/IRR Use Only – Program CIP Code

Admission Requirements:

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application.

Program-Specific Policies:

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

MATH 290 Introduction to Advanced Mathematics meets the writing intensive requirement for this major.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Graduating seniors are required to have an exit interview.

Language Proficiency Recommendation

The department recommends proficiency in French, German, or Russian.

Course Recommendations and Policies

A maximum of 6 credits of grades below 2.00 in coursework designated MATH or STAT may be applied toward the major.

Students intending to enter graduate school in mathematics are strongly advised to take MATH 315 Advanced Calculus I and MATH 321 Abstract Algebra.

Students may not receive credit for both MATH 214 Elementary Differential Equations and MATH 216 Theory of Differential Equations; both MATH 213 Analytic Geometry and Calculus III and MATH 215 Analytic Geometry and Calculus III (Honors); both MATH 351 Probability and STAT 344 Probability and Statistics for Engineers and Scientists I; and both MATH 352 Statistics and STAT 354 Probability and Statistics for Engineers and Scientists II.

After receiving a grade of 'C' or better in one of the courses listed below on the left, students may not receive credit for the corresponding course on the right:

Course	MATH credit May Not Receive Credit for

Course	May Not Receive Credit for
MATH 113 or MATH 123	MATH 105 or MATH 108
MATH 351 or STAT 344	MATH 110
MATH 441	MATH 111
MATH 125	MATH 112

Degree Requirements:

Students should refer to the Admissions & Policies tab for specific policies related to this program.

In addition to the mathematics core, science, and computational skills requirements, students may select an optional concentration in Actuarial Mathematics (ACTM), Applied Mathematics (AMT) or Mathematical Statistics (MTHS).

Mathematics Core

Course List

Code	Title	Credits
MATH 113	Analytic Geometry and Calculus I (Mason Core)	4
MATH 114	Analytic Geometry and Calculus II	4
MATH 203	Linear Algebra	3
MATH 213	Analytic Geometry and Calculus III	3
or MATH 215	Analytic Geometry and Calculus III (Honors)	
MATH 214	Elementary Differential Equations	3
or MATH 216	Theory of Differential Equations	
MATH 290	Introduction to Advanced Mathematics 1	3
MATH 322	Advanced Linear Algebra	3
Total Credits		23

1 Fulfills the writing intensive requirement.

Science

Course List

Code	Title	Credits
Select a one-year sequence of a laboratory science from the following courses:		8-9
Biology Sequence:		
BIOL 213	Cell Structure and Function (Mason Core)	
Choose one from the following:		

Code	Title	Credits
BIOL 300	BioDiversity	
BIOL 308	Foundations of Ecology and Evolution	
BIOL 311	General Genetics	
Chemistry Sequence:		
CHEM 211	General Chemistry I (Mason Core)	
& CHEM 213	and General Chemistry Laboratory I (Mason Core)	
CHEM 212	General Chemistry II (Mason Core)	
& CHEM 214	and General Chemistry Laboratory II (Mason Core)	
Geology Sequence:		
GEOL 101	Introductory Geology I (Mason Core)	
GEOL 102	Introductory Geology II (Mason Core)	
Physics Sequence:		
PHYS 160	University Physics I (Mason Core)	
& PHYS 161	and University Physics I Laboratory (Mason Core)	
PHYS 260	University Physics II (Mason Core)	
& PHYS 261	and University Physics II Laboratory (Mason Core)	
Total Credits		8-9

Computational Skills

Course List

Code	Title	Credits
CS 112	Introduction to Computer Programming (Mason Core)	4
Total Credits		4

BS without Concentration

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:

Course List

Code	Title	Credits
Traditional Mathematics		
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 315	Advanced Calculus I	3

Code	Title	Credits
MATH 316	Advanced Calculus II	3
MATH 321	Abstract Algebra	3
or MATH 431	Topology	
Select 12 additional credits of MATH courses numbered above 300 [1]		12
Additional Science		
Select additional science credits from one of the following three options:		4-9
A second sequence from the choices under "Science" above		
6 credits from more advanced courses in biology, chemistry, geology, or physics [2]		
The 4-credit option of PHYS 262 and PHYS 263		
Total Credits		28-33

1 Excluding MATH 400 History of Math (Topic Varies) (Mason Core).

2 Only refers to courses acceptable for credit toward a natural science major. Suggested courses include: CHEM 313 Organic Chemistry I through CHEM 332 Physical Chemistry II; CHEM 463 General Biochemistry I; GEOL 302 Mineralogy through GEOL 364 Marine Geology; and PHYS 266 Introduction to Thermodynamics.

Concentration in Actuarial Mathematics (ACTM)

This concentration provides exciting opportunities for students interested in studying actuarial mathematics. Expertise in this field leads directly into a career as a practicing actuary with an insurance company, consulting firm, or in government employment.

Course List

Code	Title	Credits
ACTM Courses		
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 351	Probability	3
MATH 352	Statistics	3
MATH 551	Regression and Time Series	3
MATH 554	Financial Mathematics	3
MATH 555	Actuarial Modeling I	3
MATH 557	Financial Derivatives	3
ACCT 203	Survey of Accounting	3
ECON 103	Contemporary Microeconomic Principles (Mason Core)	3
ECON 306	Intermediate Microeconomics 1	3
or ECON 310	Money and Banking	
or FNAN 321	Financial Institutions	

Code	Title	Credits
STAT 362	Introduction to Computer Statistical Packages	3
Select two from the following:		6
MATH 441	Deterministic Operations Research	
MATH 442	Stochastic Operations Research	
MATH 446	Numerical Analysis I	
MATH 453	Advanced Mathematical Statistics	
Total Credits		39

1 For mathematics majors, the Department of Economics has agreed to waive the ECON 104 Contemporary Macroeconomic Principles (Mason Core) prerequisite.

Concentration in Applied Mathematics (AMT)

This concentration provides exciting opportunities for students interested in taking additional classes on applied mathematics. The concentration prepares numerical analysts able to deal with real world applications in science and engineering.

Course List

Code	Title	Credits
AMT Courses		
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 315	Advanced Calculus I	3
MATH 351	Probability	3
MATH 413	Modern Applied Mathematics I	3
MATH 414	Modern Applied Mathematics II	3
MATH 446	Numerical Analysis I	3
Select 6 credits of MATH courses numbered above 300 1		6
Additional Science Courses		
Select additional science credits from one of the following three options:		4-9
A second sequence from the choices under "Science" above		
6 credits from more advanced courses in biology, chemistry, geology, or physics 2		
The 4-credit option of PHYS 262 and PHYS 263		
Total Credits		28-33

1 Excluding MATH 400 History of Math (Topic Varies) (Mason Core).

2 Only refers to courses acceptable for credit toward a natural science major). Suggested courses include: CHEM 313 Organic Chemistry I through CHEM 332 Physical Chemistry II; CHEM 463 General Biochemistry I; GEOL 302 Mineralogy through GEOL 364 Marine Geology; and PHYS 266 Introduction to Thermodynamics.

Concentration in Mathematical Statistics (MTHS)

This concentration provides exciting opportunities for students interested in taking additional classes on statistics and data analysis. The concentration prepares data analysts able to deal with real world applications in science and engineering.

Course List

Code	Title	Credits
MTHS Courses		
MATH 125	Discrete Mathematics I (Mason Core)	3
MATH 315	Advanced Calculus I	3
MATH 351	Probability	3
MATH 352	Statistics	3
MATH 453	Advanced Mathematical Statistics	3
MATH 551	Regression and Time Series	3
STAT 362	Introduction to Computer Statistical Packages	3
Select one from:		**3**
STAT 260	**Introduction to Statistical Practice I**	
STAT 350	**Introductory Statistics II**	
STAT 360	**Introduction to Statistical Practice II**	
Select two from the following:		6
STAT 455	Experimental Design	
STAT 460	**Introduction to Biostatistics**	
STAT 462	**Applied Multivariate Statistics**	
STAT 463	Introduction to Exploratory Data Analysis	
STAT 465	**Nonparametric Statistics and Categorical Data Analysis**	
STAT 472	**Introduction to Statistical Learning**	
STAT 474	Introduction to Survey Sampling	
Additional Science Courses		
Select additional science credits from one of the following options:		3-4
Choose 3 credits from more advanced courses in biology, chemistry, geology, or physics 1		
~~The 4-credit option of PHYS 262 and PHYS 263~~		
Choose the 4 credit option of PHYS 262 and PHYS 263		
Total Credits		33-34

1Only refers to courses acceptable for credit toward a natural science major. Suggested courses include: CHEM 313 Organic Chemistry

I through CHEM 332 Physical Chemistry II; GEOL 302 Mineralogy through GEOL 364 Marine Geology; and PHYS 266 Introduction to Thermodynamics.

~~1Only refers to courses acceptable for credit toward a natural science major). Suggested courses include: CHEM 313%7C through CHEM 332%7C, CHEM 463%7C, GEOL 302%7C through GEOL 364%7C, and PHYS 266%7C~~

Retroactive Requirements Updates:

Plan of Study:

Honors Information:

Honors in the Major

Eligibility

Mathematics majors who have maintained a GPA of at least 3.50 in mathematics courses and a GPA of 3.50 in all courses taken at George Mason University may apply to the departmental honors program upon completion of two MATH courses at the 300+ level (excluding MATH 400 History of Math (Topic Varies) (Mason Core)), at least one of which has MATH 290 Introduction to Advanced Mathematics as a prerequisite. Admission to the program will be monitored by the undergraduate committee.

Honors Requirements

To graduate with honors in mathematics, a student is required to maintain a minimum GPA of 3.50 in mathematics courses and successfully complete MATH 405 Honors Thesis in Mathematics I and MATH 406 RS: Honors Thesis in Mathematics II with an average GPA of at least 3.50 in these two courses.

Additional Program Information

This information is required by the Office of Accreditation and Program Integrity.

Courses offered via distance (if applicable):

What is the primary delivery format for the program?	Face-to-Face Only

Does any portion of this program occur off-campus?

No

Are you working with a vendor / other collaborators to offer your program?

No

Related Departments

Could this program prepare students for any type of professional licensure, in Virginia or elsewhere?

No

Are you adding or removing a licensure component?

No

Additional SCHEV & SACSCOC Information

Are you changing the total number of credits required for this program?

Are you changing the delivery format in any way (e.g adding an online option)?

Are you adding/removing a licensure option which was approved by SCHEV?

Will any portion of this program be offered at an off-campus location?

Are you adding significant new content areas to the program?

Will this program change affect any specialized accreditation?

Green Leaf Program Designation

Is this a Green Leaf program? No

Does this program cover material which crosses into another department?

No

Additional Attachments

UGC-COS-Program Mod BS Math.pdf
UGC-COS-Program-Mod-bsmath_001.pdf
BS_in_math_modification_ProgramApprovalForm_COSCC-2_ACTUARIAL.pdf

SCHEV Proposal

Executive Summary

Reviewer Comments

Additional Comments

Is this course required of all students in this degree program?

%wi_required.eschtml%

Key: 587