## Program Change Request

Date Submitted: 12/14/23 9:08 am

## Viewing: SC-PHD-MATH : Mathematics, PhD

Last approved: 05/08/23 11:07 am
Last edit: 12/15/23 11:02 am
Changes proposed by: jbazaz

| Mathematics, PhD |  |
| :--- | :--- |
| Catalog Pages |  |
| Using this Program |  |
|  |  |

Approval Path

1. 12/14/23 12:00 pm

Maria Emelianenko (memelian):
Approved for MATH Chair

## History

1. Nov 10, 2017 by clmig-jwehrheim
2. Feb 7, 2018 by rzachari
3. Jul 24,2020 by Jennifer Bazaz Gettys (jbazaz)
4. Feb 23, 2021 by jriemen
5. Mar 5, 2021 by jriemen
6. May 8, 2023 by Tory Sarro (vsarro)

| Name | Extension |  |
| :--- | :--- | :--- |
| Rebecca Goldin | 5302 |  |

Effective Catalog: 2024-2025
Program Level: Graduate

## Program Type:

Doctoral
Degree Type: Doctor of Philosophy

Title: Mathematics, PhD


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Banner Title: Mathematics, PhD
Is this a retitling of
an existing
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Existing Program
Registrar/OAPI Use Approved
Only - SCHEV
Status
Registrar's Office
Use Only -
Program Start Term
Registrar/OAPI Use
Only - SCHEV
Letter

Registrar/OAPI Use Only - SACSCOC
Status

## Concentration(s):

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Registrar/IRR Use
Only -
Concentration CIP
Code
College/School: College of Science
Department / Mathematical Sciences
Academic Unit:
Jointly Owned No
Program?
Participating
Participating
Justification
What: The Math Department wants to change the requirement of MATH 795 from 6 credits (9 maximum allowable) to 4 credits (6 allowable).

Why: We have found that 4 semesters is sufficient for MATH 795 for our students, since we discuss issues and develop skills that are most relevant to early PhD students. We want to promote their degree progress by reducing this requirement.

## Catalog Published Information

Total Credits Total credits: 72
Required:

## Registrar's Office Use Only - Program Code:

SC-PHD-MATH
Registrar/IRR Use
Only - Program CIP
Code

## Admission

Requirements:

## Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.
To apply for this program, please complete the George Mason University Admissions Application.

## Eligibility

It is expected that all applicants have a recent bachelor's degree in mathematics or an equivalent amount of undergraduate mathematics preparation, with a GPA of at least 3.00 in their last 60 credits of study. Students without this background who have had an upper-division course in linear algebra (equivalent to MATH 322 Advanced Linear Algebra),
an upper-division course in advanced calculus (equivalent to MATH 315 Advanced Calculus I), and an upper-division course in group theory (equivalent to MATH 321 Abstract Algebra) are encouraged to apply to the Mathematics, MS. Such students may subsequently apply to the PhD when all background issues have been addressed. It is recommended that all applicants have some familiarity with mathematical software.

## Application Requirements

To apply, prospective students should provide the completed George Mason University Admissions Application, two copies of official transcripts from each college and graduate institution attended, three letters of recommendation, and a goals statement. GRE scores are not required.
TOEFL scores are required for all international applicants; find additional information in the Admission of International Students section of this catalog.

## Program-Specific

Policies:

## Policies

For policies governing all graduate programs, see AP. 6 Graduate Policies.

## Reduction of Credits

For students entering the doctoral program with a master's degree in a related field from an institution of higher education accredited by a Mason-recognized U.S. institutional accrediting agency or international equivalent, the number of required credits may be reduced up to 30 credits, subject to approval of the program faculty and the college's associate dean for student affairs. See AP.6.5.2 Reduction of Credits for more information.

## Transfer of Credit

Graduate mathematics courses taken elsewhere without being applied to degree conferral may be counted toward the degree as transfer credit. See AP 6.5.3 Transfer of Credit for additional information.

## Degree Requirements:

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

## Core Courses

Students must earn a grade of 'B' or better in each core course. eourse that eounts toward the core requirement.

Select nine credits from the following:

MATH 621
MATH 631
MATH 677
MATH 685

## Seminar

Students must register for a 1 credit seminar each semester until they advance to candidacy, or have acquired at least 4 seminar credits 1

```Total Credits electives.

\section*{Preliminary Written Exam}

Students are required to pass three preliminary written exams and complete four core courses by the end of their second year. Preliminary exams are offered twice a year and students may take each exam up to three times.

\section*{Dissertation Advisor and Examination Committee}

After passing the preliminary written exams, the student chooses a dissertation advisor and a three person examination committee. In consultation with the advisor and committee, the student chooses a major and a minor area of study (the major and minor areas are presumed to be in two different branches of mathematics). Seminar
\(\pm\)
A student entering without a master's clegree in mathematies should expect to take a totalof 6 to 9 ereedits of MAATH 795\%7C.
Students must register for a 1 credit seminar each semester until they advance to candidacy or have acquired at least 6 eredits 1

MATH 795 Graduate-Seminar
FotalCredits

\section*{Electives}

Students complete 27-42 credits of approved MATH electives 127-42
Students complete 32-44 credits of approved MATH electives 132-44
Total Credits
32-44
1
Courses not designated as MATH courses must be approved by the graduate committee.
Classes at the 500 level, MATH 600 Special Topics in Mathematics - MATH 614 Rational Numbers and Proportional Reasoning for K-8 Teachers, and actuarial classes MATH 653 Construction and Evaluation of Actuarial Models I, MATH 654 Construction and Evaluation of Actuarial Models II and MATH 655 Pension Valuation cannot be used for credit.

\section*{Qualifying Examinations}

Students are required to take a qualifying exam after passing the preliminary written exams. The qualifying exam may have oral and written components. In consultation with the advisor and committee, the student chooses a major and a minor area of study (the major and minor areas are presumed to be in two different branches of mathematics). The qualifying exam typically covers the equivalent of approximately four courses of material from the major area and three courses from the minor area.

\section*{Dissertation Proposal and Advancement to Candidacy}

After passing the qualifying exam, each doctoral student prepares a written dissertation proposal while taking MATH 998 Doctoral Dissertation Proposal. The proposal must be approved by the dissertation committee, which consists of the three qualifying exam committee members, plus a fourth member from outside the Department of Mathematical Sciences. After successfully completing this requirement, the student advances to doctoral candidacy.

\section*{Dissertation Research}

Select 12-24 credits from the following:
12-24
MATH 998Doctoral Dissertation Proposal
MATH 999Doctoral Dissertation
Total Credits 12-24

\section*{Doctoral Dissertation}

After advancing to candidacy, the student will work on a doctoral dissertation while enrolled in MATH 999 Doctoral Dissertation. The dissertation is a written piece of original mathematics that demonstrates a doctoral candidate's mastery of the subject matter. A student is expected to produce new and original research worthy of publication in a peerreviewed journal. After the dissertation is completed, the committee will review the dissertation and examine the student in a public oral thesis defense.

\section*{Retroactive}

\section*{Requirements}

Updates:

\section*{Plan of Study:}

Honors
Information:

Accelerated
Description/Dual
Degree
INTO-Mason
Requirements:

\section*{College}

Requirements \&
Policies:

Department /
Academic Unit
Requirements \&
Policies:

Program Outcomes

\section*{Additional Program Information}

This information is required by the Office of Accreditation and Program Integrity.
Courses offered via
distance (if
applicable):
Indicate whether
students are able
What is the
Face-to-Face Only
primary delivery
format for the
program?
Does any portion of this program occur off-campus?
No
Off-campus details:

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

\section*{No}

Please explain:
Related
Departments
Could this program prepare students for any type of professional licensure, in Virginia or elsewhere?
No

Please explain:
Are you adding or removing a licensure component?
No
Please explain:

\section*{Additional SCHEV \& SACSCOC Information}

Is the content of the new program closely related to that of an existing approved program at the same instructional level (i.e., baccalaureate, master's, doctoral)?

Which existing approved program(s)?

Is this new program considered to be "advancing the degree level of a currently approved program" (i.e. existing content is at lower degree level, new content is at the higher degree level)?

Which existing approved program(s)?
Is this new program considered to be "lowering the degree level of a currently approved program" (i.e. existing content is at higher degree level, new content is at the lower degree level)?

Which existing approved program(s)?

Is this a re-opening of a program that was closed to admission within the last five years?

\section*{Date of Program Closure}

What are the methods of delivery for the program?

Does this program include a course/credit-based competency-based education delivery option?

Is this change a simple retitling of an existing program, with no other changes, to any existing program content, curriculum requirements, etc?

\section*{No}

Does this change represent a repackaging of content in an existing approved degree/certificate program at the same instructional level (i.e., baccalaureate, master's, or doctoral)?

No
Which existing approved program(s)?

Percentage of total credits containing new course content. ("New course content" is defined by SACSCOC as content that is not currently included in an existing approved degree/certificate program at the same instructional level. Do no exclude gen ed credits in calculations for undergraduate programs.)

0\%-24\%
Does this change include the addition of a distance education or face-to-face method of delivery for this program?
No
What is the new method of delivery?

Does this change include the addition of a course/credit-based competency-based education delivery option?
No
Will any additional equipment/facilities be needed?
No
Description of institutional impact:

Will any additional faculty be required?
No
Description of institutional impact:

Will any additional financial resources be needed?
No
Description of institutional impact:

Additional library/learning resources needed?
No
Description of institutional impact:

OAPI Use Only - Determination of SACSCOC Impact

\section*{Comments or Notes}

\section*{Green Leaf Program Designation}
Is this a Green Leaf No
program?
Green Leaf
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Sustainability-focused academic programs require at least one green leaf course. Either that course is itself
sustainability-focused or else the program requires a set of sustainability-related courses with aggregated

Relationship to
Evicting Dracrame
List sustainabilityfocused courses
currently required
in the degree
Sustainability-related academic programs either require at least one sustainability-related
rnirca nr alca nffar any orapn laaf rnirca acan nntinn nr alartiva*
List sustainabilityrelated courses
currently required
in the degree

Does this program cover material which crosses into another department?
No
Impacted
nenartmentc
Additional
Attachments

\section*{SCHEV Proposal}

Executive Summary
Reviewer
Comments
Additional
Comments
Is this course required of all students in this degree program?
\%wi_required.eschtml\%
Attached \%attach document.eschtml\%
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