

Date Submitted: 09/19/18 10:07 am

Viewing: **SMTHMA : Secondary Mathematics,****Master of Arts**

Last approved: 03/20/17 2:52 pm

Last edit: 09/27/18 4:51 pm

Changes proposed by: markj

Catalog Pages Using

this Program

[Mathematical Sciences \(MASC\)](#)[Secondary Mathematics \(SMTH\)](#)

Submitter: 57456 User ID: gdaughter Phone:

Program Status: Active

Academic Level: Graduate

Type of proposal: Major/Field of Study

Select a reason for this modification

Making Minor Changes to an Existing Degree (e.g. changing 15 or fewer hours, changing admission/graduation requirements, adding Focused Study)

Are you adding a concentration?

No

Are you adding a track?

No

Are you adding a focused study?

No

Effective Catalog Year: Fall 2019

College/School Code

Fulbright College of Arts and Sciences (ARSC)

Department Code

In Workflow

1. ARSC Dean Initial
2. GRAD Dean Initial
3. Director of Program Assessment and Review
4. Registrar Initial
5. Institutional Research
6. MASC Chair
7. ARSC Curriculum Committee
8. ARSC Dean
9. Global Campus
10. Provost Review
11. University Course and Program Committee
12. Graduate Committee
13. Faculty Senate
14. Provost Final
15. ADE Licensure Approval
16. Provost's Office-- Notification of Approval
17. Registrar Final
18. Catalog Editor Final

Approval Path

1. 09/19/18 10:09 am
Jeannine Durdik (jdurdik): Approved for ARSC Dean Initial

Department of Mathematical Sciences(MASC)

Program Code SMTHMA
 Degree Master of Arts
 CIP Code

2. 09/19/18 10:40 am
Pat Koski (pkoski):
Approved for GRAD
Dean Initial
3. 09/25/18 9:29 am
Alice Griffin
(agriffin): Approved
for Director of
Program
Assessment and
Review
4. 09/27/18 4:51 pm
Lisa Kulczak
(lkulcza): Approved
for Registrar Initial
5. 09/28/18 8:37 am
Gary Gunderman
(ggunderm):
Approved for
Institutional
Research
6. 09/28/18 10:58 am
Mark Johnson
(markj): Approved
for MASC Chair
7. 10/11/18 2:15 pm
Pearl Dowe
(pkford): Approved
for ARSC Curriculum
Committee
8. 10/11/18 2:27 pm
Jeannine Durdik
(jdurdik): Approved
for ARSC Dean
9. 10/12/18 2:33 pm
Miran Kang (kang):
Approved for Global
Campus
10. 10/16/18 10:26 am
Terry Martin

- (tmartin): Approved for Provost Review
- 11. 10/29/18 11:06 am Alice Griffin (agriffin): Approved for University Course and Program Committee
- 12. 11/16/18 9:15 am Pat Koski (pkoski): Approved for Graduate Committee

History

1. Mar 20, 2017 by Gina Daugherty (gdaugher)
2. Mar 20, 2017 by Gina Daugherty (gdaugher)

13.1311 - Mathematics Teacher Education.

Program Title

Secondary Mathematics, Master of Arts

Program Delivery

Method

Online/Web-based

Is this program interdisciplinary?

No

Does this proposal impact any courses from another College/School?

No

What are the total hours needed to complete the program? **30**

On-line/Web-based Information

Reason for offering
Web-based Program
n/a

Maximum Class Size n/a
for Web-based
Courses

Course delivery
mode

| Method(s) |
|-----------|
| Online |

Class interaction
mode

| Method(s): |
|------------|
| E-mail |

Percent Online

~~100%~~

100% with No Required Campus Component

Provide a List of
Services Supplied by
Consortia Partners or
Outsourced
Organization
n/a

Estimate Costs of the n/a
Program over the
First 3 Years

List Courses Taught
by Adjunct Faculty

Upload
Memorandum of
Understanding Forms
(if required)

Program Requirements and Description

Requirements

Requirements for the Master of Arts Degree with a Major in Secondary Mathematics: This program is designed for secondary school teachers of mathematics. It requires 30 semester hours of graduate work.

Prospective candidates for the Master of Arts degree in secondary mathematics are expected to have earned a baccalaureate degree or equivalent with a major in a mathematical science (mathematics, statistics, operations research, or computer science), engineering, or a physical science, and credit in courses equivalent to [MATH 2564](#), [MATH 3083](#), [MATH 3113](#), and [MATH 3773](#).

The program has four components in which to earn a minimum of 30 semester hours of credit:

Graduate course work in mathematics content and content-based pedagogy. At least 12 hours of credit in graduate course work specifically designed for preparation for teaching secondary mathematics. The content will include **probability and probability**, statistics, algebra, **geometry, and geometry, applied mathematics and advanced calculus with connections to secondary school mathematics**. At least one of the courses must be in probability and statistics; one in algebra; and one in advanced **calculus**. **These courses are to be selected from:**

| | | |
|---------------------------|--|------------|
| MATH 4153 | Mathematical Modeling | 3 |
| STAT 4003 | Statistical Methods (with corequisite STAT 4001L) | 3 |
| STAT 5103 | Introduction to Probability Theory | 3 |
| MATH 5001 | Connections to School Mathematics | 1 |
| MATH 5013 | Abstract Algebra with Connections to School Mathematics | 3 |
| MATH 5023 | Geometry with Connections to School Mathematics | 3 |
| MATH 5033 | Advanced Calculus with Connections to School Mathematics Teaching | 3 |
| MATH 5153 | Advanced Linear Algebra (Formerly MATH 4103) | 3 |
| MATH 5393 | Numerical Linear Algebra (formerly MATH 4353) | 3 |
| MATH 5053 | Probability & Statistics with Connections to School Mathematics | 3 |
| MATH 504V | Special Topics for Teachers | 1-6 |

Other graduate mathematics or statistics courses may be used in place of these courses with the approval of the student's committee.

~~Candidates will sit for examinations in three of the following areas: probability and statistics; algebra; geometry; advanced calculus; and mathematics education. Candidates will also present a portfolio describing the body of work with samples of student work and explanations of connections to secondary school mathematics. These courses are to be selected from: Independent study and research in mathematics or mathematics education. Independent study and research From three to six hours of credit is available in mathematics or mathematics education. Up to six hours of credit is available in independent study and research study and research~~ under the direction of mathematical sciences faculty. The results will be evidenced by a report roughly equivalent to a master's thesis.

Advanced work in professional teacher preparation. Up to six hours of credit in [MATH 507V](#) is available for advanced work in preparation for teaching AP calculus, AP statistics, International Baccalaureate (IB) mathematics, or for achieving National Board Certification in (Adolescence and Young Adulthood) Mathematics.

Other professional development activities with quality control features similar to those of the AP, IB, and National Board programs may be presented for consideration for credit. All such work must be sanctioned by the sponsoring organizations.

Graduate courses in education. Up to six hours of credit is available in graduate courses in education. The student’s committee must approve the courses. Recommended courses include:

| | | |
|----------------------|---|--------------|
| CIED 5483 | Teaching Mathematics | 3 |
| <u>CIED 6013</u> | Curriculum Theory, Development, and Evaluation | 3 |
| CIED 6023 | Instructional Theory | 3 |
| CIED 6033 | Content Specific Pedagogy | 3 |
| <u>CIED 6043</u> | Analysis of Teacher Education | 3 |
| <u>CIED 6053</u> | Curriculum and Instruction: Learner Assessment and Program Evaluation | 3 |

Other graduate courses in education may be used in place of these courses with the approval of the student’s advisory committee.

If allowed by Graduate School rules, credit previously earned may be applied to the requirements for this degree with the approval of the student’s advisory committee.

Each person receiving the Master of Arts degree in secondary mathematics must pass a written examination in three of the following areas: **probability and statistics; algebra; geometry; advanced calculus; and mathematics education.** ~~probability and statistics; algebra; geometry; advanced calculus; and mathematics education.~~ No student will be allowed to take the examination more than three times. Candidates will also present a portfolio describing the body of work with samples of their work as students and explanations of connections to secondary school mathematics.

Students should also be aware of Graduate School requirements with regard to master's degrees.

| Are Similar Programs available in the area? | |
|---|-------------------------------------|
| No | |
| Estimated Student Demand for Program | n/a |
| Scheduled Program Review Date | 2021-2022 n/a |
| Program Goals and Objectives | Program Goals and Objectives |

Program Goals and Objectives

There is an emphasis on further strengthening abstract and conceptual tools, exposing the student to a wide variety of mathematical topics, and preparing the student to bring mathematical thought to the lower-level classroom. To this end the student should:

- 1) Be able to frame abstract arguments and produce mathematical proofs.
- 2) Demonstrate an understanding of a variety of advanced topics, such as advanced calculus and abstract algebra, connecting them to the secondary school curriculum.
- 3) Demonstrate an ability to articulate the context and meaning of these topics.
- 4) Write, analyze and communicate in a lucid and critical manner. n/a

Learning Outcomes

Learning Outcomes

- 1) Demonstrate computational competence in analysis, algebra, statistics and other areas of mathematics relevant to the secondary mathematics curriculum.
- 2) Demonstrate understanding of the conceptual frameworks and underlying structure of these topics; clearly demonstrate an ability to construct mathematical proofs.
- 3) Relate these subject areas to applications in the natural or social sciences, engineering, or other areas of mathematics at a level appropriate to the secondary mathematics curriculum.
- 4) Write, analyze and communicate in a lucid and critical manner, particularly in a manner appropriate for the secondary mathematics classroom.
- 5) Have a sense of the broader mathematical culture. n/a

Description and justification of the request

| Description of specific change | Justification for this change |
|---|--|
| Updated available courses Allow course work to replace independent study | The change allows the program more flexibility and reduces the time for students to complete the degree program. |

Upload attachments

Reviewer Comments

Alice Griffin (agriffin) (09/25/18 9:12 am): Inserted program goals and learning outcomes from assessment plan.

Alice Griffin (agriffin) (09/25/18 9:13 am): Inserted program review date.