



Graduate Curriculum Approval Form Changes to Graduate Majors

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|---|------------------|
| Degree Program CIP Code | 27.0101 |
| Degree (i.e. M.A., Ph.D., etc.): | M.A. |
| Name of Major (e.g. Biology) | Mathematics |
| Name of affected Concentration(s) (e.g. Botany) | Pure and Applied |
| Proposed Effective Term (e.g. Fall 2017) | Fall 2018 |
| Faculty Contact | Brian Curtin |
| Email | bcurtin@usf.edu |

| APPROVALS | Name | Signature | Action | Date |
|---|---|------------------|---|---------|
| Dept. Chair | Leslaw Skrzypek | | <input checked="" type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Comments attached | 1-12-18 |
| School Committee Chair (if applicable) | Jennifer Lewis | | <input checked="" type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Comments attached | 2/27/18 |
| College Committee Chair | Kathleen McCork | | <input checked="" type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Comments attached | 3/2/18 |
| College Dean/ Associate Dean | Robert Potter | | <input checked="" type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Comments attached | 3/2/18 |
| Concurrence <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Needed | Dept: Chair: | | <input type="checkbox"/> Concurs <input type="checkbox"/> Doesn't concur <input type="checkbox"/> Comments attached | |
| Grad Council | <input type="checkbox"/> Approve <input type="checkbox"/> Not approved <input type="checkbox"/> Tabled <input type="checkbox"/> Comments | Graduate Studies | <input type="checkbox"/> Approve <input type="checkbox"/> Disapprove | |

Summary of Changes – Select all that apply:

Admissions Section:

- X Change Priority Admission Deadlines
 - Fall: _____
 - X Spring: October 1_____
 - Summer: _____
 - To "fall admissions only"
- From Regular to Direct Receipt Admissions
- From Direct Receipt to Regular Admission
- X Admission Requirements

Curriculum Requirements

- x Current Curriculum Requirements
 - x Core
 - Add New Concentration, Specialization, or Track*
 - Delete Concentration, Specialization, or Track
 - Thesis/Dissertation
 - Comprehensive/Qualifying Exam
 - Other: _____

*Requires submission to APAC for comment/clearance

Why are these changes necessary?

SACS compliance, match current practices, update courses mentioned

Attach the current Catalog Copy, with the requested revisions shown using Track Changes. Catalog copy is not required for changes to the Admission Deadline. All other changes require Catalog Copy. To obtain the most current catalog, email cdh@usf.edu.

Once College has approved, scan and email this Approval Form, and the revised Catalog Copy in Word to Graduate Studies by the deadline posted online <http://www.grad.usf.edu/graduate-council.php> . For questions, contact cdh@usf.edu

MATHEMATICS

Master of Arts (M.A.) Degree

DEGREE INFORMATION

Priority Admission Application Deadlines:
 Fall: February 1
 Spring: August-October 1

International applicant deadlines:
<http://www.grad.usf.edu/majors>

Minimum Total Hours: 30
 Level: Masters
 CIP Code: 27.0101
 Dept. Code: MTH
 Major/College Codes: MTH AS
 Approved: 1965

Concentration:
 Pure and Applied (PAA)

CONTACT INFORMATION

College: Arts and Sciences
 Department: Mathematics and Statistics
 Contact Information: www.grad.usf.edu

MAJOR INFORMATION

The MA in Mathematics offered by the Department of Mathematics and Statistics provides the experience and knowledge to understand and appreciate prior accomplishments in the discipline and develops the skills necessary for a meaningful contribution to the intellectual advancement and applications of the discipline. It prepares its graduates to pursue long-term careers in their field by providing solid and cutting edge knowledge, as well as a technical education enabling them to take on leading positions in a modern economy.

The Department of Mathematics at the University of South Florida, Tampa Campus, is composed of approximately thirty faculty who do research in a variety of fields, and teach courses ranging from the freshman to the doctoral level.

The Department serves as the editorial base for the international journals: *Abstract and Applied Analysis* and *Journal of Theoretical Probability*. The Center for Mathematical Services within the department provides lectures, special programs for secondary students, and in-service training programs in mathematics.

Major Research Areas:

Algebra, Analysis, Discrete Mathematics, Partial Differential Equations, Probability, Statistics, and Topology, including the following fields: Applied Mathematics, Approximation Theory, Combinatorics, Computational Statistics, Control Theory, DNA computing, Dynamical Systems, Graph Theory, Knot Theory, Nonlinear Analysis, Number Theory, Special Functions, Theoretical Computer Science, and other areas.

ADMISSION INFORMATION

Must meet University requirements (see Graduate Admissions), as well as requirements for admission to the major, listed below.

- A Bachelor's degree or equivalent in mathematical sciences or related area.
- At least a 15555 percentile Quantitative score on the GRE; Verbal and Analytic Writing scores on the GRE are also considered, least a 650 quantitative preferred score on the GRE
- At least a 3.00 GPA in undergraduate math courses, and specifically in the following courses or their equivalents: Elementary Abstract Algebra, Bridge to Abstract Mathematics, and Intermediate Analysis.
- Three letters of recommendation (two of which should be from college level mathematics/statistics professors).

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- A completed math department application form, including a statement of goals.
- A completed departmental graduate teaching assistantship application form (if such a position is desired), statement of goals

The Graduate Admissions Committee may provisionally admit applicants from other majors to the Master's Program if they meet the GPA requirement.

~~Students with insufficient preparation in real analysis and/or abstract algebra will be required to take MAA 4211 and/or MAS 4301 before or during their first semester of study.~~

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CURRICULUM REQUIREMENTS

Total Minimum Hours:

30 hours

- Core courses – 9 hours
- Sequence Courses – 12 hours minimum
- Electives – 3-9 hours minimum
- Thesis (for students electing this option) – 6 hours minimum

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Core Courses – 9 hours minimum

All students in the Mathematics MA program must take the following core courses:

- MAA 5306 3 Introduction to Real Analysis
- MAS 5145 3 Advanced Linear Algebra
- MAE 5177 3 Teaching College Mathematics (Proposed course)

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Commented [Office2]: We will be submitting the course change to make the name "Real Analysis I" rather than "Real Analysis II" as it is currently in the catalog.

~~Credit Hours: A candidate must complete at least 30 credit hours in Mathematics. Some graduate courses are organized into Core and Elective Sequences as follows:~~

Commented [Office3]: This course has been submitted to the state. We hope for it to receive the number MAE 5177

Core Requirements

Sequences of Courses – 12 hours minimum +

~~The program offers coherent pairs/triples of courses, referred to as sequences, to ensure a certain balance of breadth and depth of disciplinary knowledge. The student must complete one Fundamental sequence and a total of two sequences from among the Fundamental and Elective Sequences with at least a 3.0 average in each sequence. Fundamental Sequences prepare students for Fundamental Qualifying Examinations. A student who passes a Fundamental Qualifying Examination at Ph.D. level will be considered to have completed the corresponding Fundamental Sequence. Each course may count towards only one Sequence.~~

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Fundamental Sequences:

- Algebra:
 - MAE 5107 Advanced Linear Algebra 3
 - MMAS 5311 Algebra I 3
 - MAE 5312-6312 Algebra II 3

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Analysis:

- MAA 5306 Introduction to Real Analysis (taken as a core requirement) Real Analysis I 3
- MAA 5307 Real Analysis II 3
- MAA 6616 Real Analysis II Abstract Integration 3

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Topology:

- MTG 5316 Topology I 3
- MTG 5317-6317 Topology II 3

Elective Sequences

Applied Mathematics: _____ **one of three courses, one from each group listed below.**

_____**(Group A)**_____ **one of**
 _____MAP 5407 Methods of Applied Mathematics—**3**
 _____MAP 5345 Applied Partial Differential Equations—**3**

_____**(Group B)**_____ **one of**
 _____MAA 5405 Applied Complex Analysis—**3**
 _____MAT 5932 ~~(MAD 4401)~~ Selected Topics **(Numerical Analysis)**—**1-4**

_____**(Group C)**_____ **one of**
 _____MAP 6205 Control Theory and Optimization **3**
 _____MAT 6932 Selected Topics **(Dynamical Systems II)**—**1-4**

Combinatorics:
 _____MAD 6206 Combinatorics I—**3**
 _____MAD 6207 Combinatorics II—**3**

Complex Analysis:
 _____MAA 6406—Complex Analysis I—**3**
 _____MAA 6407—Complex Analysis II—**3**

Differential Geometry _____ MTG 6256 Differential Geometry I
 _____ MTG 6257 Differential Geometry II (Proposed course)

Statistical Methods:
 _____STA 5166—Statistical Methods I—**3**
 _____STA 6167—Statistical Methods II—**3**

Dynamical Systems:
 _____MAT 5932—Selected Topics **(Dynamical Systems I)**—**1-4**
 _____MAT 6932—Selected Topics **(Dynamical Systems II)**—**1-4**

Functional Analysis: _____MAA 6506 Functional Analysis I
 _____MAA 6507 Functional Analysis II

Foundations:
 _____MHF 5306—Mathematical Logic and Foundations I—**3**
 _____MHF 6307—Mathematical Logic and Foundations II—**3**

Linear Models and Multivariate Analysis:
 _____STA 6208—Linear Statistical Models—**3**
 _____STA 6356

Mathematical Statistics:
 _____STA 5326—Mathematical Statistics—**3**
 _____STA 6326

Nonlinear Analysis:
 _____MAP 5316—Ordinary Differential Equations I—**3**
 _____MAP 5317—Ordinary Differential Equations II—**3**

Ordinary Differential Equations:
 _____MAP 6336—Theory Ordinary Differential Equations I—**3**
 _____MAT 5932—Selected Topics—**1-4**

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Partial Differential Equations:

- MAP 5345 –Applied Partial Differential Equations— 3
- MAP 6356 -Partial Differential Equations— 3

Probability:

- STA 5446 –Probability Theory I— 3
- STA 6447 –Probability Theory I— 3

Stochastical Processes and Time Series Analysis: —

- STA 6206 –Stochastic Processes— 4
- STA 6876 –Time Series Analysis— 3

Theory of Computing:

MAD 6616 Theory of Computing

—MAD 6510 Analysis of Algorithms

- MHF 5306 –Mathematical Logic and Foundations I— 3
- MAD 6616 –Algebraic Automata Theory— 3

All sequences for the Statistics Ph.D. Concentration are also Elective Sequences for the Pure and Applied Concentration. All Fundamental and Elective sequences for the Statistics MA are Elective Sequences for the Mathematics MA. Prior to offering, the Mathematics Graduate Committee may approve a pair of courses to be an elective sequence.

Electives – 3 hours minimum

Students select graduate course electives in consultation with their advisor.

Independent Study, Graduate Seminar, and Directed Research

Prior to passing two Fundamental Qualifying Examinations at Ph.D. level, students may not earn credit toward the MA or Ph.D. degrees for MAT 6908 Independent Study, MAT 6939 Graduate Seminar, and MAT 6911 / 7912 Directed Research, although they make take these course with the approval of the Concentration Graduate Director. Students must obtain the approval of the Seminar Organizer to take credit hours of MAT 6939 Graduate Seminar.

External Coursework

Graduate coursework taken from other departments may be accepted toward the minimum number of credits with prior approval from the Concentration Graduate Director.

For degree requirements, each course from the Elective Sequence list above counts towards only one Elective Sequence.

Qualifying Exam

A qualifying examination based on a Core Sequence is called a Core Qualifying Examination. The syllabus for each examination is available from the Department. Core Qualifying Examinations are offered in January, May and September. A student who passes a Core Qualifying Examination at Ph.D. level will be considered to have completed the corresponding Core Sequence. Credit hours of MAT 6908 Independent Study, MAT 6939 Graduate Seminar, and MAT 6911 / 7912 Directed Research, earned before passing two Core Qualifying Examinations at Ph.D. level, do not count towards M.A. or Ph.D. degree. These courses, MAT 6908, 6911, 6939 and 7912, however, can be taken by a student before passing two Core Qualifying Examinations at Ph.D. level, with an approval from the Graduate Director, and also from the Seminar Organizer for MAT 6939. The course work for more than one credit hour for MAT 6939 needs an approval from the Graduate Committee.

1. The Mathematics graduate courses of 5000 level or higher, offered regularly for mathematics majors from the Mathematics department, are counted towards the 30-hour requirement.

Graduate Director

2. **Completion of Sequences:** A Candidate must complete two Core or Elective Sequences, at least one of which must be a Core Sequence, and receive at least a 3.0 average in each sequence.

3. **Thesis or Examination Requirement:** Each candidate for the M.A. degree must either be examined on a thesis or pass one of the written Core Qualifying Examinations.

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Commented [Office5]: This is a current requirement.

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Comprehensive Exam

Each candidate for the M.A. degree must either be examined on a thesis (the Thesis Option) or pass one of the written Core Qualifying Examinations (the Exam option). For the student who elects the Thesis Option, the comprehensive examination takes the form of an oral thesis defense, in which the candidate must demonstrate knowledge of the general subject area of the thesis. For the

A student who elects the Exam Option, the Comprehensive Examination is passed by option—must passing one of the Core Qualifying Examinations at M.A. level or better. A student may repeat each examination once.

Independent Study, Graduate Seminar, and Directed Research

Prior to passing two Fundamental Qualifying Examinations at Ph.D. level, students may not earn credit toward the MA or Ph.D. degrees for MAT 6908 Independent Study, MAT 6939 Graduate Seminar, and MAT 6911 / 7912 Directed Research, although they may take these courses with the approval of the Concentration Graduate Director. Students require the approval of the Seminar Organizer to take credit hours of MAT 6939 Graduate Seminar.

Thesis ————— — 6 hours
MAT 6971

A student who elects the Thesis Option must register for a minimum of six (6) credit hours in MAT 6971, only six (6) hours of which may be applied toward the 30-hour degree requirement.

COURSES

See <http://www.ugs.usf.edu/course-inventory/>

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