

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>NEW/CHANGE PROGRAM REQUEST</b> <b>Graduate Programs</b>		UGPC Approval _____ UFS Approval _____ Banner Posted _____ Catalog _____
	Department <u>Mathematical Sciences</u> College <u>Science</u>		
<b>Program Name</b> PhD in Mathematics	<input type="checkbox"/> <b>New Program</b> <input checked="" type="checkbox"/> <b>Change Program</b>	<b>Effective Date</b> (TERM & YEAR) Fall 2020	
<b>Please explain the requested change(s) and offer rationale below or on an attachment</b>  This proposal requests changing the qualifying exam requirements of the PhD program in mathematics. The main change is an additional option for the qualifying exam requirements.  <u>Rationale:</u> <ul style="list-style-type: none"> <li>To expedite the graduation of qualified students by allowing them to engage in research activities sooner.</li> <li>To improve retention of PhD students by keeping their morale high.</li> <li>To enhance faculty advising of the students by allowing earlier interactions between advisors and students.</li> <li>To remain competitive with other PhD programs in mathematics. Many reputable universities, including Florida State University, University of South Florida, Ohio State University, and Washington University, have comparable options.</li> </ul>			
<b>Faculty Contact/Email/Phone</b> Yuan Wang/ ywang@fau.edu / (561) 297-3 317		<b>Consult and list departments that may be affected by the change(s) and attach documentation</b>	
<b>Approved by</b> Department Chair <u>[Signature]</u> College Curriculum Chair <u>Christopher Beetle</u> 2019.11.20 18:00:34 -05'00' College Dean <u>William David Kalie</u> 11/20/19 UGPC Chair <u>[Signature]</u> UGC Chair <u>[Signature]</u> Graduate College Dean <u>[Signature]</u> UFS President _____ Provost _____		<b>Date</b> 11-15-19 _____ 12/11/19 12/11/19 12-11-19 _____ _____	

Email this form and attachments to [UGPC@fau.edu](mailto:UGPC@fau.edu) one week before the UGPC meeting so that materials may be viewed on the UGPC website prior to the meeting.

GRADUATE COLLEGE

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## Doctoral Program

### Doctor of Philosophy with Major in Mathematics

The degree of Doctor of Philosophy (Ph.D.) is conferred upon those candidates who have demonstrated the ability to make original and independent contributions in mathematics. This quality is evaluated through a dissertation that the candidate must submit to a supervisory committee and defend in an open presentation.

#### Admission to Doctoral Study

Although each candidate will be considered individually, the admission requirements include:

1. A baccalaureate in Mathematics or a related field completed with an average of "B" or better;
2. A minimum GRE score of at least 157 on the quantitative reasoning section;
3. A TOEFL score, if applicable;
4. Three letters of recommendation; and
5. Approval of the FAU Mathematical Sciences Department graduate committee.

#### ~~To be admitted to candidacy:~~

#### Requirements to be admitted to candidacy

1. The student must complete the following courses: Introductory Analysis 1 and 2 (MAA 5228 and 5229), Introductory Abstract Algebra 1 and 2 (MAS 5311 and 5312), Linear Algebra (MAS 5145) and Multivariable Analysis (MAA 5105).

~~2. Successful completion of two qualifying examinations chosen from among the topics of algebra, analysis, probability and statistics. The choice of topics should be guided by the student's research interests. Qualifying examinations must be taken within two years of admission to doctoral study.~~

2. Satisfy one of the following:

Option A. Pass two of the three exams (Algebra, Analysis, Probability & Statistics) within five semesters (not counting the summer terms) of admission to doctoral study. Then form a supervisory committee as outlined in Item 3.

Option B. Complete the following steps within six semesters (not counting the summer terms) of admission to doctoral study:

- (a) Earn a pass on one exam and a constructive attempt on a different exam within four semesters (not counting the summer terms) of admission to doctoral study.
- (b) Select a prospective research advisor, and complete two courses at the 6000-level, selected by the prospective research advisor and approved by the departmental graduate committee. These courses will need to be passed with a combined GPA of at least 3.5. They will count towards Degree Requirement 1a below, but not 1b or 1c. The prospective research advisor may propose additional requirements.
- (c) Receive a positive recommendation by the prospective research advisor and the graduate committee. Then form a supervisory committee as outlined in Item 3 with the prospective research advisor serving as research advisor.

~~3. The student must form a supervisory committee of at least four members including the research advisor and at least two other members of the graduate faculty of the Department of Mathematical Sciences.~~

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### **Degree Requirements**

~~1. Minimum of 80 credits, including 6000-level (or higher) courses starting with at least four of the prefixes MAA, MAD, MAP, MAS, MHF, MTG and STA approved by the department graduate committee. In addition, two 6000-level courses of the same prefix must be taken in at least two of the seven prefixes.~~

1. Credits and course requirements:

- a. Earn a minimum of 80 credits
- b. Complete 6000-level or higher courses starting with at least four of the prefixes MAA, MAD, MAP, MAS, MHF, MTG, and STA.
- c. For at least two of the prefixes of part b, complete at least two 6000-level or higher courses.

2. Successful completion of a preliminary examination covering specific areas of study and set by the student's supervisory committee.

3. Presentation and oral defense of a dissertation.

4. Completion of all University requirements, including at least 18 credits at FAU beyond the master's level.

<b>Core - 18 credits</b>
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Multivariable Analysis	MAA 5105	3
Introductory Analysis 1	MAA 5228	3
Introductory Analysis 2	MAA 5229	3
Linear Algebra	MAS 5145	3
Introductory Abstract Algebra 1	MAS 5311	3
Introductory Abstract Algebra 2	MAS 5312	3
<b>Electives - 18 credits</b> <i>Select 18 credits at the 6000 or 7000 level from the Mathematical Sciences Department</i>		
<b>Remaining Requirements - 43 credits</b> <i>Select 43 credits at the 5000, 6000 or 7000 level from the Mathematical Sciences Department. Students may take MAT 7978, but not MAS 6318, MHF 6405 or MHF 6410.</i>		
<b>Dissertation - 1 credit (minimum)</b>		
Dissertation	MAT 7980	1

## Memorandum

**To:** University Graduate Programs Committee  
**From:** Yuan Wang, Graduate Director, Dept. of Mathematical Sciences  
**Subject:** PhD Program in Mathematics  
**Date:** November 15, 2019

This proposal requests a revision of the qualifying exam requirements. The main change is to add a second option (Option B) for PhD students to fulfill the qualifying exam requirements.

Our current requirement is for PhD students to pass two of the three exams. Each exam is based on a sequence of two courses run in two semesters. Typically, a student focuses on taking the courses and passing the exams in their first two years in the PhD program. However, students may become so anxious about the exams that they do not open their vision for research opportunities. Those who are looking for research opportunities may get torn apart between passing an exam and taking a research opportunity such as a research internship by federal agencies. Some students may get burned out by the time when they finally passed two exams.

Motivated by various flexible options offered in other PhD programs, we are introducing a second option for students to fulfill the qualifying exam requirements. The new option requires a student who has passed one exam and made a constructive attempt on a second exam to complete two advanced graduate courses proposed by a prospective advisor and approved by the departmental graduate committee. Upon meeting a minimum grade requirement and positive recommendations of the prospective advisor and the graduate committee, the student can progress to candidacy.

As stated in the cover page of the proposal, the new option will make it more efficient for qualified students to complete their degrees. Moreover, it will make our PhD program more attractive for prospective students. Many reputable PhD programs in mathematics, including Florida State University, University of South Florida, Ohio State University, and Washington University, have comparable options. For a prospective student admitted by several programs, the flexibility of a program can be a decisive factor for the student to make a choice.

The proposal was approved by the departmental graduate faculty with 22 Yea and 1 Nay.

GRADUATE COLLEGE

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