

Master of Science in Mathematics
Student Handbook¹

Florida Gulf Coast University
Department of Mathematics
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Contents

1	General Information	1
1.1	Getting Started	2
1.2	Program Admission Requirements	2
1.3	Graduate Program Coordinator and Advisers	3
1.4	Student Learning Goals	3
2	Degree Requirements	5
2.1	Graduate Courses	7
2.1.1	Core Requirements - 27 credits	7
2.1.2	Electives - 9 credits	8
2.2	Transfer of Credit Hours	8
3	Tuition, Fees, and Financial Assistance	9
3.1	Tuition and Fees	9
3.2	Graduate Assistantships	9
3.3	Teaching Assistantships	9
3.4	Tuition Waivers	10
3.5	Financial Aid	10
4	Some University Resources	11
5	Appendix: Program Faculty	13

Chapter 1

General Information

The Master of Science in Mathematics program prepares students for careers featuring quantitative skills and problem-solving competencies. Typical vocational paths for graduates of the program include actuarial science, financial analysis, statistical analysis, and education at the secondary or post-secondary level.

Our program offers small class sizes, opportunities for research collaboration with faculty, professional development through conference participation, and the opportunity to gain teaching experience by supporting the undergraduate pedagogical mission.

The emphasis of the program is on applied mathematics, however the core courses provide a rigorous theoretical treatment of the traditional major components of the discipline. Motivated students will be fully prepared to enter a doctoral program.

As a capstone experience, students participate in a research seminar. One quarter of the required credits for the degree may be fulfilled by electives chosen to align with students' special interests. The program is not thesis-based, but students are required to pass three comprehensive examinations, two in core areas and one chosen by the student.

See Section 2 for details.

1.1 Getting Started

Please visit the Office of Graduate Studies website www.fgcu.edu/graduate or contact Graduate Studies at 239-590-7988 or graduate@fgcu.edu for an application for admission and additional information about the application process. Satisfaction of minimum University and program requirements does not guarantee admission to a graduate program. Applicants should check with the program for the most up to date admission requirements prior to commencing the application process.

1.2 Program Admission Requirements

The minimum requirements for admission to the M.S. Mathematics program in the College of Arts & Sciences are as follows:

1. A cover letter of introduction and expression of interest.
2. A baccalaureate degree in mathematics from an accredited institution of higher learning or equivalent foreign institution. A baccalaureate degree in a related discipline may be considered as a substitute provided at least three (3) mathematics courses have been taken beyond the traditional calculus sequence, including Abstract Algebra or Analysis, or their equivalents.
3. An official copy of all undergraduate and graduate (if applicable) transcripts.
4. A minimum grade point average (GPA) of 3.0 on a 4.0 maximum scale for the most recent 60 hours of upper division undergraduate or graduate coursework.
5. An official copy of a Graduate Record Examination (GRE) score report with scores exceeding 290 (Verbal plus Quantitative). GRE must be taken within two (2) years of the date of application to the program. GRE subject exams are not required.

6. A minimum Test of English as Foreign Language (TOEFL) score of 550 (paper-based test) or 213 (computer-based test) or 79 (internet-based test) for an international applicant who is from a country where English is not the primary language.
7. Two letters of recommendation from academic sources capable of assessing your ability to succeed in a graduate program.

For any further information concerning admissions, please contact the Graduate Program Coordinator.

1.3 Graduate Program Coordinator and Advisers

When admitted, a student is assigned an academic adviser from the Mathematics Graduate Faculty (see Section 5) by the Graduate Program Coordinator. All course registrations must be approved by the student's academic adviser.

1.4 Student Learning Goals

Students who complete the Master of Science in Mathematics will have demonstrated progress toward the following learning goals:

1. CRITICAL THINKING SKILLS

The ability to make rational conclusions in the face of incomplete information, to assess the value and reasonableness of available information, to resist intellectual conformity, to evaluate competing arguments dispassionately, and to vigilantly maintain an appropriate standard of logical rigor.

2. PROBLEM-SOLVING ABILITY

The habits of mind that spring from curiosity, an appreciation of cause and effect, a desire to achieve an overarching degree of understanding, a predilection for organization, a willingness to conceptualize a goal and pursue it in the face of uncertainty, and a need to impose clarity.

3. PROFESSIONAL EXPERTISE

The knowledge base, skill set, and professional perspective that mathematicians have at their disposal by virtue of specialized study and experience.

4. LEADERSHIP SKILLS

The ability to function in a leadership role in a professional setting.

5. COMMUNICATION SKILLS

The ability to absorb and disseminate technical information effectively within the context of professional collaboration.

6. CONTINUING LEARNING

The recognition that the world of science and technology is intellectually dynamic and requires a constant professional commitment to remain informed and relevant.

Chapter 2

Degree Requirements

The Master of Science Mathematics degree is awarded to the student who successfully completes the requirements listed below.

1. Successful completion of thirty six (36) credit hours of coursework distributed as follows:
 - (a) Twenty seven (27) credits in *core* courses. See Section 2.1 below. This includes three (3) credits in a capstone seminar experience. (See Section 5 for faculty areas of interest.)
 - (b) Nine (9) credits in elective courses.

Successful completion of a core course requires a minimum grade of B (*not* B minus) or “Satisfactory” (out of Satisfactory/Unsatisfactory), and successful completion of an elective course requires a minimum grade of C (*not* C minus) or “Satisfactory” (out of Satisfactory/Unsatisfactory).

2. The *minimum* cumulative GPA shall be 3.0 on a 4.0 scale. The University’s General Graduate Academic Policies govern terms of probation should the cumulative GPA fall below 3.0. See

<http://www.fgcu.edu/Graduate/policies.html>

3. Earn a passing grade in the following three (3) comprehensive examinations prior to graduation.

- (a) *The Algebra exam.* The content of this exam reflects the content of the required courses MAS 5311 and MAS 5312.
- (b) *The Analysis exam.* The content of this exam reflects the content of the required courses MAA 5228 and MAA 5229.
- (c) Another *core course exam* must be chosen by the student in one of the following areas: Applied Mathematical Statistics I (STA 5355), Topics in Applied Mathematics (MAP 6436), Advanced Linear Algebra (MAS 5145) or Differential Equations (MAP 5316).

Students are allowed three (3) hours for each comprehensive exam.

Students who would like to take a comprehensive exam without having completed the corresponding course(s) with a B or higher must get advanced permission from the Graduate Program Coordinator.

Students are permitted to take each of the comprehensive exams above *at most* three (3) times. If a student fails an exam, then the student must wait until the next test date to retake the exam. If a student fails a comprehensive exam three (3) times, then the student has to retake the corresponding course(s) and complete them successfully (with a grade of B or higher) in order to be permitted to retake that exam three (3) more times.

Comprehensive exams are normally offered during the first weekend after classes begin in the Fall and Spring semesters. Official test dates will be announced by the Graduate Mathematics Testing Committee via email. Students must declare intent via email to take a comprehensive exam by deadline stated in the announcement.

Students may withdraw from taking a comprehensive exam after declaring their intent provided notice has been given to the Graduate Mathematics Testing Committee Chair one (1) month in advance of the test date. Failure to do so will count as a failed attempt of that comprehensive exam. Students who provide documentation of extenuating circumstances can petition the Graduate Mathematics Testing Committee to waive the attempt.

The Graduate Mathematics Testing Committee will assign a grade of Satisfactory (S) or Unsatisfactory (U) to each comprehensive exam. Students will receive a letter from the Graduate Program Coordinator stating the grades S or U received for each comprehensive exam taken during a given testing period.

For appeals or any other information concerning the comprehensive examinations, please contact the Graduate Program Coordinator. Appeals are handled by the Graduate Mathematics Testing Committee through the Graduate Program Coordinator. See section 5.

4. An application to graduate must be submitted online to CAS Advising prior to the deadline given in the FGCU academic calendar.

2.1 Graduate Courses

2.1.1 Core Requirements - 27 credits

- MAA 5228 Modern Analysis I (3 credits)
- MAA 5229 Modern Analysis II (3 credits)
- MAS 5311 Modern Algebra I (3 credits)
- MAS 5312 Modern Algebra II (3 credits)
- MAP 6436 Topics in Applied Mathematics (3 credits)
- STA 5355 Applied Mathematical Statistics I (3 credits)
- MAS 5145 Advanced Linear Algebra (3 credits)
- MAP 5316 Differential Equations I (3 credits)
- MAT 6930 Research Seminar (3 credits)

2.1.2 Electives - 9 credits

- MTG 5316 General Topology (3 credits)
- MAD 5206 Applied Combinatorics (3 credits)
- MAA 5406 Complex Analysis I (3 credits)
- MAP 5317 Differential Equations II (3 credits)
- MHF 5107 Set Theory (3 credits)
- MHF 5405 History of Mathematics (3 credits)
- MAS 5215 Number Theory (3 credits)
- MAT 5932 Special Topics (1-3 credits)
- MAT 6907 Directed Individual Study (1-4 credits)
- EDG 6356 Instructional Models and Strategies (3 credits)
- MAE 6336 Math Methods 6-12 (3 credits)

2.2 Transfer of Credit Hours

A maximum of nine (9) credit hours may be transferred from another institution to apply towards the thirty six (36) credit hours required for the M.S. Mathematics. Requests for transfer of credit hours are subject to the approval of the Graduate Program Coordinator. Students may apply a maximum of nine (9) credit hours completed as a non-degree seeking student toward the completion of a graduate degree as approved by the program.

Chapter 3

Tuition, Fees, and Financial Assistance

3.1 Tuition and Fees

Information on Tuition, Fees and estimated total Cost of Attendance is available on the Office of the Bursar web site.

<http://www.fgcu.edu/Cashiers/tuition-and-fees.html>

3.2 Graduate Assistantships

A limited number of graduate assistantships are available for full-time students (those enrolled in 9 or more credit hours per semester). These are awarded competitively, and admission into the program does not guarantee a graduate assistantship. These include stipends for work, research assistance, or in the one of the other programs sponsored by the Department of Mathematics.

3.3 Teaching Assistantships

A limited number of teaching assistantships are available for students that have been admitted to the program and have successfully completed 18

credit hours toward their degree. These are awarded competitively; meeting the minimum qualifications does not guarantee a teaching assistantship.

3.4 Tuition Waivers

A limited number of tuition waivers, which cover only in-state matriculation fees, are available. These are awarded competitively. To access the application, visit the tuition waiver page.

3.5 Financial Aid

Visit FGCU's Financial Aid Web site for information about grants, scholarships, loans, and student employment.

Chapter 4

Some University Resources

- The Master of Science in Mathematics program
<http://www.fgcu.edu/CAS/MathMS/index.asp>
- Graduate Mathematics Comprehensive Exams
<http://faculty.fgcu.edu/acondori/examsPage.html>
- Office of Research and Graduate Studies (ORGS)
<http://www.fgcu.edu/graduate/>
- General Graduate Academic Policies
<http://www.fgcu.edu/Graduate/policies.html>
- Graduate Student Handbook
<http://www.fgcu.edu/Graduate/handbook.html>
- International Services
<http://www.fgcu.edu/international/>

Chapter 5

Appendix: Program Faculty

GRADUATE FACULTY

OFFICE, TELEPHONE & E-MAIL

1. Tom Beatty AB7 202, (239) 590-7217
Professor & Graduate Program Coordinator tbeatty@fgcu.edu
Areas of Interest: Set-theoretic topology, functional analysis, particularly topological vector spaces/locally convex spaces.
2. Cara Brooks WH 206, (239) 590-7073
Assistant Professor cbrooks@fgcu.edu
Areas of Interest: Inverse and Ill-posed problems, Integral Equations, and Numerical Analysis.
3. Alberto Condori AB7 226, (239) 590-1458
Assistant Professor acondori@fgcu.edu
Areas of Interest: Operatory Theory, Functional Analysis, Complex Analysis, and Harmonic Analysis.
4. Peng Feng AB7 205, (239) 590-7377
Associate Professor pfeng@fgcu.edu
Areas of Interest: Partial differential equations, ordinary differential equations and mathematical biology.

5. Thomas Hair AB7 207, (239) 590-7178
 Assistant Professor twhair@fgcu.edu
 Areas of Interest: Monte Carlo simulation and exploratory data analysis.
6. Erik Insko MH 172, (239) 590-7297
 Assistant Professor einsko@fgcu.edu
 Areas of Interest: Algebraic Geometry, Combinatorics, and Topology.
7. Brian Johnson MH 173, (239) 590-1284
 Assistant Professor bpjohnson@fgcu.edu
 Areas of Interest: Commutative algebra, and specifically graded rings and algebras.
8. Katie Johnson MH 175, (239) 590-7235
 Assistant Professor kjohnson@fgcu.edu
 Areas of Interest: Extremal, probabilistic, and enumerative combinatorics and graph theory.
9. Daniel Kern AB7 224, (239) 590-1261
 Assistant Professor dkern@fgcu.edu
 Areas of Interest: Biomathematics, Optimal Control, Differential Equations and Mathematical Modeling.
10. Shuang Li WH 204, (239) 590-7436
 Assistant Professor sli@fgcu.edu
 Areas of Interest: Statistical Modeling, Reliability of Complex Systems and High-dimension Data Inference.
11. Chuck Lindsey AB7 203, (239) 590-7168
 Associate Professor clindsey@fgcu.edu
 Areas of Interest: History of mathematics, Probability and stochastic processes, and Integration theory.

12. Menaka Navaratna AB7 204, (239) 590-7544
 Associate Professor mnavarat@fgcu.edu
 Areas of Interest: Applied Mathematics, Modeling, and Biomathematics.
13. Galen Papkov WH 205, (239) 590-1262
 Assistant Professor gpapkov@fgcu.edu
 Areas of Interest:
14. Richard Schnackenberg.....AB7 210, (239) 590-7435
 Department Chair and Assistant Professor rschnack@fgcu.edu
 Areas of Interest: Algebra, Finite Groups, and Model Theory.
15. Jaffar Ali Shahul-Hameed.....AB7 206, (239)590-1470
 Associate Professor jashahulhameed@fgcu.edu
 Areas of Interest: Applied Mathematics, Applied Analysis and Differential Equations (ODE & PDE).
16. Shaun SullivanLIB 460C, (239) 590-1267
 Visiting Assistant Professor ssullivan@fgcu.edu
 Areas of Interest: Lattice Path Combinatorics and Finite Operator Calculus.