FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Graduate Programs

UGPC Approval _____
UFS Approval _____
Banner _____
Catalog _____

Department Mathematical Sciences

College Science

Program Name
Master of Science in Mathematics

☐ **New Program***

☑ **Change Program***

Effective Date
(TERM & YEAR)
Fall 2024

Please explain the requested change(s) and offer rationale below or on an attachment.

Remove the GRE admission requirement, as this is a trend at FAU and many other universities which will help increase the number of applicants and reduce the cost for applicants.

*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.

Faculty Contact/Email/Phone
Hongwei Long, hlong@fau.edu, 561-297-0810

Consult and list departments that may be affected by the change(s) and attach documentation
NA

Approved by	***Date***
Department Chair	10/17/2023
College Curriculum Chair	10/23/2023
College Dean	10/23/2023
UGPC Chair	
UGC Chair	
Graduate College Dean	
UFS President	
Provost	

Email this form and attachments to UGPC@fau.edu 10 days before the UGPC meeting.

MATHEMATICS
MASTER OF SCIENCE (M.S.)

Pure Mathematics Concentration
Applied Analysis Concentration
Biostatistics Concentration
Cryptology and Information Security Concentration
Financial Mathematics Concentration

This program is designed to provide a foundation for mathematical work and application of mathematics in scientific or technical fields and industry. It should normally take a full-time student two years to complete. Five concentrations are offered: Pure Mathematics, Applied Analysis, Biostatistics, Cryptology and Information Security, and Financial Mathematics.

Admission Requirements

In addition to meeting the University graduate admission requirements ~~(including a score of at least 155 on the quantitative reasoning section of the GRE)~~, applicants must have a bachelor's degree in mathematics or coursework that includes the equivalent of Introduction to Advanced Mathematics, Modern Algebra, and Probability and Statistics 1, as well as computer competency. Applicants who do not meet all of the requirements will still be considered for conditional admission.

Degree Requirements

To complete the M.S. degree in Mathematics the candidate must complete at least 30 credits of graduate coursework and satisfy the following criteria in addition to University requirements:

1. Earn at least 24 credits in courses specified in a degree concentration, pre-approved by the graduate advisor in mathematics; at least 15 credits of all credits applied to the degree must be at the 6000 level;
2. If pre-approved by the department graduate committee, up to 12 credits of FAU coursework from outside of the Department of Mathematical Sciences may count toward the degree.

3. Complete one of the following three capstone options:

    a. Successfully complete and defend a master's thesis, earning at least 6 credits of MAT 6971, Master's Thesis;

b. Successfully complete and report on an industrial internship, earning at least 6 credits; or

c. Successfully complete a master's examination. The exam should be scheduled during the semester before the anticipated completion of coursework for the degree. Students should contact the departmental graduate director to schedule the exam.

Capstone Options	
Thesis - 6 credits	
Master's Thesis (may be taken over multiple terms)	MAT 6971
Internship - 6 credits	
Internship in Applied Mathematics	MAP 6941
Non-Thesis, Non-Internship - 6 credits	
Choose 6 credits of graduate courses approved by the department and complete M.S. exam.	

Concentration Options

Pure Mathematics - 24 credits	
Common Core Course	
Linear Algebra	MAS 5145
Additional Core Courses - 9 credits, choose three of the following four courses.	
Introductory Analysis 1	MAA 5228
Introductory Analysis 2	MAA 5229
Introductory Abstract Algebra 1	MAS 5311
Introductory Abstract Algebra 2	MAS 5312
At least four elective courses - 12 credits. Choose 12 credits at the 5000 or 6000 level from courses in the Mathematical Sciences Department. A minimum of 9 credits must be at the 6000 level.	

Applied Analysis - 24 credits	
Common Core Course	
Linear Algebra	MAS 5145
Additional Core Courses - 9 credits	
Introductory Analysis 1	MAA 5228
Computational Mathematics	MAD 6403
Numerical Analysis	MAD 6407
Ordinary Differential Equations	MAP 6336
Partial Differential Equations	MAP 6345
At least four elective courses - 12 credits	
Introduction to Data Science	CAP 5768
Multivariable Analysis	MAA 5105
Introductory Analysis 2	MAA 5229
Real Analysis	MAA 6306
Complex Analysis 1	MAA 6406

Introduction to Functional Analysis	MAA 6506
Computational Mathematics	MAD 6403
Numerical Analysis	MAD 6407
Introduction to Dynamical Systems and Chaos 1	MAP 6211
Ordinary Differential Equations	MAP 6336
Partial Differential Equations	MAP 6345
Supervised University Instruction in Mathematics	MAT 5946
General Topology 1	MTG 6316
Regression Analysis	STA 6236
Mathematical Statistics	STA 6326
Mathematical Probability	STA 6444
Applied Time Series Analysis	STA 6857

Biostatistics - 24 credits	
Common Core Course	
Linear Algebra	MAS 5145
Additional Core Courses - 9 credits	
Biostatistics	STA 5195
Mathematical Statistics	STA 6326
Mathematical Probability	STA 6444
At least four elective courses - 12 credits	
Introduction to Data Science	CAP 5768
Data Mining and Machine Learning	CAP 6673
Multivariable Analysis	MAA 5105
Numerical Analysis	MAD 6407
Supervised University Instruction in Mathematics	MAT 5946
Statistical Computing	STA 6106
Survival Analysis	STA 6177
Biostatistics - Longitudinal Data Analysis	STA 6197
Applied Statistical Methods	STA 6207
Regression Analysis	STA 6236
Topics in Probability and Statistics (Stochastic Calculus)	STA 6446
Applied Time Series Analysis	STA 6857

Cryptology and Information Security - 24 credits	
Common Core Course	
Linear Algebra	MAS 5145
Additional Core Courses - 9 credits	
Introduction to Cryptology and Information Security	MAD 5474
Cryptanalysis	MAD 6478
Coding Theory	MAD 6607
Three courses - 9 credits from the following	
Introductory Analysis 1	MAA 5228

Introductory Analysis 2	MAA 5229
Introductory Abstract Algebra 1	MAS 5311
Introductory Abstract Algebra 2	MAS 5312
Mathematical Statistics	STA 6326
Mathematical Probability	STA 6444
At least one elective course - 3 credits	
Computer Data Security	CIS 6370
Distributed Systems Security	CIS 6375
Analysis of Algorithms	COT 6405
Secret Sharing Protocols	COT 6427
Randomized Algorithms	COT 6446
Computer Networks	CNT 5008
Cyber Security: Measurement and Data Analysis	CTS 6319
Information Theory	EEL 6532
Enumerative Combinatorics	MAD 6206
Graph Theory	MAD 6307
Computational Mathematics	MAD 6403
Cryptography	MAD 6477
Algebraic Number Theory	MAS 6215
Algebraic Curves	MAS 6315
Commutative Algebra	MAS 6333
Topics in Algebra	MAS 6396
Supervised University Instruction in Mathematics	MAT 5946
Special Topics	MAT 6933
Mathematical Statistics	STA 6326
Mathematical Probability	STA 6444

Financial Mathematics - 24 credits	
Common Core Course	
Linear Algebra	MAS 5145
Additional Core Courses - 18 credits	
Introductory Analysis 1	MAA 5228
Mathematical Statistics	STA 6326
Mathematical Probability	STA 6444
Topics in Probability and Statistics (Stochastic Calculus)	STA 6446
Applied Time Series Analysis	STA 6857
Directed Independent Study	STA 6907
At least one elective course - 3 credits	
Data Mining and Machine Learning	CAP 6673
Financial Markets	FIN 6246
Financial Management	FIN 6406
Portfolio Theory	FIN 6525
Multivariable Analysis	MAA 5105

Introductory Analysis 2	MAA 5229
Supervised University Instruction in Mathematics	MAT 5946
Statistical Computing	STA 6106
Applied Statistical Methods	STA 6207
Regression Analysis	STA 6236
Topics in Probability and Statistics	STA 6446
Directed Independent Study	STA 6907