FAU
FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Graduate Programs

Department Mathematical Sciences

College Science

UGPC Approval _____

UFS Approval _____

Banner _____

Catalog _____

Program Name		Effective Date (TERM & YEAR)
Master of Science in Mathematics	☐ New Program*	
	✔ Change Program*	Spring 2023

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

This proposal requests a revision on the course requirements of the MS program in Mathematics. We are requesting to add the course MAT 5946-Supervised University Instruction in Mathematics to the list of elective courses of the four concentrations: Applied Analysis, Biostatistics, Cryptology and Information Security, and Financial Mathematics for the MS program in Mathematics.

Rationale: Currently MAT 5946 can be counted as an elective for Ph.D. in Mathematics, MS in the Pure Mathematics concentration, and MST (Master of Science in Teaching Mathematics), but not the four concentrations: Applied Analysis, Biostatistics, Cryptology and Information Security, and Financial Mathematics in the MS program in Mathematics. That is a discrepancy between programs that we wanted to correct. So it is reasonable for us to make changes to the MS program in Mathematics by adding MAT 5946 to the list of electives for the aforementioned four concentrations.

*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	Consult and list departments that may be affected by the change(s) and attach documentation
Hongwei Long / hlong@fau.edu / (561) 297-0810	

Approved by

		Date
Department Chair	*[signature]*	11/16/2022
College Curriculum Chair	*Louis Merlin*	11/29/2022
College Dean	———	———
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.

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	1-6
Internship - 6 credits		
Internship in Applied Mathematics	MAP 6941	1-6
Non-Thesis, Non-Internship - 6 credits		
Select 6 credits of graduate courses approved by the department and complete ~~and~~ M.S. exam.		
Concentration Options		
Pure Mathematics - 24 credits		
Common Core Course		
Linear Algebra	MAS 5145	3
Additional Core Courses - 9 credits, select three of the following four courses		
Introductory Analysis 1	MAA 5228	3
Introductory Analysis 2	MAA 5229	3
Introductory Abstract Algebra 1	MAS 5311	3

Introductory Abstract Algebra 2	MAS 5312	3

At least four elective courses - 12 credits. Select 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	3
Additional Core Courses - 9 credits		
Introductory Analysis 1	MAA 5228	3
Computational Mathematics	MAD 6403	3 **or**
Numerical Analysis	MAD 6407	3
Ordinary Differential Equations	MAP 6336	3 **or**
Partial Differential Equations	MAP 6345	3
At least four elective courses - 12 credits		
Introduction to Data Science	CAP 5768	3
Multivariable Analysis	MAA 5105	3
Introductory Analysis 2	MAA 5229	3
Real Analysis	MAA 6306	3
Complex Analysis 1	MAA 6406	3
Introduction to Functional Analysis	MAA 6506	3
Computational Mathematics	MAD 6403	3
Numerical Analysis	MAD 6407	3
Introduction to Dynamical Systems and Chaos 1	MAP 6211	3
Ordinary Differential Equations	MAP 6336	3
Partial Differential Equations	MAP 6345	3
Supervised University Instruction in Mathematics	MAT 5946	3
General Topology 1	MTG 6316	3
Regression Analysis	STA 6236	3
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3
Applied Time Series Analysis	STA 6857	3
Biostatistics - 24 credits		
Common Core Course		
Linear Algebra	MAS 5145	3
Additional Core Courses - 9 credits		
Biostatistics	STA 5195	3
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3
At least four elective courses - 12 credits		
Introduction to Data Science	CAP 5768	3
Data Mining and Machine Learning	CAP 6673	3

Multivariable Analysis	MAA 5105	3
Numerical Analysis	MAD 6407	3
Supervised University Instruction in Mathematics	MAT 5946	3
Statistical Computing	STA 6106	3
Survival Analysis	STA 6177	3
Biostatistics - Longitudinal Data Analysis	STA 6197	3
Applied Statistical Methods	STA 6207	3
Regression Analysis	STA 6236	3
Topics in Probability and Statistics (Stochastic Calculus)	STA 6446	3
Applied Time Series Analysis	STA 6857	3
Cryptology and Information Security - 24 credits		
Common Core Course		
Linear Algebra	MAS 5145	3
Additional Core Courses - 9 credits		
Introduction to Cryptology and Information Security	MAD 5474	3
Cryptanalysis	MAD 6478	3
Coding Theory	MAD 6607	3
Three courses (9 credits) from the following		
Introductory Analysis 1	MAA 5228	3
Introductory Analysis 2	MAA 5229	3
Introductory Abstract Algebra 1	MAS 5311	3
Introductory Abstract Algebra 2	MAS 5312	3
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3
At least one elective course - 3 credits		
Computer Data Security	CIS 6370	3
Distributed Systems Security	CIS 6375	3
Analysis of Algorithms	COT 6405	3
Secret Sharing Protocols	COT 6427	3
Randomized Algorithms	COT 6446	3
Computer Networks	CNT 5008	3
Cyber Security: Measurement and Data Analysis	CTS 6319	3
Information Theory	EEL 6532	3
Enumerative Combinatorics	MAD 6206	3
Graph Theory	MAD 6307	3
Computational Mathematics	MAD 6403	3
Cryptography	MAD 6477	3
Algebraic Number Theory	MAS 6215	3
Algebraic Curves	MAS 6315	3
Commutative Algebra	MAS 6333	3
Topics in Algebra	MAS 6396	3

Supervised University Instruction in Mathematics	MAT 5946	3
Special Topics	MAT 6933	1-4
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3
Financial Mathematics - 24 credits		
Common Core Course		
Linear Algebra	MAS 5145	3
Additional Core Courses - 18 credits		
Introductory Analysis 1	MAA 5228	3
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3
Topics in Probability and Statistics (Stochastic Calculus)	STA 6446	3
Applied Time Series Analysis	STA 6857	3
Directed Independent Study	STA 6907	1-4
At least one elective course - 3 credits		
Data Mining and Machine Learning	CAP 6673	3
Financial Markets	FIN 6246	3
Financial Management	FIN 6406	3
Portfolio Theory	FIN 6525	3
Multivariable Analysis	MAA 5105	3
Introductory Analysis 2	MAA 5229	3
Supervised University Instruction in Mathematics	MAT 5946	3
Statistical Computing	STA 6106	3
Applied Statistical Methods	STA 6207	3
Regression Analysis	STA 6236	3
Topics in Probability and Statistics	STA 6446	3
Directed Independent Study	STA 6907	3