

 FLORIDA ATLANTIC UNIVERSITY	NEW/CHANGE PROGRAM REQUEST Graduate Programs		UGPC Approval _____ UFS Approval _____ Banner _____ Catalog _____
	Department Mathematical Sciences College Science		
Program Name Combined Bachelor of Science/Master of Science with Major in Applied Mathematics and Statistics		<input type="checkbox"/> New Program* <input checked="" type="checkbox"/> Change Program*	Effective Date (TERM & YEAR) Fall 2022
<p>Please explain the requested change(s) and offer rationale below or on an attachment.</p> <p>This proposal requests to terminate the combined Bachelor of Science/Master of Science with Major in Applied Mathematics and Statistics since we are going to terminate the Master of Science in Applied Mathematics and Statistics (AMST) program. Consequently the catalog entries for the combined BS/MS in AMST program should be removed from the university catalog.</p> <p>Rationale: Due to low enrollment and graduates of the AMST program, we have proposed to merge the AMST program with MS in Mathematics with five concentrations: pure mathematics, applied analysis, biostatistics, cryptology and information security, and financial mathematics. Consequently we have made the program change for the combined Bachelor of Science/Master of Science with Major in Mathematics by incorporating the merged MS in Mathematics program. All the prospective students interested in combined program with focus on applied mathematics and statistics can apply for the combined Bachelor of Science/Master of Science with Major in Mathematics program by choosing the appropriate concentration.</p>			
<p><small>*All new programs and changes to existing programs must be accompanied by a catalog entry showing the new or proposed changes.</small></p>			
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	
Approved by Department Chair <u>AC Locke</u> College Curriculum Chair <u>Christopher Beetle</u> <small>Digitally signed by Christopher Beetle Date: 2021.11.23 19:57:58 -05'00'</small> College Dean <u>William David Kulis</u> UGPC Chair <u>Christopher Beetle</u> UGC Chair <u>Paul P. [Signature]</u> Graduate College Dean <u>Robert W. Stackman Jr.</u> <small>Robert W. Stackman Jr. (Jan 4, 2022 21:22 EST)</small> UFS President _____ Provost _____		Date <u>11/18/21</u> _____ 11/19/21 Jan 4, 2022 Jan 4, 2022 Jan 4, 2022 _____ _____	

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

Combined Bachelor of Science/Master of Science with Major in Mathematics

This accelerated, five-year program leads to both Bachelor of Science (B.S.) and a Master of Science (M.S.) degrees. The combined degree program is 150 credits: 120 credits for the undergraduate degree and 30 for the master's degree, with a maximum of 12 credits of graduate coursework used to satisfy both degrees. To allow for maximum flexibility in career aspirations, students may select from five concentrations:

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

Once admitted into the program, students shall follow the suggested course sequence within a single concentration. The baccalaureate degree will be conferred before the master's degree.

Students must maintain a GPA of 3.0 in upper-division and graduate courses. Students interested in the combined B.S./M.S. should consult with the graduate advisor before taking upper-division mathematics coursework to ensure that their coursework will apply toward the combined degree. Students must take the GRE and apply for admission to candidacy by the end of their junior year.

Prerequisite Coursework for Transfer Students

Students transferring to Florida Atlantic University must complete both lower-division requirements (including the requirements of the Intellectual Foundations Program) and requirements for the college and major. Lower-division requirements may be completed through the A.A. degree from any Florida public college, university or community college or through equivalent coursework at another regionally accredited institution. Before transferring and to ensure timely progress toward the baccalaureate degree, students must also complete the prerequisite courses for their major as outlined in the [Transition Guides](#).

All courses not approved by the Florida Statewide Course Numbering System that will be used to satisfy requirements will be evaluated individually on the basis of content and will require a catalog course description and a copy of the syllabus for assessment.

In addition to the University and Charles E. Schmidt College of Science requirements, students seeking a B.S./M.S. degree in Mathematics must complete the following courses:

Calculus with Analytic Geometry 1	MAC 2311	4
Calculus with Analytic Geometry 2	MAC 2312	4
Calculus with Analytic Geometry 3	MAC 2313	4
Matrix Theory	MAS 2103	3
Discrete Mathematics	MAD 2104	3
Introduction to Computational Math	MAD 2502	3
Mathematical Problem Solving	MAT 4937	3
Linear Algebra 2	MAS 4107	3
Probability and Statistics 1	STA 4442	3
Introductory Complex Analysis	MAA 4402	3
Three upper-division undergraduate electives (3000-4000 level) (see note 1 below)		9
Total Undergraduate Math Credits		42
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

Six graduate electives (at least five at 6000 level)	18
Total Graduate Credits	30

Notes:

1. ~~Upper division mathematics electives: These electives must be chosen from courses offered by the Department of Mathematical Sciences and numbered 3000 or higher. The following courses may not be used as upper division mathematics electives: STA 3163, STA 3173, STA 3949, MAT 3949, MAP 4945 or STA 4821.~~

2. ~~Because of overlap in course content, Mathematics majors may receive credit for at most one course in each of the following pairs: (MAP 2302, MAP 3305); (MAP 4303, MAP 4306); (MAD 3400, MAD 4401); (STA 4443, STA 4032).~~

3. ~~Students may opt to take up to 6 master's thesis credits as elective courses, but the student must successfully complete a master's thesis for these credits to be counted toward the degree requirements.~~

4. ~~The 12 credits from the graduate courses: MAA 5228, 5229, MAS 5311 and MAS 5312 will be counted toward both degrees.~~

B.S. Curriculum

Students must complete the requirements of the B.S. degree in Mathematics. Twelve graduate credits will count toward both B.S. and M.S. degree requirements. Students must select 12 credits from the graduate courses within a single concentration.

Pure Mathematics Concentration. Four courses from the following list		
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
Linear Algebra	MAS 5145	3
Applied Analysis Concentration. Four courses from Lists A and B, with at least one from List A		
<i>List A</i>		
Introductory Analysis 1	MAA 5228	3
Linear Algebra	MAS 5145	3
Computational Mathematics	MAD 6403	3
Numerical Analysis	MAD 6407	3
Ordinary Differential Equations	MAP 6336	3
Partial Differential Equations	MAP 635	3
<i>List B</i>		
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 Dynamical Systems and Chaos 1	MAP 6211	3
General Topology 1	MTG 6313	3
Regression Analysis	STA 6236	3
Mathematical Statistics	STA 6326	3

Mathematical Probability	STA 6444	3
Applied Time Series Analysis	STA 6857	3
Biostatistics Concentration. Four courses from Lists A and B, with at least one from List A		
<i>List A</i>		
Biostatistics	STA 5195	3
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3
Linear Algebra	MAS 5145	3
<i>List B</i>		
Introduction to Data Science	CAP 5768	3
Multivariable Analysis	MAA 5105	3
Numerical Analysis	MAD 6407	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 Concentration. Four courses from Lists A and B, with at least one from List A		
<i>List A</i>		
Introduction to Cryptology and Information Security	MAD 5474	3
Cryptanalysis	MAD 6478	3
Coding Theory	MAD 6607	3
Linear Algebra	MAS 5145	3
<i>List B</i>		
Introductory Analysis 1	MAA 5228	3
Introductory Analysis 2	MAA 5229	3
Enumerative Combinatorics	MAD 6206	3
Graph Theory	MAD 6307	3
Computational Mathematics	MAD 6403	3
Cryptography	MAD 6477	3
Introductory Abstract Algebra 1	MAS 5311	3
Introductory Abstract Algebra 2	MAS 5312	3
Algebraic Number Theory	MAS 6215	3
Algebraic Curves	MAS 6315	3
Commutative Algebra	MAS 6333	3
Topics in Algebra	MAS 6396	3

Special Topics	MAS 6933	1-4
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3
Financial Mathematics Concentration. Four courses from Lists A and B, with at least one from List A		
<i>List A</i>		
Introductory Analysis 1	MAA 5228	3
Mathematical Statistics	STA 6236	3
Mathematical Probability	STA 6444	3
Linear Algebra	MAS 5145	3
<i>List B</i>		
Multivariable Analysis	MAA 5105	3
Introductory Analysis 2	MAA 5229	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
Applied Time Series Analysis	STA 6857	3
Directed Independent Study	STA 6907	3

The 12 graduate credits can either be counted as upper-division math electives or as a substitute for a required course as follows:

MAA 5228 can be used to substitute for MAS 3156
MAA 6406 can be used to substitute for MAA 4402
MAS 5145 can be used to substitute for MAS 4107
MAS 5311 can be used to substitute for MAS 4301

M.S. Curriculum

Students complete all requirements for the M.S. degree with Major in Mathematics.