FAU FLORIDA ATLANTIC UNIVERISTY

New Combined Degree Program Request

UUPC Approval _____

UGPC Approval _____

UFS Approval _____

Banner Posted _____

Catalog _____

New Combined Degree Program Request

Proposed Program: _BA or BS, concentration in Math with MS in AMST_ CIP:_____ Effective Date (Term/Year): _Fall_/2020 (e.g. Fall/2020)

Proposed Combined Program Information	Undergraduate	Graduate
Degree Level (e.g. B.A., B.S., M.A., M.S., etc.)	B.A. or B.S.	M.S.
Program Name (e.g. Physics, Engineering, etc.)	Liberal Arts and Sciences Biological and Physical Sciences	Applied Mathematics and Statistics (AMST)
College	Wilkes Honors College	Schmidt College of Science
Department	NA	Mathematical Sciences
Program Description (provide a brief description of the program, including thesis or non-thesis option)	The combined program is offered in partnership with the Wilkes Honors College. The B.A. or the B.S. degree is completed at the Wilkes Honors College, the MS degree is completed in the Department of Mathematical Sciences, Schmidt College of Science. For the Master's degree, both thesis and non-thesis options are available.	

Curriculum Requirements

GPA Requirements: Departments must establish a minimum undergraduate GPA for students to be admitted to a combined program. *Note: Please attach explanation.* GPA of 3.0 in upper-division and graduate courses	**List courses to be shared:** Up to twelve (12) credit hours of graduate courses (5000 level or above course work) may be shared between the graduate and undergraduate degree for a combined program. *Note: Please attach explanation:* • *Academic justification for shared credits and catalog language* • *List the undergraduate course that will be replaced by graduate courses.*	

Faculty Submitting Request	Name	Signature	Email	Date
	Yuan Wang	*Yuan Wang*	ywang@fau.edu	2/18/2020

Approved by

Department Chair: *R. Stevenson*

College Dean: *William David Kalie*

College Curriculum Chair: *Christopher Beetle* 2020.03.06 11:38:50 -05'00'

UUPC Chair: _____

Undergraduate Studies Dean: _____
(Note: Forward approved form to UGPC@fau.edu)

UGPC Chair: _____

UGC Chair: _____

Graduate College Dean: _____

UFS President: _____

Provost: _____

Date

2/25/20

March 9, 2020

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Email this form and syllabus to mjenning@fau.edu seven business days before the UUPC meeting.

For questions, contact the Graduate College at ugpc@fau.edu

GRADUATE COLLEGE

MAR 09 2020   Updated: 01/31/2020

Academic Justification

The Wilkes Honors College (WHC) and the Department of Mathematical Sciences propose a combined program, where the B.A. or the B.S. degree in Liberal Arts or Sciences or in Biological and Physical Sciences is completed at the Wilkes Honors College, and the MS degree in Applied Mathematics and Statistics is completed in the Department of Mathematical Sciences, Schmidt College of Science.

Background information:

- The degree programs listed in this proposal are both offered currently.
- Neither new courses nor additional resources are required.

Justification:

The combined program is expected to help retain the best and brightest of our own students, as well as recruit talented students to the bachelor's programs. There have been bright and ambitious students who took graduate courses in mathematics while completing their bachelor's degrees. The combined program will entice such students to complete the MS degree at FAU. Some students may also be persuaded to continue towards a doctoral education in a STEM field.

The applied nature of the MS program in Applied Mathematics and Statistics may enhance the opportunity for students to find jobs or internship positions in industry, thereby attracting students interested in real world applications of mathematics.

Admission requirements:

Students should complete their BA or BS degrees with Concentration in Mathematical Sciences or Mathematics. In addition, students are required to have completed MAS 4107 Linear Algebra 2 and STA 4442 Probability and Statistics 1. The GPA requirement is 3.0 for upper division and graduate courses.

Courses to be shared by the BS and MS programs:

The four graduate courses to be shared by the BS and MS programs are to be taken from a single track of the MS program, and will be part of the MS curriculum. Covering higher level material, the graduate courses are also suitable substitutions for upper-division electives and required courses for the undergraduate curriculum.

<u>Catalog Description</u>

Bachelor of Arts with Major in Liberal Arts and Sciences, with Concentration in Mathematical Sciences; or Bachelor of Arts or Bachelor of Science with Major in Biological and Physical Sciences, with Concentration in Mathematics; to Master of Science Degree with Major in Applied Mathematics and Statistics

The combined program is offered in partnership with the Wilkes Honors College (WHC). The B.A. or the B.S. degree is completed at the Wilkes Honors College, the MS degree is completed in the Department of Mathematical Sciences, Schmidt College of Science.

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. Once admitted into the program, students shall follow the suggested course sequences within a single track. 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 this program should consult with the undergraduate and graduate advisors 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.

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.

The Bachelor's Curriculum:

Students must complete the requirements of the B.A. or the B.S. degree with concentration in Mathematical Sciences or Mathematics from the Wilkes Honors College. In addition, students must complete MAS 4107 Linear Algebra 2 and STA 4442 Probability and Statistics.

Twelve graduate credits from the Department of Mathematical Sciences can be counted toward both the Bachelor's degree and the MS degree. The twelve graduate credits should be chosen within a single track of the MS program.

Applied Analysis Track: four courses from Lists A and B, with at least one from List A		
List A		
Introductory Analysis 1	MAA 5228	3
Linear Algebra	MAS 5145	3
Computational Math	MAD 6403	3
Numerical Analysis	MAD 6407	3
Ordinary Differential Equations	MAP 6336	3
Partial Differential Equation	MAP 6345	3
List B		
Introduction to Data Science	CAP 5786	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
Introduction to Dynamical Systems & Chaos 1	MAP 6211	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 Track: four courses from Lists A and B, with at least one from List A.

List A		
Biostatistics	STA 5195	3
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3

List B		
Introduction to Data Science	CAP 5786	3
Data Mining and Machine Learning	CAP 6673	3
Multivariable Analysis	MAA 5105	3
Numerical Analysis	MAD 6407	3
Linear Algebra	MAS 5145	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 Track: four courses from Lists A and B, with at least one from List A

List A		
Intro to Crypto and Information Security	MAD 5474	3
Cryptanalysis	MAD 6478	3
Coding Theory	MAD 6607	3

List B		
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
Linear Algebra	MAS 5145	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 (Group Theory)	MAS 6396	3
Special Topics (Elliptic Curves / Computational Group Theory)	MAT 6933	3
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3

Financial Mathematics Track: four courses from Lists A and B, with at least one from List A.

List A		
Introductory Analysis 1	MAA 5228	3
Mathematical Statistics	STA 6326	3
Mathematical Probability	STA 6444	3
List B		
Multivariable Analysis	MAA 5105	3
Introductory Analysis 2	MAA 5229	3
Linear Algebra	MAS 5145	3
Statistical Computing	STA 6106	3
Applied Statistical Methods	STA 6207	3
Regression Analysis	STA 6236	3
Topics in Probability and Statistics (Topics in Stochastic Processes)	STA 6446	3
Topics in Probability and Statistics (Stochastic Calculus)	STA 6446	3
Applied Time Series Analysis	STA 6857	3
Directed Independent Study (Financial Mathematics 1)	STA 6907	3

Directed Independent Study (Financial Mathematics 2)	STA 6907	3

The 12 credits from the graduate courses can be counted as the upper-division math electives or as a substitute as follows:

MAA 5228 can be used to substitute for MAA 4200
MAS 5312 can be used to substitute for MAS 4301
MAS 5145 can be used to substitute for MAS 4107

The MS Curriculum:

Students complete all requirements of the MS degree with major in Applied Mathematics and Statistics.

4 YEAR FLIGHT PLAN:
BA or BS in Liberal Arts and Sciences or in Biological and Physical Sciences with a
Concentration in <u>Mathematics or Mathematical Sciences doing the</u>
<u>Combined BS/MS in Mathematics or Applied Mathematics and Statistics</u>
For students entering Fall 2020 and later

FAU is committed to your success as a student. One way we define student success is efficient and effective progression through your degree program.

This Flight Plan is a tool to assist you in planning the courses you should complete and the milestones you should reach during your undergraduate studies so you may graduate on time. It is our intention that you complete this planning tool in *collaboration with your academic advisor* to ensure good understanding of:

- Which graduation requirements you have satisfied
- Which Honors College Core and elective courses will best help you explore your interests and future goals or develop new interests
- How to balance coursework with your other responsibilities and activities (e.g., employment, mentored research, study abroad, student organizations)
- How to get the most from your academic experience at FAU

Your academic advisor will help you customize and maintain your final Flight Plan during the next four years so that you stay on track for success at FAU's Honors College. In order to graduate on time, you will need to:

- Complete an average of 30 credit hours per year, less any college credit you enter FAU with
- Earn 120 credit hours, at least 45 in the upper division (3000 or 4000 level)
- Earn at least 9 credit hours in summer coursework (or equivalent)

The Honors College provides individual advising from faculty and so this Flight Plan is meant only to be a general guide. The Faculty advisor is assigned initially during Orientation but students are free to change their faculty advisor by completing a change of advisor form, available online. Students should not feel bound by this generic plan if they and their faculty advisor have developed a different plan that better suits their particular needs. Your advisor will help you identify what additional milestones apply to you, as well as help prepare you for a graduate program if that is your goal. In addition, students should use MyFAU to run a DARS audit of their coursework to confirm what requirements they still need to meet. If you have any questions at all about your FAU Flight Plan, feel free to contact any of the following individuals for assistance. They are here to help!

Your Academic Advising Professionals

Faculty Advisor	
Office Location:	
Email Address/Phone:	
Academic Support Services	**Mr. David Flanigan**
Office Location:	**HC 132**
Email Address/Phone:	**flanigan@fau.edu/799-8622**
Associate Dean	**Dr. Terje Hoim**
Office Location:	**HC 133**
Email Address/Phone:	**thoim@fau.edu/799-8673**
Additional Info:	**http://www.fau.edu/honors/academics.php**

This unofficial guide is to be used in conjunction with regular academic advising appointments. Not all University and State degree requirements are listed. For a full degree audit, see the Director of Academic Support Services in HC 132.

Flight Plan: in Liberal Arts and Sciences or BA or BS in Biological and Physical Sciences with a Concentration in <u>Mathematics or Mathematical Sciences</u> <u>doing the Combined BS/MS in Mathematics or Applied Mathematics and Statistics</u>

IMPORTANT NOTES

1. Honors College students are required to maintain an FAU cumulative GPA of at least **3.0** to remain eligible for their Honors College scholarships. You must maintain a minimum **2.0** GPA each semester to be in good academic standing.

2. To receive your Honors College scholarship you must be full-time (**minimum 12 credits/semester**) in the Honors College. You should have your advisor's prior approval when taking courses outside the Honors College.

3. Students with an out-of-state tuition waiver must maintain a **3.3** FAU Cumulative GPA to retain the waiver.

Abbreviated Version of 4-year plan

Year One:	
IDS 1022 Forum	1
MAC 2311	4
MAC 2312	4
ENC 1101, ENC 1102	6
COP 2220	3
AMH 2010	3
POS 1041	3
STA 2023	3
Natural Science with lab	3-4
Year Two:	
ANT 2410	3
SPN 1120	4
Social Science Distribution Group A	3
MAD 2104	3
1 intermediate Math Group A	4
1 Intermediate Math Group A	3
SPN 1121	4
PHI 2010	3
Natural Science	3
Year Three:	
MAA 4200	3
2 Team-taught courses	2
1 intermediate Math Group A	3
MAS 4301	3
2 upper division Math Electives	6
Humanities Distribution Group B	3
Social Science Distribution Group B	3
Global Citizenship Elective	3

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Ethics elective	3
Internship (summer)	3
Year 4	
MAS 4107	3
Math Honors Thesis	6
Team-taught course	3
One upper division Math elective	3
STA 4442	3
Addl Humanities Distribution	3
Addl Social Science Distribution	3
5000-level math course	3
	120

More Information

Honors College Academic Information
http://www.fau.edu/honors/academics.php

Student Policies, Services, and Resources (Handbook):
http://www.fau.edu/handbook/

Registration, Transcripts, Forms, Student Records:
http://www.fau.edu/registrar/

Academic Support (Center for Teaching and Learning, Writing Center, Undergraduate Research):
http://www.fau.edu/ctl/

Student Financial Aid, Other Financial Services:
http://www.fau.edu/finaid/

Students with Disabilities:
http://osd.fau.edu/

Student Life (Housing, Events & Organizations, Wellness, Counseling, Leadership, Military Affairs, etc.):
http://www.fau.edu/student/SADepts.php

Career Development Center:
https://www.fau.edu/cdc/students/undergraduate/student.php

Tips for Success

- **Meet with your faculty advisor at least once a semester.**

- **Monitor your progress in your courses; "check-in" with your instructors regularly!**

- **Check your degree audit every semester.**

- **Stay aware of important deadlines.**

- **Take advantage of resources FAU and the Honors College has made available to you to help you succeed on your flight, such as tutoring, office hour visits, and the writing center.**

Last updated 02/20/20

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