FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Undergraduate Programs

UUPC Approval 4-27-26
UFS Approval _____
Banner _____
Catalog _____

Department Mathematics and Statistics

College Charles E. Schmidt College of Science

Program Name	☐ **New Program***	**Effective Date** *(TERM & YEAR)*
BS in Math	☑ **Change Program***	Spring 2027

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

We would like to request:

1) Adding the course, Applications of AI in Science, as a required course for BS in Math.

2) Changing the concentration title from Mathematical Cryptology Concentration in the B.S. in Mathematics to Cybersecurity Concentration in the B.S. in Mathematics.

Rationale: Please see the attached.

*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**
Yuan Wang /ywang@fau.edu	EECE and ITOM

Approved by	***Date***
Department Chair Yuan Wang	4/16/2026
College Curriculum Chair	4-16-2026
College Dean	4/16/26
UUPC Chair Korey Sorge	4-27-26
Undergraduate Studies Dean Dan Mecroff	4-27-26
UFS President	
Provost	

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

We would like to request:

1) Adding the course, Applications of Al in Science, as a required course for BS in Math

Rationale: Integrating "Applications of Al in Science" into the core curriculum for a Bachelor of Arts in Mathematics is essential to prepare graduates for the evolving landscape of science, technology, and industry. AI is currently transforming mathematical research and application, and mandatory training in this area is necessary to ensure graduates are competitive in the workforce and equipped to address modern complex problems.

Adding Applications of Al in Science to BA in Mathematics aligns with FAU's institutional goals in workforce preparation, interdisciplinary education, and research engagement. The course would equip mathematics students with the ability to translate rigorous mathematical training into applied AI methodologies relevant to real-world scientific problems.

2) Changing the concentration title from *Mathematical Cryptology Concentration in the B.S. in Mathematics* to *Cybersecurity Concentration in the B.S. in Mathematics.*

Rationale: The proposed renaming more accurately reflects the focus and structure of this concentration within the B.S. in Mathematics and highlights its role as foundational preparation for cybersecurity. The curriculum emphasizes rigorous mathematical training in calculus, linear algebra, discrete mathematics, number theory, modern algebra, probability, and proof-based methods, while applying these tools to the mathematical foundations of cryptography, algorithms, and secure information systems. The revised title clarifies for mathematics majors that the concentration provides a mathematically intensive pathway addressing contemporary security problems and supports preparation for graduate study or mathematically oriented careers in cybersecurity and related fields, without altering the academic content or level of rigor.

Mathematics

Bachelor of Science (B.S.)

(Minimum of 120 credits required)

The B.S. degree program in Mathematics consists of four concentrations:

1. Mathematical Biology
2. ~~Mathematical Cryptology~~ Cybersecurity
3. Pure Mathematics
4. Statistics and Data Science

To complete the B.S. degree program, students will take the specific courses for one of the four concentrations. All students will take two courses in Calculus, at least one statistics course, Discrete Mathematics~~, and~~ at least one programming course, and at least one course in Artificial Intelligence~~.~~

Mathematical Biology Concentration

Course Title	Course Number	Credits
Methods of Calculus	MAC 2233	3 **or**
Life Science Calculus 1	MAC 2241	3 **or**
Calculus with Analytic Geometry 1	MAC 2311	4 **or**
Mathematics for Biological Sciences 1	MAP 2491	3
Applications of AI in Science	IDS 3763	3
Biological Principles	BSC 1010	3
Biodiversity	BSC 1011	3
Applied Machine Learning and Data Mining	CAP 4612	3
General Chemistry 1	CHM 2045	3
General Chemistry 2	CHM 2046	3
Artificial Intelligence Applications in Biology	IDS 4139	3

Discrete Mathematics	MAD 2104	3
Introduction to Computational Mathematics	MAD 2502	3
Mathematics for Biological Sciences 2	MAP 2492	~~4~~ 3
Applied Mathematical Modeling	MAP 4103	3
Genetics	PCB 3063	3 **or**
Principles of Ecology	PCB 4043	3
Introductory Statistics	STA 2023	3
Introduction to Biostatistics	STA 3173	3
Choose two upper-division math electives		***6***
Choose two upper-division science electives with BCH, BOT, BSC, CHM, IDS, MCB, OCB, PCB, PHY, PHZ, ZOO prefixes		***6***

Choose one Research-Intensive elective

Course Title	**Course Number**	**Credits**
RI: Introduction to Data Science	CAP 3786	3
RI: Industrial Problems in Applied Math	MAP 4913	3
RI: Neurophysiology	PCB 4832C	3
RI: Neurobiology of Learning and Memory	PSB 4810	3
RI: Statistical Learning	STA 4241	3

Concentration Total (including Science): 61-62 ~~59-60~~

Note: For this concentration, MAP 2492 can be replaced by the combination of the three courses MAC 2312 and MAP 2302 and MAS 2103.

~~Mathematical Cryptology Concentration~~ Cybersecurity Concentration

Course Title	**Course Number**	**Credits**

Calculus and Analytic Geometry 1	MAC 2311	4
Calculus and Analytic Geometry 2	MAC 2312	4
Calculus and Analytic Geometry 3	MAC 2313	4
Applications of AI in Science	IDS 3763	3
General Chemistry 1 and Lab **or**	CHM 2045/2045L	**or**
General Physics 1 and Lab	PHY 2048, 2048L	4-5
Cryptography and Information Security	CIS 4362	3
Programming 1	COP 2220C	3
Programming 2	COP 3014	3
Data Structures and Algorithm Analysis	COP 3530	3
Discrete Mathematics	MAD 2104	3
Matrix Theory	MAS 2103	3
Introductory Number Theory	MAS 3203	3
Modern Algebra	MAS 4301	3
Introduction to Advanced Mathematics	MHF 3202	3
Probability and Statistics 1	STA 4442	3

Choose two, not limited to the following courses, from the approved list of upper-division math electives.
**** Courses apply to the undergraduate Cybersecurity Certificate program.***

Course Title	**Course Number**	**Credits**
Numerical Methods	MAD 3400	3
Graph Theory	MAD 4301	3
Numerical Analysis 1	MAD 4401	3

Post-Quantum Cryptography	MAD 4475	3
Cryptography of Blockchain	MAD 4476	3
Introduction to Coding Theory *	MAD 4605	3
Engineering Mathematics 1	MAP 3305	3
Introduction to Methods in Complex Systems	MAP 4112	3
Mathematics of Cybersecurity *	MAP 4190	3
Vector Calculus	MAS 3156	3
Linear Algebra 2	MAS 4107	3
Mathematics for Cryptography *	MAS 4206	3
Topology for Data Science	MTG 4325	3
Computational Statistics	STA 3100	3

Choose three, not limited to the following courses, from the approved list of upper-division EECS electives in the Cybersecurity Certificate program.

Course Title	**Course Number**	**Credits**
Applied Machine Learning and Data Mining	CAP 4612	3
Introduction to Deep Learning	CAP 4613	3
Introduction to Artificial Intelligence	CAP 4630	3
Introduction to Data Mining and Machine Learning	CAP 4770	3
Introduction to Cryptographic Engineering	CDA 4321	3
Applied Cryptography and Security	CIS 4634	3
Network and Data Security	CNT 4411	3
Introduction to Database Structure	COP 3540	3
Python Programming	COP 4045	3

Computer Operating Systems	COP 4610	3
Design and Analysis of Algorithms	COT 4400	3
Theory of Computation	COT 4420	3
Concentration Total (excluding Science)		~~57~~ 60

Pure Mathematics Concentration

Course Title	**Course Number**	**Credits**
Calculus with Analytic Geometry 1	MAC 2311	4
Calculus with Analytic Geometry 2	MAC 2312	4
Calculus with Analytic Geometry 3	MAC 2313	4
Applications of AI in Science	IDS 3763	3
General Chemistry 1 and Lab **or**	CHM 2045, CHM 2045L	**or**
General Physics 1 and Lab	PHY 2048, PHY 2048L	4-5
Introductory Analysis 1	MAA 4226	3
Introductory Complex Analysis	MAA 4402	3
Discrete Mathematics	MAD 2104	3
Introduction to Computational Mathematics	MAD 2502	3
Differential Equations 1	MAP 2302	3
Matrix Theory	MAS 2103	3
Vector Calculus	MAS 3156	3
Linear Algebra 2	MAS 4107	3
Modern Algebra	MAS 4301	3
Introductory Abstract Algebra 1	MAS 4304	3

Introduction to Advanced Mathematics	MHF 3202	3
Probability and Statistics 1	STA 4442	3
Upper-division math electives		***9***
Concentration total (excluding Science)		~~**57**~~ **60**

Statistics and Data Science Concentration

Course Title	**Course Number**	**Credits**
Calculus with Analytic Geometry 1	MAC 2311	4
Calculus with Analytic Geometry 2	MAC 2312	4
Calculus with Analytic Geometry 3	MAC 2313	4
Applications of AI in Science	IDS 3763	3
General Chemistry 1 and Lab **or**	CHM 2045, CHM 2045L	**or**
General Physics 1 and Lab	PHY 2048, PHY 2048L	4-5
Programming 1	COP 2220C	3
Programming 2	COP 3014	3
Data Structures and Algorithm Analysis	COP 3530	3
Introduction to Complex Analysis	MAA 4402	3
Discrete Mathematics	MAD 2104	3
Introduction to Computational Mathematics	MAD 2502	3
Matrix Theory	MAS 2103	3
Modern Algebra	MAS 4301	3
Introduction to Advanced Mathematics	MHF 3202	3
Applied Statistics 1	STA 4234	2 **and**

Applied Statistics 1 Lab	STA 4202L	1
Probability and Statistics 1	STA 4442	3

Choose two of the Approved Math Electives, at least one upper-division course

Course Title	**Course Number**	**Credits**
Choose two of the Concentration Electives		***6***
RI: Introduction to Data Science	CAP 3786	3
Introduction to Deep Learning	CAP 4613	3
Introduction to Data Mining and Machine Learning	CAP 4770	3
Introduction to Data Science and Analytics	CAP 4773	3
Theory of Computation	COT 4420	3
Applied Mathematical Modeling	MAP 4103	3
Introduction to Methods in Complex Systems	MAP 4112	3
RI: Industrial Problems in Applied Math	MAP 4913	3
Topology for Data Science	MTG 4325	3
Computational Statistics	STA 3100	3
RI: Statistical Learning	STA 4241	3
Applied Time Series and Forecasting	STA 4853	3
Concentration Total (excluding Science)		~~**57**~~ **60**

Required Minimum GPA 2.5

Notes:

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

2. In calculation of the departmental GPA, where relevant, the highest grade in the course will be used.
3. 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) and (STA 4443, STA 4032).
4. The upper-division mathematics courses required for these programs that are completed at FAU must be completed with at least a 2.2 GPA (B.A. program) or 2.5 GPA (B.S. program).
5. Any mathematics course taken at another institution must be completed with a grade of at least
   "C" to be considered part of either baccalaureate program.
6. Mathematics majors are required to consult with their advisors at least once a year.