FLORIDA ATLANTIC UNIVERSITY

# NEW/CHANGE PROGRAM REQUEST
## Undergraduate Programs

UUPC Approval 9/8/25
UFS Approval _____
Banner _____
Catalog _____

**Department** Mathematics and Statistics

**College** Science

**Program Name**

Bachelor of Science in Mathematics

☐ **New Program***

☑ **Change Program***

**Effective Date**
*(TERM & YEAR)*

Spring 2026

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

To align with the recent course changes from the College of Engineering and Computer Science, we request to updating our curriculum requirements for several courses accordingly. These adjustments will affect the Mathematical Cryptology Concentration and the Statistics and Data Science Concentration as follows:

- Replace COP 2220 Programming 1 with COP 3035C Introduction to Programming with Python
- Replace COP 3014 Programming 2 with CEN 3062C Introduction to Software Design
- Replace COP 3530 Data Structures and Algorithm Analysis with COP 3410C Data Structures with Python

*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**

Yuan Wang / ywang@fau.edu

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

Dept. of Electrical Engineering and Computer Science

| ***Approved by*** | ***Date*** |
|---|---|
| Department Chair yuanwang | 8/20/2025 |
| College Curriculum Chair | 8/28/25 |
| College Dean Evonne Rezler (Aug 28, 2025 15:04:50 EDT) | Aug 28, 2025 |
| UUPC Chair Korey Sorge | 9/8/25 |
| Undergraduate Studies Dean Dan Mesoff | 9/8/25 |
| UFS President | |
| Provost | |

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

**Catalogue Change**

# 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
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.

**Mathematical Biology Concentration**

| Course Title | Couse 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 |
| 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 |
| 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 |

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|---|---|
| ***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): 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**

| 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 |
| 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~~ |
| Introduction to Programming with Python | COP 3035C | 3 |
| ~~Programming 2~~ | ~~COP 3014~~ | ~~3~~ |
| Introduction to Software Design | CEN 3062C | 3 |
| ~~Data Structures and Algorithm Analysis~~ | ~~COP 3530~~ | ~~3~~ |
| Data Structures with Python | COP 3410C | 3 |
| Discrete Mathematics | MAD 2104 | 3 |
| Matrix Theory | MAS 2103 | 3 |

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|---|---|---|
| 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** |

**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 |
| 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** |

**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 |
| 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~~ |
| Introduction to Programming with Python | COP 3035C | 3 |
| ~~Programming 2~~ | ~~COP 3014~~ | ~~3~~ |
| Introduction to Software Design | CEN 3062C | 3 |
| ~~Data Structures and Algorithm Analysis~~ | ~~COP 3530~~ | ~~3~~ |
| Data Structures with Python | COP 3410C | 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*** | | 6 |
| ***Choose two of the Concentration Electives*** | | 6 |

| Course Title | Course Number | Credits |
|---|---|---|
| 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** |

**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.

# Math - Course Req Updates in Programs

Final Audit Report 2025-08-28

| | |
|---|---|
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