

# MATHEMATICS, BACHELOR OF SCIENCE

| Code   | Title                                      | Semester Hours |
|--|--|----------------|
| <b>Core Curriculum for STEM Majors (MATH 1113 or 1211 required for Area A2)</b> ( <a href="http://catalog.asurams.edu/undergraduate/core-curriculum">http://catalog.asurams.edu/undergraduate/core-curriculum</a> ) <sup>1</sup> |  | 43             |
| <b>Area F: Courses Related to Major</b>  |  |                |
| MATH 1211  | Calculus I                                 | 4              |
| MATH 2212  | Calculus II                                | 4              |
| MATH 2411  | Introduction to Statistics                 | 3              |
| MATH 2111  | Linear Algebra                             | 3              |
| CSCI 1201  | Introduction to Computer Science           | 3              |
| <b>Area G - Major Requirements</b>   |  |                |
| MATH 2213  | Calculus III                               | 4              |
| MATH 3101  | Introduction to Number Theory              | 3              |
| MATH 3112  | Discrete Mathematics                       | 3              |
| MATH 3211  | Ordinary Differential Equations            | 3              |
| MATH 3213  | Modern Geometry                            | 3              |
| MATH 3314  | Math Statistics                            | 3              |
| MATH 3411  | Statistical Methods                        | 3              |
| MATH 3423  | Introduction to Operations Research        | 3              |
| MATH 4111  | Modern Algebra I                           | 3              |
| MATH 4112  | Modern Algebra II                          | 3              |
| MATH 4211  | Elements of Analysis I                     | 3              |
| MATH 4212  | Elements of Analysis II                    | 3              |
| MATH 4214  | Introduction to Complex Variables          | 3              |
| MATH 4215  | Numerical Analysis                         | 3              |
| MATH 4921  | Senior Project I                           | 1              |
| MATH 4922  | Senior Project II                          | 2              |
| <b>Major Electives</b>   |  | 12             |
| MATH 3413  | Introduction to Combinatorics              |                |
| MATH 4511  | History of Mathematics                     |                |
| MATH 4313  | Topology                                   |                |
| MATH 4220  | Partial Differential Equations             |                |
| MATH 4330  | Math of Compound Interest                  |                |
| MATH 4332  | Math of Demography                         |                |
| Free elective  |  | 3              |
| <b>First-Year and Wellness Course Requirements Outside the Core</b>  |  |                |
| ASU 1101   | First Year Experience: Pathways to Success | 1              |
| HEDP, WELL   | Health & Wellness Requirement <sup>2</sup> | 2              |
| <b>Total Semester Hours</b>  |  | 124            |

<sup>1</sup> Students are required to complete MATH 1113 Pre-Calculus in Area A2 or Area D with a minimum grade of "C".

<sup>2</sup> The health & wellness requirement may be fulfilled by taking one - two (2) credit hour health or wellness course OR two one (1) credit hour health or wellness activity courses.

The Bachelor of Science degree in Mathematics with a minor is for those students who want to add a minor in another area to their degree in mathematics. In addition to the general institutional requirements, the

major completes 60 semester hours in major courses which include 42 semester hours in mathematics and 18 semester hours in a minor.

All majors and minors in the department must achieve a grade of "C" or better in all mathematics, science, computer science, and business courses. A cumulative grade point average of at least 2.25 is required for graduation.

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| <b>Area F: Courses Related to Major</b>  |  |                |
| MATH 1211  | Calculus I                                 | 4              |
| MATH 2212  | Calculus II                                | 4              |
| MATH 2213  | Calculus III                               | 4              |
| MATH 2411  | Introduction to Statistics                 | 3              |
| MATH 2111  | Linear Algebra                             | 3              |
| <b>Area G - Major Requirements</b>   |  |                |
| MATH 3101  | Introduction to Number Theory              | 3              |
| MATH 3112  | Discrete Mathematics                       | 3              |
| MATH 3211  | Ordinary Differential Equations            | 3              |
| MATH 3213  | Modern Geometry                            | 3              |
| MATH 3314  | Math Statistics                            | 3              |
| MATH 3411  | Statistical Methods                        | 3              |
| MATH 3423  | Introduction to Operations Research        | 3              |
| MATH 4111  | Modern Algebra I                           | 3              |
| MATH 4112  | Modern Algebra II                          | 3              |
| MATH 4211  | Elements of Analysis I                     | 3              |
| MATH 4212  | Elements of Analysis II                    | 3              |
| MATH 4214  | Introduction to Complex Variables          | 3              |
| MATH 4215  | Numerical Analysis                         | 3              |
| MATH 4921  | Senior Project I                           | 1              |
| MATH 4922  | Senior Project II                          | 2              |
| <b>Courses Toward Minor</b>  |  | 18             |
| <b>First-Year and Wellness Course Requirements Outside the Core</b>  |  |                |
| ASU 1101   | First Year Experience: Pathways to Success | 1              |
| HEDP, WELL   | Health & Wellness Requirement <sup>2</sup> | 2              |
| <b>Total Semester Hours</b>  |  | 124            |

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<sup>2</sup> The health & wellness requirement may be fulfilled by taking one - two (2) credit hour health or wellness course OR two one (1) credit hour health or wellness activity courses.

The Bachelor of Science degree in Mathematics with a Nexus Option is for those students who want to add a Nexus Option to their degree in mathematics. In addition to the general institutional requirements, the major completes 60 semester hours in major courses which include 42 semester hours in mathematics and 18 semester hours of a Nexus Option.

Albany State University has been approved by the Board of Regents of the University System of Georgia to offer two Nexus Options: Blockchain with Machine Learning and Blockchain with Data Analytics. The Nexus

Program is available to Undergraduate students and those who have completed a bachelor's degree and wish to acquire Blockchain, Data Analytics and Machine Learning certified training.

Under the Nexus Program, 18 hours of elective Area G courses (6 nexus degree courses) can be taken to earn a Nexus Option. A Nexus Option does not increase the number of hours you need to graduate. It is comprised of a group of 6 courses in Area G pertaining to the chosen Nexus Option and includes apprenticeships and internships to earn the Nexus Option alongside the bachelor's degree program the student is already undertaking. Further information can be obtained by calling 229-500-2280 or sending email to robert.owor@asurams.edu.

These courses are designed to engage the student academically while collaborating with industry partners for internship, apprenticeship and job placements with such companies as IBM, Microsoft, Google, Amazon, Geico, P&G, Miller-Coors and others. Students gain industry expertise, earn badges as proof of certain skills and become highly marketable upon graduation.

All majors and minors in the department must achieve a grade of "C" or better in all mathematics, science, computer science, and business courses. A cumulative grade point average of at least 2.25 is required for graduation.

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| <b>Area F: Courses Related to Major</b>  |   |                |
| MATH 1211  | Calculus I  | 4              |
| MATH 2212  | Calculus II                                       | 4              |
| MATH 2213  | Calculus III                                      | 4              |
| MATH 2411  | Introduction to Statistics                        | 3              |
| MATH 2111  | Linear Algebra                                    | 3              |
| <b>Area G - Major Requirements</b>   |   |                |
| MATH 3101  | Introduction to Number Theory                     | 3              |
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| MATH 4211  | Elements of Analysis I                            | 3              |
| MATH 4212  | Elements of Analysis II                           | 3              |
| MATH 4214  | Introduction to Complex Variables                 | 3              |
| MATH 4215  | Numerical Analysis                                | 3              |
| MATH 4921  | Senior Project I                                  | 1              |
| MATH 4922  | Senior Project II                                 | 2              |
| <b>Blockchain with Machine Learning Required Courses (18 hours)</b>  |   |                |
| CSCI 4392  | Introduction to Blockchain Technology             | 3              |
| CSCI 4397  | Blockchain Design Thinking <sup>3</sup>           | 3              |
| CSCI 4389  | Blockchain Coding and Implementation <sup>3</sup> | 3              |
| CSCI 4319  | Introduction to Machine Learning                  | 3              |

|           |                                |   |
|-----------|--------------------------------|---|
| MATH 4611 | Apprenticeship I <sup>3</sup>  | 3 |
| MATH 4612 | Apprenticeship II <sup>3</sup> | 3 |

#### First-Year and Wellness Course Requirements Outside the Core

|                      |  |     |
|----------------------|--|-----|
| ASU 1101             | First Year Experience: Pathways to Success | 1   |
| HEDP, WELL           | Health & Wellness Requirement <sup>2</sup> | 2   |
| Total Semester Hours |  | 124 |

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<sup>3</sup> Further information about this program and the new courses can be obtained by calling 229-500-2280 or sending email to robert.owor@asurams.edu

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| MATH 2213  | Calculus III               | 4              |
| MATH 2411  | Introduction to Statistics | 3              |

|   |  |     |
|---|--|-----|
| MATH 2111   | Linear Algebra                                 | 3   |
| <b>Area G - Major Requirements</b>                                  |  |     |
| MATH 3101   | Introduction to Number Theory                  | 3   |
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| MATH 3213   | Modern Geometry                                | 3   |
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| MATH 4214   | Introduction to Complex Variables              | 3   |
| MATH 4215   | Numerical Analysis                             | 3   |
| MATH 4921   | Senior Project I                               | 1   |
| MATH 4922   | Senior Project II                              | 2   |
| <i>Blockchain with Data Analytics Required Courses (18 hours)</i>   |  |     |
| CSCI 3350   | Introduction to Data Science with R and Watson | 3   |
| CSCI 4319   | Introduction to Machine Learning               | 3   |
| CSCI 1321   | Introduction to Programming in R and Python    | 3   |
| CSCI 4391   | Data Mining <sup>3</sup>                       | 3   |
| MATH 4611   | Apprenticeship I <sup>3</sup>                  | 3   |
| MATH 4612   | Apprenticeship II <sup>3</sup>                 | 3   |
| <b>First-Year and Wellness Course Requirements Outside the Core</b> |  |     |
| ASU 1101  | First Year Experience: Pathways to Success     | 1   |
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