## DEPARTMENT OF MATHEMATICS

## AND COMPUTER SCIENCE

[Bachelor Of Science Degree In Computer Science](#_Toc303538616) [(Mathematics Emphasis)](#_Toc303538617)

[Program Of Study](#_Toc303538618)

[Bachelor Of Science Degree In Computer Science (Business Emphasis)](#_Toc303538619)

[Program Of Study](#_Toc303538620)

[Bachelor Of Arts Degree In Mathematics](#_Toc303538621)

[Program Of Study](#_Toc303538622)

The Department of Mathematics and Computer Science offers programs of study leading to the Bachelor of Arts degree in Mathematics, the Bachelor of Science degree in Computer Science with emphasis in mathematics, Bachelor of Science degree in Computer Science with emphasis in business and offers graduate courses to support the Master of Education degree with concentration in mathematics. The Department also provides courses in support of the curriculums of other departments at the University and minor programs in mathematics and computer science. The minor programs are designed for those students interested in pursuing graduate study or the wide variety of careers in the fields of mathematics and computer science. Students in computer science may choose to concentrate in business or mathematics. To be admitted to the department as a major, the student must have a cumulative grade point average of 2.25 or higher.

The major in mathematics provides course work that leads to the Bachelor of Arts degree in mathematics. In addition to the general institutional requirements, the major in mathematics is required to complete 60 semester hours in major courses which include six (6) hours of foreign language and 15 semester hours of general electives.

The Bachelor of Science degree in computer science with mathematics emphasis is for those students who want to combine mathematics and computer science. In addition to the general institutional requirements, the major completes 60 semester hours in major courses which include 33 hours in computer science, 20 hours in mathematics courses, including Calculus II, and Calculus III, 6 semester hours in major electives and 1 hour in general electives.

The Bachelor of Science degree in computer science with business emphasis is for those students who want to combine computer science and business. In addition to the general institutional requirements, the major completes 60 semester hours in major courses, which include 39 hours in computer science and mathematics courses, 12 hours in business courses, 6 semester hours in major electives and 3 semester hours in general electives. The Bachelor of Science degree in computer science with business emphasis is a cooperative program between Albany State University and Albany Technical College that allows qualified students to earn 99 quarter hours at Albany Technical College and then transfer to Albany State University to complete the requirements for the Bachelor of Science degree with emphasis in business. Upon admission to Albany State University students may transfer up to 60 semester hours of credit to Albany State to satisfy Areas A, B, C, D, and E of the Core Curriculum.

All majors must complete a minimum of 126 semester hours. All majors and minors in the department must achieve a grade of "C" or better in all mathematics, science, and computer science and business courses. A cumulative grade point average of at least 2.25 is required for graduation.

## BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE

## (MATHEMATICS EMPHASIS)

|  |  |  |  |
| --- | --- | --- | --- |
| **Area** |  |  | **Credit hours** |
| **Core Curriculum** |  |  | **(60 hours)** |
| AREA A1 | Communication Skills |  | 6 |
| AREA A2 | Quantitative Skills |  | 3 |
| AREA B | Institutional Options |  | 5 |
| AREA C | Humanities, Fine Arts and Ethics | | 6 |
| AREA D | Natural Science, Math & Tech | | 11 |
| AREA E | Social Sciences |  | 12 |
| AREA F | Courses Related to Major | Prerequisite | 17 |
| CSCI 1201 | Intro to Computer Science (3 hrs) | |  |
| CSCI 1301 | Computer Science I (4 hrs) |  |  |
| CSCI 1302 | Computer Science II (4 hrs) |  |  |
| MATH 2411 | Linear Algebra (3 hrs) |  |  |
| MATH 2411 | Basic Statistics (3 hrs) |  |  |
|  |  |  |  |
| **Above The Core** |  |  | **(5 hours)** |
|  |  |  |  |
| **Area G - Major Requirements** | |  | **(54 hours)** |
| CSCI 3111 | Discrete Structures |  | 3 |
| CSCI 3122 | Data Structures |  | 3 |
| CSCI 3211 | Computer Organization & Architecture I | | 3 |
| CSCI 3212 | Computer Organization& Architecture II | | 3 |
| CSCI 4113 | Operating Systems |  | 3 |
| CSCI 4123 | Computer Networks |  | 3 |
| CSCI 4151 | System Simulation |  | 3 |
| CSCI 4221 | Software Engineering |  | 3 |
| CSCI 4311 | Computer Graphics |  | 3 |
| CSCI 4211 | Systems Analysis I |  | 3 |
| CSCI 4921 | Senior Project I |  | 1 |
| CSCI 4922 | Senior Project II |  | 2 |
| MATH 1211 | Calculus I |  | 4 |
| MATH 2212 | Calculus II |  | 4 |
| MATH 2213 | Calculus III |  | 4 |
| MATH 3211 | Ordinary Differential Equations | | 3 |
| MATH 3423 | Introductions to Operations Research | | 3 |
| MATH 4215 | Numerical Analysis |  | 3 |
|  |  |  |  |
| **Major Electives** |  |  | **(6 hours)** |
| Any courses in the college curriculum | |  |  |
|  |  |  |  |
| **Total Required For Graduation** | |  | **(125 hours)** |

## PROGRAM OF STUDY FOR THE BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE (MATHEMATICS EMPHASIS)

126 semester hours

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Freshman Year** | |  |  |  |  |
| **Fall** |  |  | **Spring** |  |  |
| ENGL 1101 | English Comp. I | 3 | ENGL 1102 | English Comp. II | 3 |
| CSCI 1201 | Intro to Computer Science | 3 | COMM 1100 | Fund. of Public Speaking | 3 |
| ASU 1201 | Foundations of College Suc | 2 | MATH 1113 | Pre-Calculus | 3 |
| MATH 1111 | College Algebra | 3 | MUSC 1100 | Music | 3 |
| HIST 1111 | History I | 3 | CSCI 1301 | Computer Science I | 4 |
| PEDH |  | 1 |  |  |  |
| **Total** |  | **(15 hrs)** |  |  | **(16 hrs)** |
|  |  |  |  |  |  |
| **Sophomore Year** | |  |  |  |  |
| **Fall** |  |  | **Spring** |  |  |
| ENGL 2111 | World Literature I | 3 | POLS 1101 | US & Georgia Govt | 3 |
| CSCI 1302 | Computer Science II | 4 | MATH 2411 | Basis Statistics | 3 |
| MATH 1211 | Calculus I | 4 | PHYS 2221 | Principles of Physics I | 4 |
| HIST 1002 | Intro to African Diaspora | 2 | CSCI 3122 | Data Structures | 3 |
| **PEDH** |  | **1** | MATH 2212 | Calculus II | 4 |
| **Total** |  | **(14 hrs)** |  |  | **(17 hrs)** |
|  |  |  |  |  |  |
| **Junior Year** |  |  |  |  |  |
| **Fall** |  |  | **Spring** |  |  |
| PHYS 2222 | Principles of Physics | 4 | HIST 1112 | World History II | 3 |
| CSCI 3211 | Comp. Org. & Arch. 1 | 3 | CSCI 4311 | Computer Graphics | 3 |
| CSCI 3111 | Discrete Structures | 3 | CSCI 4211 | System Analysis I | 3 |
| MATH 2111 | Linear Algebra | 3 | CSCI 3212 | Comp. Org. & Arch II | 3 |
| MATH 2213 | Calculus III | 4 | MATH 3211 | Differential Equations | 3 |
|  |  |  | PEDH |  | 1 |
| **Total** |  | **(17 hrs)** |  |  | **(16 hrs)** |
|  |  |  |  |  |  |
| **Senior Year** |  |  |  |  |  |
| **Fall** |  |  | **Spring** |  |  |
| CSCI 4113 | Operating Systems | 3 | CSCI 4123 | Computer Networks | 3 |
| CSCI 4921 | Senior Project I | 1 | MATH 4215 | Numerical Analysis | 3 |
| CSCI 4151 | Systems Simulation | 3 | AREA E Elective | | 3 |
| MATH 3423 | Intro. Operations Research | 3 | CSCI | Major Elective | 3 |
| CSCI 4221 | Software Engineering | 3 | CSCI 4922 | Senior Project II | 2 |
| Major Electives | | 3 | General Electives | | 1 |
| **Total** |  | **(16 hrs)** |  |  | **(15 hrs)** |

## BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE (BUSINESS EMPHASIS)

|  |  |  |  |
| --- | --- | --- | --- |
| **Area** |  |  | **Credit hours** |
| **Core Curriculum** |  |  | **(60 hours)** |
| AREA A1 | Communication Skills |  | 6 |
| AREA A2 | Quantitative Skills |  | 3 |
| AREA B | Insitutional Options |  | 5 |
| AREA C | Humanities, Fine Arts and Ethics | | 6 |
| AREA D | Natural Science, Math & Tech | | 11 |
| AREA E | Social Sciences |  | 12 |
| AREA F | Courses Related to Major | Prerequisite | 17 |
| ACCT 2101 | Accounting Principles I (3 hrs) | |  |
| CSCI 1201 | Introduction to Computer Science (3 hrs) | | |
| CSCI 1301 | Computer Science I (4 hrs) |  |  |
| CSCI 1302 | Computer Science II (4 hrs) |  |  |
| MATH 2411 | Basic Statistics (3 hrs) |  |  |
|  |  |  |  |
| Above The Core |  |  | **(5 hours)** |
|  |  |  |  |
| **Area G - Major Requirements** | |  | **(52 hours)** |
| **Computer Science Courses (30 hours)** | |  |  |
| CSCI 2211 | Visual Basic Programming |  | 3 |
| CSCI 3111 | Discrete Structures |  | 3 |
| CSCI 3122 | Data Structures |  | 3 |
| CSCI 3132 | Database Management |  | 3 |
| CSCI 4211 | Systems Analysis I |  | 3 |
| CSCI 4212 | Systems Analysis II |  | 3 |
| CSCI 4113 | Operating Systems |  | 3 |
| CSCI 4123 | Computer Networks |  | 3 |
| CSCI 4311 | Computer Graphics |  | 3 |
| CSCI 4921 | Senior Project I |  | 1 |
| CSCI 4922 | Senior Project II |  | 2 |
| Mathematics Courses (10 hours) | |  |  |
| MATH 1211 | Calculus I |  | 4 |
| MATH 2111 | Linear Algebra |  | 3 |
| MATH 3423 | Operations Research |  | 3 |
| Management/Economic Courses (12 hours) | |  |  |
| ACCT 2102 | Accounting Principles II |  | 3 |
| ECON 2106 | Principles of Microeconomics | | 3 |
| MGMT 3105 | Legal Environment for Business | | 3 |
| MKTG 3120 | Principles of Marketing |  | 3 |
|  |  |  |  |
| **Major Electives** |  |  | **(6 hours)** |
| Six hours from the following courses: | |  |  |
| Computer Science Courses 2000 Level or higher | |  |  |
| Management Courses 3000 Level or above | |  |  |
|  |  |  |  |
| **General Electives** |  |  | **(2 hours)** |
| Any courses in the college curriculum | |  |  |
|  |  |  |  |
| **Total Required For Graduation** | |  | **(125 hours)** |

## PROGRAM OF STUDY FOR THE BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE (BUSINESS EMPHASIS)

125 Semester Hours

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Freshman Year** | **Fall** |  | **Spring** |  |  |
| ENGL 1101 | English Comp I | 3 | ENGL 1102 | English Comp. II | 3 |
| MATH 1111 | College Algebra | 3 | MATH 1113 | Precalculus | 3 |
| ASU 1201 | Found. of College Succ | 2 | COMM 1100 | Fund. of Public Speaking | 3 |
| CSCI 1201 | Intr to Comp Science | 3 | CSCI 1301 | Computer Science I | 4 |
| HIST 1111 | History I | 3 | MUSC 1100 | Music | 3 |
| PEDH |  | 1 |  |  |  |
| **Total** |  | **(15 hrs)** |  |  | **(16 hrs)** |
|  |  |  |  |  |  |
| **Sophomore Year** | |  |  |  |  |
| MATH 1211 | Calculus I | 4 | MATH 2411 | Basic Statistics | 3 |
| ENGL 2111 | World Literature I | 3 | POLS 1101 | U.S. & Georgia Govt | 3 |
| CSCI 1302 | Computer Science II | 4 | ACCT 2102 | Accounting Principles II | 3 |
| HIST 1002 | Intro. to African Diaspora | 2 | CSCI 3122 | Data Structures | 3 |
| ACCT 2101 | Accounting I | 3 | BIOL 1111 | Intro to Biological Science | 4 |
| **Total** |  | **(16 hrs)** |  |  | **(16 hrs)** |
|  |  |  |  |  |  |
| **Junior Year** |  |  |  |  |  |
| CSCI 3111 | Discrete Structures | 3 | CSCI 2211 | Visual Basic Programming | 3 |
| MATH 2111 | Linear Algebra | 3 | ECON 2106 | Principles of Microeconomics | 3 |
| BIOL 1112 | Intro to Biological Science | 4 | CSCI 4211 | System Analysis I | 3 |
| CSCI 3132 | Database Management | 3 | HIST 1112 | Survey of World History II | 3 |
| ECON 2105 | Macroeconomics | 3 | CSCI 4311 | Computer Graphics | 3 |
|  |  |  | PEDH | | 1 |
| **Total** |  | **(16 hrs)** |  |  | **(16 hrs)** |
|  |  |  |  |  |  |
| **Senior Year** |  |  |  |  |  |
| CSCI 4113 | Operating Systems | 3 | CSCI 4123 | Computer Networks | 3 |
| CSCI 4212 | System Analyis II | 3 | MGMT 3120 | Principle of Marketing | 3 |
| MATH 3423 | Intro. to Op. Research | 3 | CSCI 4922 | Senior Project II | 2 |
| MGMT 3105 | Legal Env. of Business | 3 | General Electives | | 3 |
| CSCI 4921 | Senior Project I | 1 | Major Electives | | 3 |
| Major Electives |  | 3 | PEDH |  | 1 |
| **Total** |  | **(16 hrs)** |  |  | **(15 hrs)** |

## BACHELOR OF ARTS DEGREE IN MATHEMATICS

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Area** |  | |  | | **Credit hours** | |
| **Core Curriculum** |  | |  | | **(60 hours)** | |
| AREA A1 | Communication Skills | |  | | 6 | |
| AREA A2 | Quantitative Skills | |  | | 3 | |
| AREA B | Insitutional Options | |  | | 5 | |
| AREA C | Humanities, Fine Arts and Ethics | | | | 6 | |
| AREA D | Natural Science, Math & Tech | | | | 10 | |
| AREA E | Social Sciences | |  | | 12 | |
| AREA F | Courses Related to Major | | Prerequisite | | 18 | |
| MATH 1211 | Calculus I (4 hrs) | |  | |  | |
| MATH 2212 | Calculus II (4 hrs) | |  | |  | |
| MATH 2213 | Calculus III (4 hrs) | |  | |  | |
| MATH 2411 | Basic Statistics (3 hrs) | |  | |  | |
| FREN 1001 | Elem. French I or GRMN 1001 Elem German I (3 hrs) | | | | | |
|  |  | |  | |  | |
| **Above The Core** | |  | |  | | **(5 hours)** | |
|  |  | |  | |  | |
| **Area G - Major Requirements** | | |  | | **(39 hours)** | |
| MATH 2111 | Linear Algebra | |  | | 3 | |
| MATH 3101 | Introduction to Number Theory | | | | 3 | |
| MATH 3211 | Ordinary Differential Equations | | | | 3 | |
| MATH 3213 | Modern Geometry | |  | | 3 | |
| MATH 3314 | Math Statistics | |  | | 3 | |
| MATH 3411 | Statistical Methods | |  | | 3 | |
| MATH 4111 | Modern Algebra I | |  | | 3 | |
| MATH 4112 | Modern Algebra II | |  | | 3 | |
| MATH 4211 | Elem. of Analysis I | |  | | 3 | |
| MATH 4212 | Elem. of Analysis II | |  | | 3 | |
| MATH 4215 | Numerical Analysis | |  | | 3 | |
| MATH 4921 | Senior Project I | |  | | 1 | |
| MATH 4922 | Senior Project II | |  | | 2 | |
| FREN 1102 | Elem. Fren or GRMN 1121, Elem. German | | | | 3 | |
|  |  | |  | |  | |
| **Major Electives** |  | |  | | **(6 hours)** | |
| Six hours from the Mathematics Courses 3000 or above | | |  | |  | |
|  |  | |  | |  | |
| **General Electives** | | |  | | **(15 hours)** | |
| Any course from the college curriculum. | | |  | |  | |
|  |  | |  | |  | |
| **Total Required for Graduation** | | |  | | **(125 hours)** | |

## PROGRAM OF STUDY FOR THE BACHELOR OF ARTS DEGREE IN MATHEMATICS

125 Semester Hours

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Freshman Year** | **Fall** |  | **Spring** |  |  |
| ENGL 1101 | English Comp. I | 3 | ENGL 1102 | English Comp. II | 3 |
| MATH 1113 | Precalculus | 3 | MATH 1211 | Calculus 1 | 4 |
| COMM 1100 | Fund. of Public Speaking | 3 | PEDH | Elective | 1 |
| CHEM 1211K | General Chemistry I or | 4 | CHEM 1212K | General Chemistry II | 4 |
| ASU 1201 | Found. of College Success | 2 | POLS 1101 | U.S. & GA Gov. | 3 |
| **Total Hours** |  | **(15 hrs)** |  |  | **(15 hrs)** |
|  |  |  |  |  |  |
| **Sophomore Year** | |  |  |  |  |
| ENGL 2111 | World Lit. I | 3 | MATH 2213 | Calculus III | 4 |
| MATH 2212 | Calculus II | 4 | Elective | Hum./Fine Arts | 3 |
| Social Science Elective | | 3 | MATH 2111 | Linear Algebra | 3 |
| MATH 2411 | Basic Statistics | 3 | Social Science Elective | | 3 |
| General Elective |  | 3 | PEDH | Elective | 1 |
|  |  |  | HIST 1002 | Intro. to Afr. Diasp. | 2 |
| **Total Hours** |  | **(16 hrs)** |  |  | **(16 hrs)** |
|  |  |  |  |  |  |
| **Junior Year** |  |  |  |  |  |
| MATH 3213 | Modern Geometry | 3 | **MATH 4112** | Modern Algebra II | 3 |
| **MATH 3211** | Ordinary Diff. Equa. | 3 | **MATH 3101** | Intro to Number Theory | 3 |
| MATH 4111 | Modern Algebra I | 3 | FREN or GRMN II |  | 3 |
| General Elective |  | 3 | MATH 3314 | Math Statistics | 3 |
| FREN 1101 OR GRMN 1121 | | 3 | Social Science Elective | | 3 |
| PEDH | Activity | 1 |  |  |  |
| **Total Hours** |  | **(16 hrs)** |  |  | **(15 hrs)** |
|  |  |  |  |  |  |
| **Senior Year** |  |  |  |  |  |
| MATH 4211 | Elements of Analysis I | 3 | MATH 4212 | **Elements of Analysis II** | **3** |
| MATH | Elective | 3 | **MATH 4215** | **Numeric Analysis** | 3 |
| MATH | Elective | 3 | MATH 4922 | Senior Project II | 2 |
| General Electives | | 6 | MATH 3411 | Statistical Methods | 3 |
| MATH 4921 | Senior Project I | 1 | General Electives | | 3 |
|  |  |  | Social Science | Electives | 3 |
| **Total Hours** |  | **(16 hrs)** |  |  | **(17 hrs)** |