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DEPARTMENT OF MATHEMATICS

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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 em- phasis in business, the Bachelor of Applied Science with emphasis in Computer Information Systems 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 institu- tional requirements, the major in mathematics is required to complete 60 semester hours in major courses which include six (6) hours of for- eign language, a computer science elective and general electives.

The Bachelor of Science degree in computer science is for those students who want to combine mathematics and computer science. In addi- tion to the general institutional requirements, the major completes 60 semester hours in major courses which include 30 hours in computer science and 18 hours in mathematics courses, including Calculus 1, Calculus II, and Calculus III and 12 hours in 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 31 hours in computer science courses and 15 hours in business courses. The Bachelor of Applied Science degree is a cooperative program be- tween Albany State University and Albany Technical College that allows qualified students to earn 99 quarter hours at Albany Technical Col- lege and then transfer to Albany State University to complete the requirements for the Bachelor of Applied

Science degree with emphasis in Computer Information Systems. While at Albany Technical College students will complete the Computer Information System Program or equivalent courses. Upon admission to Albany State University students will be granted 42 semester hours of credit for technical courses. Additionally, 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 125 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 grad- uation. The Graduate Record Examination (GRE-Subject) is also required for graduation.

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**BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE**

**(MATHEMATICS EMPHASIS)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Courses** |  | **Titles** | **Credit Hrs.** |
| CSCI | 2101 | Intro to Computer Science | 3 |
| CSCI | 1301 | Computer Science I | 4 |
| CSCI | 2211 | Visual BASIC Programming | 3 |
| CSCI | 1302 | Computer Science II | 4 |
| MATH | 1211 | Calculus 1 | 4 |
| **Subtotal** |  |  | **18** |

**Major Requirements**

|  |  |  |  |
| --- | --- | --- | --- |
| 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 | 4911 | Special Topics in Computer Science | 3 |
| MATH | 2212 | Calculus II | 4 |
| MATH | 2213 | Calculus III | 4 |
| MATH | 2411 | Basic Statistics | 3 |
| MATH | 2111 | Linear Algebra | 3 |
| MATH | 3211 | Ordinary Differential Equations | 3 |
| MATH | 3423 | Introductions to Operations Research | 3 |
| MATH | 4215 | Numerical Analysis | 3 |
| **Subtotal** |  |  | **56** |

Major Electives 6

General Electives 3

Any courses in the college curriculum

**Subtotal 66**

**Total Required For Graduation 125**

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

Total number of hours= 125

**Freshman Year**

**Fall Spring**

ENGL 1101 English Comp. I 3 ENGL 1102 English Comp. 11 3

MATH 1211 Calculus I 4 MATH 2411 Basic Statistics 3

HIST 1002 Introduction to African Diaspora 2 ASU 1200 Freshmen Sem/Service L'dship 3

CHEM 1211K General Chem. 1 or 4

PHYS 1111K Introductory Physics 1 CHEM 1212K General Chem. 11 or 4

PHYS 1112K Introductory Physics 1 1

CSCI 2101 Intro to Computer Science 3 COMM 1100 Analytic Discussions of Global Issues 3

**Total 16 16**

**Sophomore Year**

**Fall Spring**

ENGL 2111 World Literature I 3 ECON 2105 Princ. Of Macroeconomics 3

CSCI 1301 Computer Science I 4 CSCI 1302 Computer Science II 4

Humanities/Fine Arts Elective 3 POLS 1101 US & Georgia Gov. 3

HIST 1111/1112 Survey to World Hist. I or II 3 PEDH Activity 2

MATH 2212 Calculus II 4 MATH 2213 Calculus III 4

**Total 17 16**

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**Junior Year**

**Fall Spring**

CSCI 3132 Data Structures 3 CSCI 2111 Visual Basic Programming 3

CSCI 3211 Comp. Org. & Arch. 1 3 CSCI 3111 Discrete Structures 3

Social Science Elective 3 MATH 2111 Linear Algebra 3

MATH 4215 Numerical Analysis 3 MATH 3211 Differential Equations 3

MATH 2111 Linear Algebra 3 CSCI 3212 Comp. Org. & Arch 11 3

PEDH Activity 1

**Total 15 16**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **SeniorYear** |  | | | | | | |
| **Fall** |  |  |  | **Spring** |  |  |  |
| CSCI | 4113 | Operating Systems | 3 | CSCI | 4123 | Computer Networks | 3 |
| CSCI | 4411 | Artificial Intelligence | 3 | CSCI | 4911 | Special Topics | 3 |
| MATH | 3423 | Intro. Operations Research | 3 | CSCI | 4151 | Systems Simulation | 3 |
| MATH | 4215 | Numerical Analysis | 3 | CSCI | 4311 | Computer Graphics | 3 |
| General Electives | |  | 1 | General Electives | |  | 2 |
| **Total** | |  | **15** |  | |  | **14** |

**BACHELOR OF SCIENCE DEGREE IN COMPUTER SCIENCE**

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**(BUSINESS EMPHASIS)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Courses** | **Titles** |  | **Credit Hrs.** |
| ACCT | 2101 | Accounting Principles I | 3 |
| ACCT | 2102 | Accounting Principles II | 3 |
| CSCI | 2101 | Introduction to Computer Science | 3 |
| CSCI | 1301 | Computer Science I | 3 |
| MATH | 1211 | Calculus I | 4 |
| **Subtotal** |  |  | **16** |

**Major Requirements**

Computer Science Courses

|  |  |  |  |
| --- | --- | --- | --- |
| CSCI | 1302 | Computer Science II | 3 |
| CSCI | 2231 | COBOL Programming | 4 |
| 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 |
| **Subtotal** |  |  | **31** |

**Mathematics Courses**

|  |  |  |  |
| --- | --- | --- | --- |
| MATH | 2111 | Linear Algebra | 3 |
| MATH | 2411 | Basic Statistics I | 3 |
| MATH | 3423 | Operations Research | 3 |
| **Subtotal** |  |  | **9** |

**Management/Economic Courses**

|  |  |  |  |
| --- | --- | --- | --- |
| ECON | 2106 | Principles of Microeconomics | 3 |
| MGMT | 3105 | Legal Environment for Business | 3 |
| MKTG | 3120 | Principles of Marketing | 3 |
| **Subtotal** |  |  | **9** |

**Major Electives 6**

Six hours from the following courses:

MGMT 4110 Organizational Behavior 3

CSCI 4911 Special Topics in Computer Science 3

Management Courses 3000 Level or above

General Electives 6

Any courses in the college curriculum

**Subtotal 61**

**Total Required For Graduation 125**

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**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 | 1113 | Precalculus | 3 | MATH | 1211 | Calculus I | 4 |
| COMM | 1100 | Analytic Discussion of |  |  |  |  |  |
|  |  | Glob. Issues | 3 | CSCI | 2101 | Intro. to Computer Science | 3 |
| CHEM | 1511K | Survey Chemistry I or | 4 | CHEM | 1521K | Survey Chemistry II or | 4 |
| BIOL | 1111K | Intro. to Biological Science |  | BIOL | 1112K | Intro. to Biological Science II |  |
| PHYS | 1001K | Physical Science I |  | PHYS | 1002K | Physical Science II |  |
| ASU | 1200 | Fresh. Sem. & Serv. to |  |  |  |  |  |
|  |  | Leadership 3 PEDH Activity | 1 |  |  |  |  |
| **Total** |  |  | **17** |  |  |  | **15** |

**Sophomore Year**

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|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ENGL | 2111 | World Literature I | 3 | ECON | 2105 | Princ. of Macroeconomics | 3 |
| CSCI | 1301 | Computer Science I | 3 | CSCI | 1302 | Computer Science II | 3 |
| Humanities/Fine Arts Elective 3 ACCT | | | | | 2102 | Accounting Principles II | 3 |
| ACCT 2101 Accounting Principles I 3 Social Science Elective 3 | | | | | | | |
| PEDH | | Activity | 2 | HIST | 1002 | Intro. to African Diaspora | 2 |
| General Elective | |  | 2 | POLS | 1101 | U.S. & Georgia Govt. | 3 |
| **Total** | |  | **16** |  |  |  | **17** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Junior Year** |  | | | | | | |
| CSCI | 3122 | Data Structures | 3 | MGMT | 3105 | Legal Envir. Business | 3 |
| CSCI | 2231 | Cobol Programming | 4 | CSCI | 3111 | Discrete Structures | 3 |
| MATH | 2411 | Basic Statistics | 3 | MKTG | 3120 | Principles of Marketing | 3 |
| MATH | 2111 | Linear Algebra | 3 | CSCI | 3132 | Database Management | 3 |
| ECON | 2106 | Principles of Microeconomics | 3 | Social Science Electives | | | 3 |
| **Total** |  |  | **16** |  | | | **15** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Senior Year** |  | | | | | | |
| CSCI | 4113 | Operating Systems | 3 | CSCI | 4123 | Computer Networks | 3 |
| CSCI | 4211 | System Analysis I | 3 | CSCI | 4911 | Special Topics | 3 |
| MATH | 3423 | Intro. to Operations Research | 3 | CSCI | 4151 | Systems Simulation II | 3 |

CSCI 4311 Computer Graphics 3 Major Electives 6

General Electives 3

**Total 15 15**

**PROGRAM OF STUDY FOR THE BACHELOR OF APPLIED SCIENCE DEGREE WITH EMPHASIS IN COMPUTER INFORMATION SYSTEMS:**

This program admits Albany Technical College graduates or any graduates from other Technical Colleges or two-year Colleges who plan to earn Bachelor of Applied Science Degree with emphasis in Computer Information Systems. Students admitted into this program are expected to meet the core requirements of Albany State University and for those students who are deficient in the core, appropriate recommendations will be made to remediate such deficiencies. Transfer students may be given credit for the courses listed below, and will be required to take courses listed under major course requirement.

**Phase 1 requirements to be completed at Albany Technical College** Completion of the Computer Information Systems Program -106 semester hours Course work should also include the following courses

|  |  |  |
| --- | --- | --- |
| MAT | 103 | Algebraic Concepts |
| MAT | 105 | Trigonometry |
| ACC | 101 | Accounting I |
| ACC | 102 | Accounting 11 |
| CIS | 113 | COBOL 1 |
| CIS | 124 | Microcomputer database programming |
| CIS | 157 | Introduction to Visual Basic Programming |
| CIS | 250 | RPG Programming |
| CIS | 256 | Advanced C-Programming |
| CIS | 260 | Introduction to Fourth Generation Languages |
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**Phase 2 requirements to be completed at Albany State University**

Completion of the following courses.

**Area A-Essential Skills 10 sem. hrs.**

ENGL 1101 English Composition 3

ENGL 1102 English Composition 3

MATH 1211 Calculus I 4

**Area B-Institutional Options 6 sem. hrs.**

COMM 1100 Fundmental of Public Speaking 3

ASU 1200 Freshman Seminar & Service to Leadership 3

|  |  |  |  |
| --- | --- | --- | --- |
| Select One |  |  | 2 sem. hrs. |
| H1ST | 1002 | Intro to African Diaspora | 2 |

Above the Core 3 sem. hrs. HEDP 1001 Intro to Wellness 1

**Area C-Humanities/Fine Arts**

**6 sem. hrs.**

ENGL 2111 World Literature I 3

Choice of the following

AMP 1100, MUSC 1100, FREN 2201, GRMN 2221,

SPAN 2231, FIAR 1100, HONR 1111, HONR 1112 3

**Area D-Science, Math, Technology** 11 sem. hrs. Select one of the Sequences

|  |  |  |
| --- | --- | --- |
| B1OL | ll11K Biological Science I | 4 |
| Bl0L | 1112K Biological Science II | 4 or 3 |
| CHEM | 1211 K General Chemistry I | 4 |
| CHEM | 1212K General Chemistry II | 4 or 3 |
| PHYS | 1001K Physical Science I | 4 |
| PHYS | 1002K Physical Science II | 4 |
| MATH | 2411 Basic Statistics | 3 |

**Area F-Social Science 12 sem. hrs.**

POLS 1101 U.S. and Georgia Government 3

Electives 9

ECON 2105 Principles of Macroeconomics (3) Social Science elective with at least 3 hours from a historical or foreign perspective (6)

**Area F-Major Area 18 sem. hrs.**

Completion of approved courses of Albany Technical College

Computer Information Systems Program

**Major Course Requirements 60 Semester Hours Supporting Courses 24 sem. hrs.** Completion of approved courses at Albany Technical College

Computer Information Systems Program

**Major Courses to be taken at Albany State University 36 sem. hrs.**

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CSCI 3111 Discrete Structures 3

CSCI 3122 Data Structures 3

CSCI 3132 Database Management 3

CSCI 4113 Operating Systems 3

CSCI 4123 Computer Networks 3

CSCI 4211 Systems Analysis I 3

CSCI 4212 Systems Analysis II 3

CSCI 4311 Computer Graphics 3

MATH 2111 Linear Algebra 3

MATH 3423 Operations Research 3

MGMT 3105 Legal Environment of Business 3

MKTG 3120 Principles of Marketing 3

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**Junior Year**

**Fall Spring**

CSCI 3132 Data Structures 3 MGMT 3105 Legal Envir. Business 3

Social Science Electives 3 CSCI 3111 Discrete Structures 3

MATH 2411 Basic Statistics 3 MKTG 3120 Principles of Marketing 3

MATH 1211 Calculus I 4 CSCI 3132 Database Management 3

ECON 2106 Principle of Microeconomics 3 2111 Linear Algebra 3

**Total 16 15**

**Senior Year**

**Fall Spring**

CSCI 4113 Operating Systems 3 CSCI 4123 Computer Networks 3

CSCI 4211 Systems Analysis I 3 CSCI 4911 Special Topics 3

MATH 3423 Intro. Operations Research 3 CSCI 4151 Systems Analysis II 3

CSCI 4311 Computer Graphics 3 Major Electives 6

General Electives 2

**Total 14 15**

Remark: Other relevant Albany Tech Courses: Students planning to transfer these courses must make at least a grade of “C”

at Albany Technical College.

|  |  |  |  |
| --- | --- | --- | --- |
| 1. CIS | 2228 | Advanced Spreadsheet Techniques | (3) |
| 2. CIS | 2229 | Advanced Database Techniques | (3) |
| 3. CIS | 1121 | Introduction to Visual Basic.Net | (3) |
| 4. CIS | 276 | Advanced Routers and Switches | (3) |
| 5. CIS | 2322 | Introduction to WAN and Routing | (3) |

**BACHELOR OF ARTS DEGREE IN MATHEMATICS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Courses** | **Titles** | **Credit Hrs.** |  |
| MATH | 1211 | Calculus I | 4 |
| MATH | 2212 | Calculus II | 4 |
| MATH | 2411 | Basic Statistics | 3 |
| MATH | 2111 | Linear Algebra | 3 |
| FREN | 1101 | Elem. French or GRMN 1121 Elem German | 3 |
| **Subtotal** |  |  | **17** |

**Major Requirements**

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|  |  |  |  |
| --- | --- | --- | --- |
| MATH | 2213 | Calculus III | 4 |
| MATH | 3101 | Introduction to Number Theory | 3 |
| MATH | 3211 | Ordinary Differential Equations | 3 |
| MATH | 3313 | Modern Geometry | 3 |
| MATH | 3314 | Math Statistics | 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 | 4313 | Topology | 3 |
| MATH | 4512 | Senior Project | 1 |
| FREN | 1102, Elem. | Fren or GRMN 1121, Elem. German | 3 |
| **Subtotal** |  |  | **38** |

**Major Electives**

Six hours from the following: 6

|  |  |
| --- | --- |
| MATH 3112 Discrete Mathematics | 3 |
| MATH 3413 Introduction to Combinatorics | 3 |
| MATH 4214 Introduction to Complex Variables | 3 |
| MATH 4511 History of Mathematics | 3 |
| General Electives |  |
| Any course from the college curriculum. | 16 |
| **Subtotal** | **60** |
| **Total Required for Graduation** | **125** |

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**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 | Analytic Discussion | 3 | PEDH | Elective |  |  |
| HEDP | 1001 |  | 2 |  |  |  |  |
| CHEM | 1211K | General Chemistry I or | 4 | CHEM | 1212K | General Chemistry II | 4 |
| PHYS | 1001K | Physical Science I or |  | PHYS | 1002K | Physical Science II | 4 |
| PHYS | 2221K | Introductory Physics |  | PHYS | 2222K | Principles of Physics II |  |
| ASU | 1200 | Fresh. Sem. & Serv. to Lead. | 3 | POLS | 1101 | U.S. & GA Government | 3 |
| **Total Hours** |  |  | **16** |  |  |  | **16** |

**Sophomore Year**

ENGL 2111 World Lit. I 3 MATH 2213 Calculus III 4

MATH 2212 Calculus II 4 Hum./Fine Arts Elective 3

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Social Science Elective | | | 3 | MATH 2111 | | Linear Algebra | 3 |
| CSCI | 1003 | Intro. to Technology | 2 | Social Science Elective | |  | 3 |
| MATH | 2411 | Basic Statistics | 3 | PEDH | | Elective | 1 |
| General Elective | |  | 2 | HIST | 1002 | Intro. to African Diaspora | 2 |
| **Total Hours** | |  | **17** |  |  |  | **16** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **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 |
| MATH | 3314 | Math Statistics | 3 |  | |  |  |

FREN 1101 OR GRMN 1121 3 Social Science Elective 3

General Elective 3

**Total Hours 15 15**

**Senior Year**

MATH 4211 Elements of Analysis I 3 MATH 4212 Elements

Analysis II 3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| MATH | Elective | 3 | MATH | 4215 | Numeric Analysis | 3 |
| MATH | Elective | 3 | MATH | 4313 | Topology | 3 |
| General Electives |  | 7 | MATH | 4512 | Senior Project | 1 |
| Project |  | 1 |  |  |  |  |
| General Electives |  | 4 |  |  |  |  |
| **Total Hours** |  | **16** |  |  |  | **14** |

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