

CYBERSECURITY MANAGEMENT AND ANALYTICS MAJOR

Program Curriculum

| Code | Title | Credits |
|--|---|---------|
| Degree Core Requirements | | |
| ACIS 2116 | Principles of Accounting ^{1,2} | 3 |
| BIT 3414 | Operations and Supply Chain Management ^{2,3} | 3 |
| FIN 3054 | Legal and Ethical Environment of Business ^{2,3} | 3 |
| FIN 3104 | Introduction to Finance ^{2,3} | 3 |
| HTM 2314 or MGT 2314 | Introduction to International Business ² | 3 |
| MGT 4394 | Strategic Management ^{2,3} | 3 |
| MKTG 3104 | Marketing Management ^{2,3} | 3 |
| Subtotal | | 21 |
| Major Requirements | | |
| ACIS 1504 | Introduction to Business Analytics and Business Intelligence ^{1,2} | 3 |
| ACIS 2115 | Principles of Accounting ^{1,2} | 3 |
| BIT 2104 | Careers in Business Information Technology | 1 |
| BIT 2554 | Linux, Shell Scripting, and Securing the OS for Business ³ | 3 |
| BIT 3474 | Data Management and Business Analytics in Python ³ | 3 |
| BIT 3484 | Advanced Business Analytics in Python and R ³ | 3 |
| BIT 4604 | Data Governance, Privacy and Ethics ³ | 3 |
| BIT 4614 | Information Security ³ | 3 |
| BIT 3554 | Networks, Telecommunications and Security ³ | 3 |
| BIT 4484 | Project Management ³ | 3 |
| BIT 4624 | Cybersecurity Analytics for Business ³ | 3 |
| BIT 4964 | Field Study ³ | 3 |
| CS 1064 | Introduction to Programming in Python | 3 |
| FIN 4014 | Cyberlaw and Policy ³ | 3 |
| MGT 1104 | Foundations of Business ² | 3 |
| MGT 3404 | Principles of Management ³ | 3 |
| PSYC 1004 or SOC 1004 | Introductory Psychology Introductory Sociology | 3 |
| Restricted Electives | | |
| Select two courses from the restricted electives list below. | | 6 |
| Subtotal | | 55 |
| Free Electives | | |
| Select six credit hours of Free Electives | | 6 |
| Subtotal | | 6 |
| Pathways to General Education | | |
| <i>Pathways Concept 1 - Discourse</i> | | |
| ENGL 1105 or COMM 1015 | First-Year Writing (1F) Communication Skills | 3 |
| ENGL 1106 or COMM 1016 | First-Year Writing (1F) Communication Skills | 3 |

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|--|---|------------|
| Select three credits in Pathway 1a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G01A) | | 3 |
| <i>Pathways Concept 2 - Critical Thinking in the Humanities</i> | | |
| Three credits of Pathway 2 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G02) fulfilled with BIT 4604 | | |
| Select three additional hours in Pathway 2 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G02) | | 3 |
| <i>Pathways Concept 3 - Reasoning in the Social Sciences</i> | | |
| ECON 2005 | Principles of Economics ^{1,2} | 3 |
| ECON 2006 | Principles of Economics ^{1,2} | 3 |
| <i>Pathways Concept 4 - Reasoning in the Natural Sciences</i> | | |
| Select six credits in Pathway 4 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G04) | | 6 |
| <i>Pathways Concept 5 - Quantitative and Computational Thinking</i> | | |
| BIT 2405 | Introduction to Business Statistics, Analytics, and Modeling ^{1,2} | 3 |
| BIT 2406 | Introduction to Business Statistics, Analytics, and Modeling ^{1,2} | 3 |
| MATH 1524 | Business Calculus (5F) | 4 |
| <i>Pathways Concept 6 - Critique and Practice in Design and the Arts</i> | | |
| Select three credits in Pathway 6a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06A) | | 3 |
| Select three credits in Pathway 6d (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06D) | | 3 |
| <i>Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States</i> | | |
| Select three credits in Pathway 7 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G07) or Free Electives ³ | | 3 |
| Subtotal | | 43 |
| Total Credits | | 125 |

¹ Policy 91: Pamplin students in a business degree program must complete eight business courses (ACIS 1504 Introduction to Business Analytics and Business Intelligence, MATH 1524 Business Calculus, ACIS 2115 Principles of Accounting-ACIS 2116 Principles of Accounting, BIT 2405 Introduction to Business Statistics, Analytics, and Modeling-BIT 2406 Introduction to Business Statistics, Analytics, and Modeling, and ECON 2005 Principles of Economics-ECON 2006 Principles of Economics) with a grade of c- or higher by 72 attempted credit hours (or 90 attempted credit hours for students with more than 18 transfer credits). Students who have not met the requirements will be notified upon reaching 72 (or 90) credit hours that they must complete the missing course(s) in the next term(s) of enrollment. Failure to do so may result in the student's dismissal from the business degree program. This policy is strictly enforced.

² Graduation requirement: Students must achieve a grade of C- or higher in select business courses (ACIS 1504 Introduction to Business Analytics and Business Intelligence, MATH 1524 Business Calculus, ACIS 2115 Principles of Accounting-ACIS 2116 Principles of Accounting, BIT 2405 Introduction to Business Statistics, Analytics, and Modeling-BIT 2406 Introduction to Business Statistics, Analytics, and Modeling, ECON 2005 Principles of Economics-ECON 2006 Principles of Economics, MGT 1104 Foundations of Business, HTM 2314 Introduction to International Business or MGT 2314 Introduction to International Business, MGT 3404 Principles of Management, MKTG 3104 Marketing Management, FIN 3104 Introduction to Finance, FIN 3054 Legal and Ethical Environment of

Business, BIT 3414 Operations and Supply Chain Management, and MGT 4394 Strategic Management).

³ Overall and In-Major GPA: Students must have an overall GPA of 2.0 and an in-major GPA of 2.0 to graduate. Courses used to calculate the in-major GPA are noted (e.g. BIT 3424 Introduction to Business Analytics Modeling).

⁴ Critical Analysis of Identity & Equity in the U.S. may be double-counted with another course (major, option, pathway, or free elective) that is designated as pathway 7. If this pathway is already met, students must take a free elective to meet the 125-credit hour requirement.

Restricted Electives

| Code | Title | Credits |
|-----------|--|---------|
| ACIS 4684 | Information Systems Security and Assurance | 3 |
| BIT 3514 | Systems Analysis | 3 |
| BIT 3524 | Database Management and Design | 3 |
| BIT 4424 | Business Information Visualization and Analytics | 3 |
| BIT 4544 | Advanced Methods in Business Analytics | 3 |
| BIT 5114 | Crime and Conflict in Cyberspace | 3 |
| BIT 5134 | Cybersecurity Program Design and Operations | 3 |
| CS 4264 | Principles of Computer Security | 3 |
| MATH 4175 | Cryptography | 3 |

General Information

A total of **125 credit hours** is required for graduation. Any exceptions to this curriculum must be approved by the student's department head and Associate Dean for Pamplin Undergraduate Programs.

Foreign Language Requirement

Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six credit hours of a single foreign, classical, or sign language at the college level. Courses taken to meet this requirement do not count towards the minimum credit hours required for graduation. Please refer to the Undergraduate Catalog for details.

Transferring Courses

Requirements and procedures for transferring courses are available <http://pampl.in/transfercredits> (<http://pampl.in/transfercredits/>).

Policy 91

University policy requires a student to make satisfactory academic progress towards a degree in order to remain enrolled at the institution (see footnote 1). Students are responsible for reading and understanding Policy 91 in accordance with Pamplin policies <http://pampl.in/policy91> (<http://pampl.in/policy91/>).

Roadmap

| Course | Title | Credits |
|---------------------------|---|---------|
| First Year | | |
| Fall Semester | | |
| ACIS 1504 | Introduction to Business Analytics and Business Intelligence ^{1,2} | 3 |
| MATH 1524 | Business Calculus ^{1,2} | 4 |
| MGT 1104 | Foundations of Business ² | 3 |
| ENGL 1105 or COMM 1015 | First-Year Writing or Communication Skills | 3 |

Select three credits in Pathway 6a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06A)

| Credits | | 16 |
|---|---|----|
| Spring Semester | | |
| ACIS 2115 | Principles of Accounting ^{1,2} | 3 |
| ECON 2005 | Principles of Economics ^{1,2} | 3 |
| BIT 2405 | Introduction to Business Statistics, Analytics, and Modeling ^{1,2} | 3 |
| ENGL 1106 or COMM 1016 | First-Year Writing or Communication Skills | 3 |
| Select three credits in Pathway 2 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G02) | | 3 |
| BIT 2104 | Careers in Business Information Technology | 1 |

| Credits | | 16 |
|--------------------------|---|----|
| Second Year | | |
| Fall Semester | | |
| ACIS 2116 | Principles of Accounting ^{1,2} | 3 |
| ECON 2006 | Principles of Economics ^{1,2} | 3 |
| BIT 2406 | Introduction to Business Statistics, Analytics, and Modeling ^{1,2} | 3 |
| CS 1064 | Introduction to Programming in Python | 3 |
| BIT 2554 | Linux, Shell Scripting, and Securing the OS for Business ³ | 3 |
| PSYC 1004 or SOC 1004 | Introductory Psychology or Introductory Sociology | 3 |

| Credits | | 18 |
|--|--|----|
| Spring Semester | | |
| BIT 3554 | Networks, Telecommunications and Security ³ | 3 |
| BIT 3474 | Data Management and Business Analytics in Python ³ | 3 |
| HTM 2314 or MGT 2314 | Introduction to International Business ² or Introduction to International Business | 3 |
| Select three credits in Pathway 4 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G04) | | 3 |
| Select three credits in Pathway 6d (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06D) | | 3 |

| Credits | | 15 |
|---|---|----|
| Third Year | | |
| Fall Semester | | |
| Free Electives | | 3 |
| BIT 4614 | Information Security ³ | 3 |
| MKTG 3104 | Marketing Management ^{2,3} | 3 |
| BIT 3414 | Operations and Supply Chain Management ³ | 3 |
| Select three credits in Pathway 4 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G04) | | 3 |

| Credits | | 15 |
|------------------------|--|----|
| Spring Semester | | |
| BIT 4604 | Data Governance, Privacy and Ethics ³ | 3 |
| BIT 3484 | Advanced Business Analytics in Python and R ³ | 3 |
| FIN 3054 | Legal and Ethical Environment of Business ^{2,3} | 3 |
| FIN 3104 | Introduction to Finance ^{2,3} | 3 |
| Free Electives | | 3 |

| Credits | | 15 |
|----------------------|---|----|
| Fourth Year | | |
| Fall Semester | | |
| Restricted Electives | | 3 |
| FIN 4014 | Cyberlaw and Policy ³ | 3 |
| BIT 4484 | Project Management ³ | 3 |
| BIT 4624 | Cybersecurity Analytics for Business ³ | 3 |
| MGT 3404 | Principles of Management ³ | 3 |

| Credits | | 15 |
|------------------------|--|----|
| Spring Semester | | |
| BIT 4964 | Field Study (approval required) ³ | 3 |
| MGT 4394 | Strategic Management ³ | 3 |

| | |
|---|------------|
| Select three credits in Pathway 7 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G07) or Free Electives | 3 |
| Restricted Electives | 3 |
| Select three credits in Pathway 1a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G01A) | 3 |
| Credits | 15 |
| Total Credits | 125 |

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| BIT 5114 | Crime and Conflict in Cyberspace | 3 |
| BIT 5134 | Cybersecurity Program Design and Operations | 3 |
| CS 4264 | Principles of Computer Security | 3 |
| MATH 4175 | Cryptography | 3 |