# COMPUTER INFORMATION SYSTEMS MAJOR (B.S.)

https://manchester.unh.edu/program/bs/computer-information-systems-major

## Description

The computer information systems (CIS) or information technology (IT) field, in its broadest sense, encompasses all aspects of computing technology. During their program of study, students develop a strong skillset to effectively select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals.

The bachelor of science degree in Computer Information Systems prepares graduates with knowledge, skills, and professional practices to work in the highly integrated field of computing and to grow into leadership positions. The program also enables graduates to further their studies at the graduate level and pursue research in a computing-related discipline.

Career opportunities for students with an undergraduate CIS degree are varied, but may include such areas as software applications developer, data security specialist, database developer/administrator, e-commerce analyst/programmer, help desk manager, multimedia developer, network/system administrator, technical writer, technology trainer, user support specialist, testing and quality assurance specialist, or web developer. Career options exist in a wide range of organizations as all businesses, industries, and nonprofits continue to use, develop, and integrate information technology solutions.

## Program Educational Objectives

Within five years of graduation, a CIS student should be able to:

- Apply knowledge and skills in core and advanced information technologies to help an organization achieve its goals.
- Advocate for users of information technologies, whether they are end users of information systems, managers of enterprise applications, developers of IT solutions, or customers of IT-reliant work systems.
- Develop, manage, and evaluate computing and communication systems and services.
- Live and work as contributing, well-rounded members of society.

For additional information about the computer information systems program, contact Michael Jonas (michael.jonas@unh.edu) or the UNH Manchester Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

## Requirements

## Degree Requirements

**Minimum Credit Requirement:** 128 credits

**Minimum Residency Requirement:** 32 credits must be taken at UNH

**Minimum GPA:** 2.0 required for conferral*

**Core Curriculum Required:** Discovery & Writing Program Requirements

**Foreign Language Requirement:** No

All Major, Option and Elective Requirements as indicated.
*Major GPA requirements as indicated.*

## Major Requirements

Students majoring in computer information systems must complete 128 credits to graduate, satisfy the University's Discovery Program, and complete 81 credits in the major with a minimum of C- in each course. Students must maintain an overall cumulative GPA of 2.0 or better.

Transfer students who elect to major in computer information systems must earn 81 approved credits for completion of the their major, of which at least 24 credits must be completed at UNH Manchester.

| Code | Title | Credits |
|---|---|---|
| **Required Mathematics Course** [1] | | |
| Select one of the following: | | 4 |
| MATH 420 | Finite Mathematics | |
| MATH 422 | Mathematics for Business Applications | |
| MATH 424B | Calculus for Life Sciences | |
| MATH 425 | Calculus I | |
| COMP 500 | Discrete Structures | |
| **Computing Core** | | |
| COMP 405 | Introduction to Web Design and Development | 4 |
| COMP 424 | Applied Computing 1: Foundations of Programming | 4 |
| COMP 430 | Systems Fundamentals | 4 |
| COMP 520 | Database Design and Development | 4 |
| COMP 525 | Data Structures Fundamentals | 4 |
| COMP 530 | Machine and Network Architecture | 4 |
| COMP 550 | Networking Concepts | 4 |
| COMP 560 | Ethics and the Law in the Digital Age | 4 |
| **Project and Professional Practice** [2] | | |
| COMP 715 | Information Security | 4 |
| COMP 730 | Software Development | 4 |
| UMST 582 | Internship and Career Planning Seminar | 1 |
| COMP 690 | Internship Experience | 4 |
| COMP 790 | Capstone Project | 4 |
| or COMP 791 | Senior Thesis | |
| **Computing Topics** [3] | | |
| Select three computing courses | | 12 |
| **Concentration to Broaden and Advance Student Learning of Computing Innovations** [4] | | |
| Select four courses | | 16 |
| **Total Credits** | | **81** |

[1] Any of these courses, except for COMP 500 Discrete Structures, may be used to satisfy the Quantitative Reasoning Discovery requirement.

[2] The program prepares students for the workforce and further education in a holistic way by emphasizing communication, collaboration, team work, initiative, appreciation for diversity, and self-direction and responsibility.

[3] Advisor permission required.

[4] Majors can creatively design a concentration of courses that meet their academic and professional goals and career plans. Four courses can be selected across a wide university curriculum, reflecting majors' interests in a liberal arts, scientific, engineering, interdisciplinary, or professional area of study. The concentration must be approved by the student's advisor before the student's junior year.

## Degree Plan

# Sample Course Sequence

**First Year**

**Fall**

| | | Credits |
|---|---|---|
| COMP 405 | Introduction to Web Design and Development | 4 |
| ENGL 401 | First-Year Writing | 4 |
| MATH 420 or MATH 422 or MATH 425 or COMP 500 | Finite Mathematics or Mathematics for Business Applications or Calculus I or Discrete Structures | 4 |
| UMST 401 | First Year Seminar | 2 |
| Discovery Course | | 4 |
| | **Credits** | **18** |

**Spring**

| | | |
|---|---|---|
| COMP 424 | Applied Computing 1: Foundations of Programming | 4 |
| COMP 520 | Database Design and Development | 4 |
| Discovery Course | | 4 |
| Discovery Course | | 4 |
| | **Credits** | **16** |

**Second Year**

**Fall**

| | | |
|---|---|---|
| COMP 430 | Systems Fundamentals | 4 |
| COMP 550 | Networking Concepts | 4 |
| Discovery Course | | 4 |
| Discovery Course | | 4 |
| | **Credits** | **16** |

**Spring**

| | | |
|---|---|---|
| COMP 525 | Data Structures Fundamentals | 4 |
| COMP 530 | Machine and Network Architecture | 4 |
| Concentration Course | | 4 |
| Discovery Course | | 4 |
| | **Credits** | **16** |

**Third Year**

**Fall**

| | | |
|---|---|---|
| COMP 560 | Ethics and the Law in the Digital Age | 4 |
| UMST 582 | Internship and Career Planning Seminar | 1 |
| Concentration Course | | 4 |
| Elective Course | | 4 |
| Elective Course | | 4 |
| | **Credits** | **17** |

**Spring**

| | | |
|---|---|---|
| COMP 690 | Internship Experience | 4 |
| COMP 730 | Software Development | 4 |
| Concentration Course | | 4 |
| COMP Topic Course | | 4 |
| | **Credits** | **16** |

**Fourth Year**

**Fall**

| | | |
|---|---|---|
| COMP 715 | Information Security | 4 |
| Concentration Course | | 4 |
| COMP Topic Course | | 4 |
| Elective Course | | 4 |
| | **Credits** | **16** |

**Spring**

| | | |
|---|---|---|
| COMP 790 | Capstone Project | 4 |
| COMP Topic Course | | 4 |
| Elective Course | | 4 |
| Elective Course | | 4 |
| | **Credits** | **16** |
| | **Total Credits** | **131** |

## Student Learning Outcomes

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Use systemic approaches to select, develop, apply, integrate, and administer secure computing technologies to accomplish user goals.

The student learning outcomes are aligned with criteria for accrediting information technology programs as recommended by the ABET Computing Accreditation Commission and the ACM Computing Curricula – IT 2017 Information Technology guidelines.