# APPLIED COMPUTING AND INFORMATICS, BACHELOR OF SCIENCE

## Applied Computing and Informatics Program (ACMP)

The Applied Computing and Informatics (ACMP) program is tailored for those who aspire to make a difference with computing in a range of domain areas from web development to healthcare to game design. Enrolling in ACMP is a choice to focus less on theory and more on solving real-world challenges. Our curriculum is designed to immerse students in the core areas of data analytics, software development, and user experience design, ensuring that the solutions developed are not only technologically advanced but also user-centric and engaging.

## Pathways for Specialization

Design and Innovation: This pathway is ideal for students with a passion for creating aesthetically pleasing and functional technological solutions. It emphasizes the importance of understanding user needs and incorporates principles of startup thinking into the design process, preparing students to become pioneers in technological innovation.

Biomedical Informatics: Tailored for students interested in the intersection of computing and healthcare, this pathway focuses on applying informatics principles to biomedicine and healthcare challenges, equipping students with the skills needed to make significant contributions to medical advancements and patient care.

## Fast Track

The School of Interdisciplinary Informatics (SI2) has developed a Fast Track program for highly qualified and motivated students providing the opportunity to complete a bachelor's degree and a master's degree in an accelerated time frame.  With Fast Track, students may count up to 9 graduate credit hours towards the completion of their undergraduate program as well as the graduate degree program. Students will work with both undergraduate and graduate advisors to ensure graduate classes selected will count toward both programs, should a student wish to earn a graduate degree in a separate College of Information Science & Technology (CIST) area than their undergraduate degree.

Program Specifics:

- This program is available for undergraduate students pursuing any CIST undergraduate degree desiring to pursue an MS in either the same or a related CIST field.
- Students must have completed no less than 60 undergraduate hours.
- Students must have a minimum undergraduate GPA of 3.0.
- Students must complete the Fast Track Approval form and obtain all signatures and submit to the Office of Graduate Studies prior to first enrollment in a graduate course.
- Students will work with their undergraduate advisor to register for the graduate courses.
- A minimum cumulative GPA of 3.0 is required for graduate coursework to remain in good standing.
- Students remain undergraduates until they meet all the requirements for the undergraduate degree and are eligible for all rights and privileges granted undergraduate status including financial aid.
- Near the end of the undergraduate program, formal application to the graduate program is required. All applicants will need to meet any other admission requirements established for the MS in selected CIST program. The application fee will be waived if the applicant contacts the Office of Graduate Studies for a fee waiver code prior to submitting the MS application.
  - Admission to Fast Track does NOT guarantee admission to the graduate program.
  - The admit term must be after the completion term of the undergraduate degree.

## Contact

For more information, contact the College of IS&T Academic Advising Office at 402.554.3819.

## Website

## Applied Computing and Informatics, Bachelor of Science Requirements

A minimum of 120 credit hours is required for a Bachelor of Science degree in applied Computing and Informatics. Thirty of the last 36 hours must be University of Nebraska at Omaha (UNO) courses. Registering for courses without having taken the stated prerequisites could result in administrative withdrawal.

To obtain a Bachelor of Science degree in Applied Computing and Informatics, a student must fulfill the university, college and departmental requirements. Some courses may satisfy requirements in more than one area, but credit is awarded only once, thereby reducing the total number of credit hours for the degree to 120. (This total does not include prerequisites.)

| Code | Title | Credits |
|---|---|---|
| **General Education Requirements - 34 Hours Required** | | |
| Minimum of "C-"required | | |
| **Fundamental Skills** | | **15** |
| **Writing** – 6 hrs. | | |
| ENGL 1150 | ENGLISH COMPOSITION I | |
| ENGL 1160 | COLLEGE RESEARCH AND INFORMATION LITERACY | |
| **Oral Communication** – 3 hrs. | | |
| CMST 1110 | PUBLIC SPEAKING FUNDS | |
| or CMST 2120 | ARGUMENTATION AND DEBATE | |
| **Quantitative Literacy** – 3 hrs. | | |
| MATH 1120 | INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING | |
| or MATH 1130 | QUANTITATIVE LITERACY | |
| or MATH 1140 | QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS | |
| or MATH 1300 | COLLEGE ALGEBRA WITH SUPPORT | |
| **Data Literacy** – 3 hrs. | | |
| Select one from the following: | | |
| STAT 1100 | DATA LITERACY AND VISUALIZATION | |
| STAT 1530 | ELEMENTARY STATISTICS | |
| Until Fall 2028, students can satisfy this requirement with an approved data literacy course, or any approved natural or social science general education course. | | |
| **Breadth of Knowledge** | | **13** |
| Social Science – 3 hrs. | | |
| Humanities – 3 hrs. | | |
| Natural & Physical Science (must complete a lab) – 4 hrs. | | |
| Arts – 3 hrs. | | |
| **Individual and Social Responsibility** | | **6** |

| | | |
|---|---|---|
| Cultural Knowledge – 3 hrs. | | |
| Civic Knowledge and Engagement – 3 hrs. | | |

**MAJOR REQUIREMENTS - 61 Hours Required**

**Course will satisfy UNO's Geneal Education requirement

^Course requires pre-requisite(s)

| All of the Following: | | 43 |
|---|---|---|
| CIST 1010 | LEARN AND EARN: COLLEGE AND CAREER SUCCESS (^) | |
| CSCI 1200 | COMPUTER SCIENCE PRINCIPLES (** ^) | |
| CYBR 1100 | INTRODUCTION TO INFORMATION SECURITY (**) | |
| ACMP 1200 | HUMAN-CENTERED COMPUTING (**) | |
| BIOI 1000 | DIGITAL HEALTH AND BIOLOGICAL SYSTEMS (**) | |
| CIST 1600 | INTRODUCTION TO PROGRAMMING USING PRACTICAL SCRIPTING (^) | |
| or CIST 1400 | INTRODUCTION TO COMPUTER SCIENCE I | |
| ACMP 2000 | DATA ANALYSIS AND MACHINE LEARNING (^) | |
| ACMP 2100 | FUNDAMENTALS OF SOFTWARE AND HARDWARE CONSTRUCTION (^) | |
| ACMP 2400 | DEVOPS AND PLATFORM ENGINEERING (^) | |
| CIST 2500 | INTRODUCTION TO APPLIED STATISTICS FOR IS&T (^) | |
| ACMP 2990 | APPLIED COMPUTING AND INFORMATICS SEMINAR (^ taken 3 times for 1 cr each) | |
| CIST 3000 | TECHNICAL WRITING & COMMUNICATION FOR IS&T (^) | |
| ACMP 3200 | DATA STRUCTURES AND ALGORITHMS FOR APPLIED COMPUTING AND INFORMATICS (^) | |
| or CSCI 3320 | DATA STRUCTURES | |
| CIST 3110 | INFORMATION TECHNOLOGY ETHICS (** ^) | |
| ACMP 4580 | CAPSTONE (^) | |

| Extension Courses - Select 18 credit hours from the following courses or complete an approved concentration: | | 18 |
|---|---|---|
| ACMP 2900 | SPECIAL TOPICS IN APPLIED COMPUTING AND INFORMATICS | |
| ACMP 3220 | CREATIVITY AND INNOVATION (^) | |
| ACMP 3330 | DESIGN METHODS AND PROTOTYPING (^) | |
| BIOI 3000 | APPLIED BIOINFORMATICS (^) | |
| CSCI 3450 | NATURAL LANGUAGE PROCESSING (^) | |
| ACMP 4000 | SPECIAL TOPICS IN IT INNOVATION (^) | |
| ACMP 4260 | USER EXPERIENCE DESIGN (^) | |
| BIOI 4860 | BIOINFORMATICS ALGORITHMS (^) | |
| BIOI 4870 | DATA MANAGEMENT AND KNOWLEDGE DISCOVERY IN COMPUTING AND INFORMATICS (^) | |
| BIOI 4890 | COMPUTERIZED GENETIC SEQUENCE ANALYSIS (^) | |
| ACMP 4510 | INTERNSHIP IN APPLIED COMPUTING AND INFORMATICS (^) | |
| ACMP 4500 | INDEPENDENT STUDIES (^) | |
| MATH 1950 | CALCULUS I (^) | |

| | | |
|---|---|---|
| CSCI 1620 | INTRODUCTION TO COMPUTER SCIENCE II (^) | |
| CSCI 2030 | MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE (^) | |
| or MATH 2030 | DISCRETE MATHEMATICS | |
| CYBR 2600 | SYSTEM ADMINISTRATION (^) | |
| ISQA 3310 | MANAGING THE DATABASE ENVIRONMENT (^) | |
| CYBR 3600 | CYBERSECURITY POLICY AND AWARENESS (^) | |
| CYBR 3570 | CRYPTOGRAPHY (^) | |
| CYBR 4360 | PRINCIPLES OF SECURE SYSTEM DESIGN (^) | |
| CYBR 4380 | DIGITAL FORENSICS (^) | |
| CYBR 4390 | MOBILE DEVICE FORENSICS (^) | |
| CYBR 4450 | ETHICAL HACKING - MALWARE ANALYSIS (^) | |
| CYBR 4460 | ETHICAL HACKING - NETWORK ANALYSIS (^) | |
| CSCI 4830 | INTRODUCTION SOFTWARE ENGINEERING (^) | |

*This area may also be used to satisfy concentration requirements.

**ELECTIVES**

#Elective hours as required to reach a total of 120 hours

# Applied Computing and Informatics Concentrations

- Biomedical Informatics Concentration (http://catalog.unomaha.edu/undergraduate/college-information-science-technology/school-interdisciplinary-informatics-si2/information-technology-it-innovation-bs/biomedical-informatics-conc/)
- Design and Innovation Concentration (http://catalog.unomaha.edu/undergraduate/college-information-science-technology/school-interdisciplinary-informatics-si2/information-technology-it-innovation-bs/design-innovation-conc/)

# Minor Offered

- Applied Computing and Informatics Minor (http://catalog.unomaha.edu/undergraduate/college-information-science-technology/school-interdisciplinary-informatics-si2/itin-minor/)

# Applied Computing and Informatics- No Concentration Four-Year Plan

**First Year**

| Fall | | Credits |
|---|---|---|
| CIST 1010 | LEARN AND EARN: COLLEGE AND CAREER SUCCESS | 1 |
| CSCI 1200 | COMPUTER SCIENCE PRINCIPLES | 3 |
| CSCI 1204 | COMPUTER SCIENCE PRINCIPLES LABORATORY | 1 |
| ENGL 1150 | ENGLISH COMPOSITION I | 3 |
| ACMP 1200 | HUMAN-CENTERED COMPUTING | 3 |
| MATH 1300 | COLLEGE ALGEBRA WITH SUPPORT | 4 |
| or MATH 1320 | or COLLEGE ALGEBRA | |
| | Credits | 15 |

**Spring**

| | | |
|---|---|---|
| ENGL 1160 | COLLEGE RESEARCH AND INFORMATION LITERACY | 3 |
| CIST 1400 or CIST 1600 | INTRODUCTION TO COMPUTER SCIENCE I or INTRODUCTION TO PROGRAMMING USING PRACTICAL SCRIPTING | 3 |
| CIST 2500 | INTRODUCTION TO APPLIED STATISTICS FOR IS&T | 3 |
| BIOI 1000 | DIGITAL HEALTH AND BIOLOGICAL SYSTEMS | 3 |
| CYBR 1100 | INTRODUCTION TO INFORMATION SECURITY | 3 |
| | **Credits** | **15** |

**Second Year**

**Fall**

| | | |
|---|---|---|
| ACMP 2000 | DATA ANALYSIS AND MACHINE LEARNING | 3 |
| ACMP 2100 | FUNDAMENTALS OF SOFTWARE AND HARDWARE CONSTRUCTION | 3 |
| General Education Course or Elective | | 3 |
| General Education Course or Elective | | 3 |
| General Education Course or Elective | | 3 |
| | **Credits** | **15** |

**Spring**

| | | |
|---|---|---|
| ACMP 2990 | APPLIED COMPUTING AND INFORMATICS SEMINAR | 1 |
| ACMP 2400 | DEVOPS AND PLATFORM ENGINEERING | 3 |
| CMST 1110 | PUBLIC SPEAKING FUNDS | 3 |
| Extension/Concentration Course | | 3 |
| General Education Course or Elective | | 3 |
| | **Credits** | **13** |

**Third Year**

**Fall**

| | | |
|---|---|---|
| ACMP 2990 | APPLIED COMPUTING AND INFORMATICS SEMINAR | 1 |
| CIST 3110 | INFORMATION TECHNOLOGY ETHICS | 3 |
| Extension/Concentration Course | | 3 |
| General Education Course or Elective | | 3 |
| General Education Course or Elective | | 3 |
| General Education Course or Elective | | 3 |
| | **Credits** | **16** |

**Spring**

| | | |
|---|---|---|
| ACMP 2990 | APPLIED COMPUTING AND INFORMATICS SEMINAR | 1 |
| ACMP 3200 | DATA STRUCTURES AND ALGORITHMS FOR APPLIED COMPUTING AND INFORMATICS | 3 |
| Extension/Concentration Course | | 3 |
| Extension/Concentration Course | | 3 |
| General Education Course or Elective | | 3 |
| General Education Course or Elective | | 3 |
| | **Credits** | **16** |

**Fourth Year**

**Fall**

| | | |
|---|---|---|
| CIST 3000 | TECHNICAL WRITING & COMMUNICATION FOR IS&T | 3 |
| General Education Course or Elective | | 3 |

| | |
|---|---|
| General Education Course or Elective | 3 |
| General Education Course or Elective | 3 |
| General Education Course or Elective | 3 |
| **Credits** | **15** |

**Spring**

| | | |
|---|---|---|
| ACMP 4580 | CAPSTONE | 3 |
| Extension/Concentration Course | | 3 |
| Extension/Concentration Course | | 3 |
| General Education Course or Elective | | 3 |
| General Education Course or Elective | | 3 |
| | **Credits** | **15** |
| | **Total Credits** | **120** |

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This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

This plan is not a contract and curriculum is subject to change

Additional Information About this Plan:
University Degree Requirements: The minimum number of hours for a UNO undergraduate degree is 120 credit hours. Please review the requirements for your specific program to determine all requirements for the program. In order to graduate on-time (four years for an undergraduate degree), you need to take 30 hours each year.

Placement Exams: For Math, English, Foreign Language, a placement exam may be required. More information on these exams can be found at https://www.unomaha.edu/enrollment-management/testing-center/placement-exams/information.php

**Transfer credit or placement exam scores may change suggested plan of study