

INFORMATION SCIENCE AND TECHNOLOGY, MS

The Master of Science in Information Science and Technology (MSIST) is a professional graduate degree program for those who seek advanced training to meet the ever increasing need for information technology (IT) professionals. The degree is composed of 30 credit hours and enhances any undergraduate course of study.

The MSIST will provide essential skills and knowledge in the following areas:

- **Data science:** Provides students with advanced knowledge and skills to manage data sets generated by applications.
- **Information security:** Focuses on techniques ensuring the security of all data captured, stored and analyzed through applications.

Admission Requirements

Application Deadlines

Application deadlines vary by program, please review the application deadline chart (<http://uwm.edu/graduateschool/program-deadlines/>) for specific programs. Other important dates and deadlines can be found by using the One Stop calendars (<https://uwm.edu/onestop/dates-and-deadlines/>).

Admission

An applicant must meet Graduate School requirements (<http://uwm.edu/graduateschool/admission/>) plus these departmental requirements to be considered for admission to the program:

- A resume.
- A one to two page reason statement outlining your background and your educational and professional goals.

Prerequisites

Preference will be given to those students who have a baccalaureate degree in information sciences, computer information systems, computer science, engineering, statistics, or a related field. Students with sufficient background gained through work experience or professional training in information technologies, such as networks, web services, and database development, will also be considered for admission to the program. Those who have neither of the aforementioned qualifications will be encouraged to take the following prerequisites, or their equivalents, before taking related courses:

| Code | Title | Credits |
|------------|--|---------|
| INFOST 240 | Web Design I | 3 |
| INFOST 410 | Database Information Retrieval Systems | 3 |
| INFOST 440 | Web Application Development | 3 |

If taken, these courses must have been completed within the last five years with a grade of B or better (B- not acceptable).

Credits and Courses

The program requires 30 graduate-level credits, including 15 credits of required coursework, competency requirement and either 12 or 15 credits

of elective credit depending on whether competency is demonstrated through coursework or examination.

| Code | Title | Credits |
|---|--|-----------|
| Core Courses | | |
| INFOST 582 | Introduction to Data Science | 3 |
| INFOST 583 | Survey of Information Security | 3 |
| COMPST 701 | Computing Fundamentals for IT Professionals | 3 |
| COMPST 703 | Software Development Life Cycle | 3 |
| <i>Programming proficiency as demonstrated by one of the following with a "C" or better:</i> | | 0-3 |
| INFOST 350 | Introduction to Application Development | |
| BUSMGMT 744 | R Programming for Business Analytics | |
| COMPST 702 | Introductory Programming Using Python | |
| COMPST 750 | Problem Solving with Object-Oriented Programming | |
| HI 741 | Essential Programming for Health Informatics | |
| PH 718 | Data Management and Visualization in R | |
| Programming Competency Examination | | |
| Culminating Course | | |
| INFOST 790 | Project Design, Implementation, and Evaluation | 3 |
| Electives | | |
| 12-15 credits from any INFOST or COMPST course offerings or from any of the Tracks. Number of credits is dependent on whether programming competency is demonstrated through coursework or examination. | | 12-15 |
| Total Credits | | 30 |

Electives

Select 12 or 15 credits of elective credits depending on whether programming competency is demonstrated through coursework or examination. Electives can be used toward Tracks.

Electives for the Information Security Track

12 credits of coursework from any of the courses listed below.

| Code | Title | Credits |
|------------|---|---------|
| INFOST 465 | Legal Aspects of Information Products and Services (G) | 3 |
| INFOST 547 | User-Centered Interaction Design | 3 |
| INFOST 584 | Survey of Web and Mobile Content Development | 3 |
| INFOST 660 | Information Policy | 3 |
| INFOST 661 | Information Ethics | 3 |
| INFOST 671 | Applied Web 3.0: Artificial Intelligence and Blockchain | 3 |
| INFOST 691 | Special Topics in Information Science: | 1-3 |
| INFOST 695 | Ethical Hacking I | 3 |
| INFOST 696 | Ethical Hacking II | 3 |
| INFOST 697 | Cisco Routing & Switching I | 3 |
| INFOST 784 | Information Security Management | 3 |

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|-------------|---|---|----------------|--|-----|
| INFOST 785 | Database Management Systems for Information Professionals | 3 | COMPST 702 | Introductory Programming Using Python | 3 |
| BUS ADM 743 | Information Privacy, Security & Continuity | 3 | COMPST 750 | Problem Solving with Object-Oriented Programming | 3 |
| BUS ADM 817 | Connected Systems for Business | 3 | COMPST 751 | Data Structures and Algorithms | 3 |
| COMPSCI 469 | Introduction to Computer Security | 3 | COMPST 790 | Advanced Topics in Computer Studies: | 3-9 |
| COMPSCI 520 | Computer Networks | 3 | ELECENG 711 | Introduction to Machine Learning | 3 |
| COMPST 750 | Problem Solving with Object-Oriented Programming | 3 | ELECENG 890 | Special Topics: | 3 |
| COMPST 751 | Data Structures and Algorithms | 3 | GEOG 726 | Geographic Information Science | 4 |
| | | | HI 741 | Essential Programming for Health Informatics | 3 |
| | | | HI/COMPSCI 744 | Text Retrieval and Its Applications in Biomedicine | 3 |
| | | | HI 760 | Biomedical and Healthcare Terminology and Ontology | 3 |

Electives for the Data Science Track

12 credits of coursework from any of the courses listed below.

| Code | Title | Credits |
|-------------|---|---------|
| INFOST 465 | Legal Aspects of Information Products and Services | 3 |
| INFOST 660 | Information Policy | 3 |
| INFOST 661 | Information Ethics | 3 |
| INFOST 671 | Applied Web 3.0: Artificial Intelligence and Blockchain | 3 |
| INFOST 687 | Data Analysis for Data Science | 3 |
| INFOST 691 | Special Topics in Information Science: | 1-3 |
| INFOST 714 | Metadata | 3 |
| INFOST 719 | Advanced Topics in Information Organization | 3 |
| INFOST 771 | Data Curation | 3 |
| INFOST 784 | Information Security Management | 3 |
| INFOST 785 | Database Management Systems for Information Professionals | 3 |
| BUS ADM 713 | Business Forecasting Methods | 3 |
| BUS ADM 741 | Web Mining and Analytics | 3 |
| BUS ADM 744 | Information Technology Strategy and Management | 3 |
| BUS ADM 746 | Topics in Information Technology Management: | 3 |
| BUS ADM 749 | Data and Information Management | 3 |
| BUS ADM 754 | Statistical Analysis | 3 |
| BUS ADM 763 | Marketing Analytics | 3 |
| BUS ADM 769 | Database Marketing | 3 |
| BUS ADM 810 | Development of Web-Based Solutions | 3 |
| BUS ADM 816 | Business Intelligence Technologies & Solutions | 3 |
| BUS ADM 914 | Advanced Multivariate Techniques in Management Research | 3 |
| BUSMGMT 709 | Predictive Analytics for Managers | 3 |
| BUSMGMT 744 | R Programming for Business Analytics | 3 |
| COMPSCI 423 | Introduction to Natural Language Processing | 3 |
| COMPSCI 425 | Introduction to Data Mining | 3 |
| COMPSCI 557 | Introduction to Database Systems | 3 |
| COMPSCI 710 | Artificial Intelligence | 3 |
| COMPSCI 744 | Text Retrieval and Its Applications in Biomedicine | 3 |

Electives for the Generalist Track

| Code | Title | Credits |
|-------------|---|---------|
| | Any Graduate level INFOST or COMPST course. | 1-3 |
| | Any course from the Data Science Track. | 1-3 |
| ART 302 | Art and Design Workshop: | 3 |
| ART 412 | Advanced Creative Technologies | 3 |
| ART 423 | Experimental Typography | 3 |
| ART 496 | Sequence and Structure | 3 |
| ART 524 | Professional Practice in Design: | 3-6 |
| ART 929 | Advanced Research-Design & Digital Media | 1-4 |
| ARCH 583 | Emerging Digital Technology: | 3 |
| ARCH 771 | Representation I | 3 |
| BUS ADM 748 | Managing Information Technology Projects | 3 |
| COMPSCI 459 | Fundamentals of Computer Graphics | 3 |
| COMPSCI 481 | Server-side Internet Programming | 3 |
| COMPSCI 482 | Rich Internet Applications | 3 |
| COMPSCI 522 | Computer Game Design | 3 |
| COMPSCI 718 | Advanced Computer Graphics: Modeling and Animation | 3 |
| COMPSCI 737 | Software Project Management | 3 |
| COMPSCI 743 | Intelligent User Interfaces | 3 |
| COMPSCI 747 | Principles & Practices of User Interface Design | 3 |
| GEOG 704 | Remote Sensing: Environmental and Land Use Analysis | 4 |
| GEOG 705 | Cartography | 4 |
| GEOG 726 | Geographic Information Science | 4 |
| GEOG 804 | Advanced Remote Sensing | 3 |

Minimum Grade Requirement in the Required Courses

The minimum grade requirement for the required courses is a B. Students who earn a grade of B- or lower have not met the minimum requirement and will be allowed to repeat the required course once. Students are responsible for tuition in the repeated course; no credit is earned from the first attempt at the required course, or any required course for which a B- or lower is earned. Materials and assignments used previously may not be reused or resubmitted when retaking a required course unless approved by the instructor. Those who do not meet the minimum

grade requirements upon repeating the course will be recommended for academic dismissal. Students may not register for a course for which any of the required courses is a prerequisite until the minimum grade requirement is met.

Additional Requirements

Time Limit

All degree requirements must be completed within five years from the date of initial enrollment in the Master's program.

Information Science and Technology MS Learning Outcomes

Students who graduate from the MSIST program will be able to:

1. Explain the fundamental theories, methods, and concepts of information science and technology.
2. Apply systems and tools of information technology to solve problems in the rapidly changing information technology field.
3. Develop analytical and critical thinking skills and capacities in a variety of Information Technology contexts.
4. Assess the quality and ethics of technology-related information as well as its value to those who will ultimately use it for decision-making.
5. Demonstrate the ability to communicate effectively with all stakeholders.

Accelerated Program Option

This program is offered as part of an accelerated graduate program. For more information, see Accelerated Graduate Degrees (<https://catalog.uwm.edu/opportunities-resources/accelerated-graduate-degrees/>).