

## INFORMATION SYSTEMS

### Information Systems

College of Science, Engineering & Technology  
Department of Information Systems & Technology  
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Web site: [www.cset.mnsu.edu/isys](http://www.cset.mnsu.edu/isys)

Chair: Leon Tietz

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The Bachelor of Science in Information Systems program provides students with a firm grasp of business concepts and information systems applications, and prepares them to create innovative solutions for significant business problems. Students gain the ability to integrate hardware, software, and management skills to solve problems in a variety of business areas.

The program's mission is to ensure that each graduate is exceptionally well-qualified to undertake a successful information systems career in business, industry, education, or government. In support of this mission, the program is designed so that:

- Each student will gain a sound foundation in computing basics: analysis and design, programming, testing, software development, security, database, and human-computer interaction.
- Each student will assimilate a solid base of business enterprise concepts, including principles of accounting, finance, business law, management, operations, and enterprise resource planning (ERP).
- Each student will learn the theory and practice of information technology, and develop skills to apply this knowledge to analyze and solve business problems.
- Each student will develop analytical, critical thinking, and interpersonal skills applicable to real-world problems.
- Each student will develop effective oral and written communication skills.
- Each student will appreciate the social and ethical issues in information systems.

Admission to Major is granted by the department. Admission to the Major is required before the student is permitted to take 300- and 400-level courses. Requirements are:

- A minimum of 32 earned semester credits
- Completion of MATH 121 or MATH 180 or MATH 181 with a grade of "C" or better
- Completion of ENG 101 with a grade of "C" or better
- Completion of ISYS 110 with a grade of "B" or better
- Completion of ISYS 210 and ISYS 215 with a grade of "C" or better in each, and a combined GPA of 2.5 in these courses (or their equivalents).

#### INFORMATION SYSTEMS BS

##### General Education Required (29 credits):

ENG	101	Composition (4)
HUM	282	Global Perspectives and Humanities Traditions (4)
ISYS	110	Foundations of Computing (4)
ISYS	202W	Computers in Society (4)
MATH	180	Mathematics for Computer Science (4)
PHIL	224	Business Ethics (3)
SPEE	100	Fundamentals of Speech Communication (3)
SPEE	212	Oral Communication for Business and the Professions (3)

##### Required for Major (Core, 68 credits):

ACCT	200	Financial Accounting (3)
ACCT	210	Managerial Accounting (3)
BLAW	371	Computer and Technology Law (3)
FINA	362	Business Finance (3)
ISYS	210	Fundamentals of Programming (4)

ISYS	215	Fundamentals of Information Systems (4)
ISYS	311	Business Application Programming (4)
ISYS	340	Database Application Systems (4)
ISYS	350	Information Security (4)
ISYS	380	Systems Analysis and Design (4)
ISYS	441	Database Modeling for Applications (4)
ISYS	450	Information Warfare (4)
ISYS	480	Software Quality Assurance and Testing (4)
ISYS	482	Human Computer Interaction (4)
ISYS	484	Software Engineering (4)
ISYS	497	Internship (1-12)
MGMT	330	Principles of Management (3)
MGMT	346	Production and Operations Management (3)
MGMT	473	Enterprise Resource Planning (ERP) (3)

##### Required Support Courses (12 credits):

ECON	207	Business Statistics (4)
ENG	271	Technical Communication (4)
ENG	475	Editing Technical Publications (4)

Required Minor: None.

#### POLICIES/INFORMATION

**GPA Policy.** The completion of any major or minor in the Department of Information Systems & Technology requires both:

- a GPA of 2.5 or higher for all departmental courses (ISYS or IT), or their substitutions, used to complete the major or minor, and
- a GPA of 2.5 or higher for all courses, or their substitutions, used to complete the major or minor. This includes all departmental courses (ISYS or IT), supporting courses, and General Education courses required for the major or minor.

It is recommended that students who cannot maintain a GPA of 3.0 in required 100 and 200 level courses see their advisor for a program review.

**Grade Policy.** All coursework used to complete a departmental major or minor, including required courses, required supporting courses, and required General Education courses, must be taken for a letter grade except for courses offered only as P/N.

No course completed with a grade of "D" can be used to complete a departmental major or minor program, or to meet a departmental prerequisite.

**Registration Hold Policy.** The department will place a registration hold on any student who earns a "D" or "F" in any of its courses. The department will also place such a hold on any student who drops any of its courses after the first two weeks of the semester. A student with a registration hold cannot register for courses until the hold is released, which requires filling out an appeal form and taking it to the student's advisor for discussion. Appeal forms are available from the departmental office. This hold policy does NOT apply to students who are taking 100-level ISYS courses.

**Dual Major Policy.** Students can earn at most one undergraduate major from this department.

**Administrative Drop Policy.** The department will automatically drop any student enrolled in ISYS 110 who does not attend the first course meeting. If you cannot attend the first meeting, submit a written request to [ad-computer@mnsu.edu](mailto:ad-computer@mnsu.edu) BEFORE the first day of the course. For assistance with the process, call the departmental office at 507-389-1412.

**Incomplete Policy.** The department gives incomplete grades for only two conditions. The first condition is illness, which requires a doctor's written recommendation. The second condition arises when a death in the student's family has caused the student to be away from the campus for an extended period. The student must have a satisfactory grade ("C" or better) in the course at the time of the onset of the condition.

## INFORMATION SYSTEMS

**Internship Policy.** An internship is required for all ISYS majors.

**Residency Policy.** Students must earn at least 50 percent of the credits required for a major in Information Systems at Minnesota State Mankato.

**Prerequisite Policy.** For all ISYS courses, an equivalent (cross-listed) IT course from the Department of Information Systems & Technology is accepted as a prerequisite in lieu of an ISYS course and vice versa.

**Advising Policy.** Every semester, before registering for courses, each student majoring in Information Systems must meet with his/her advisor to obtain permission for registration. This meeting ensures that all students are making satisfactory progress toward their degrees.

**Portfolio Policy.** Each student majoring in Information Systems is required to keep a portfolio of work done in all ISYS courses, and to make this portfolio available to ISYS faculty for review. Keeping a portfolio gives the student ownership over his or her education and helps to personalize the educational experience. The portfolio also provides a valuable showcase of work accomplished when interviewing prospective employers or applying to graduate school.

### COURSE DESCRIPTIONS

#### **ISYS 101 (3) Introduction to Information Systems**

Introduction to personal computers as productivity tools for business majors. Using Microsoft Office suite, students learn to be productive with document processing, spreadsheets, electronic presentations, and databases. Cannot be used toward any major or minor in Information Systems & Information Technology.  
Fall, Spring

#### **ISYS 110 (4) Foundations of Computing**

Comprehensive introduction to foundations of information systems and information technology. Includes algorithms, pseudocode, computer theory, computer hardware, computer software, related social issues, lab work. Knowledge and skills applicable to all disciplines.  
Pre: MATH 112 or MATH 115 or MATH 121 or MATH 181  
Fall, Spring  
GE-13

#### **ISYS 202W (4) Computers in Society**

Complex social and ethical issues associated with computers. Through thoughtful questions, informative readings, and analysis of opposing viewpoints, participants gain insight into the complexity of technology-related issues in a world without clearly defined borders.  
Fall, Spring  
GE-1C, GE-9, GE-13

#### **ISYS 210 (4) Fundamentals of Programming**

First course in two-course sequence for students majoring in information systems. Emphasis on information systems concepts, use of abstraction in program design, advanced problem-solving skills, high-level language programming.  
Pre: ISYS 110 or IT 110 (Must get "A" or "B")  
Fall, Spring

#### **ISYS 215 (4) Fundamentals of Information Systems**

Continuation of ISYS 210. Additional work with object-oriented concepts, programming techniques, use of essential data structures, and an overview of IS. Students design and write larger IS applications.  
Pre: ISYS 210 or IT 210, MATH 180 or MATH 121 or MATH 181  
Fall, Spring

#### **ISYS 311 (4) Business Application Programming**

Large-scale application development using the COBOL programming language. Emphasis on principles of application programming such as control breaks, table manipulations, file manipulations, sorting, interactive programming, sub-programming, index-sequential file handling, structure charts, and program documentation.  
Pre: ISYS 215 or IT 214  
Spring

#### **ISYS 340 (4) Database Application Systems**

Introduction to database systems, database models, database management systems, database design via data modeling and normalization, conversion of logical model into physical schema, SQL, application development using a relational database in a team environment.  
Pre: ISYS 210 or IT 210  
Fall, Spring

#### **ISYS 350 (4) Information Security**

Information system security including access control systems and methodology, business continuity and disaster recovery planning, legal issues in security, ethics, computer operations security, physical security. Security architecture and models using current standards and models.  
Pre: IT 210 or ISYS 210  
Fall, Spring

#### **ISYS 380 (4) Systems Analysis and Design**

This course introduces analysis and design of software, using both structured and object-oriented approaches. Students use upper and lower CASE tools in the analysis, design, and implementation of a team-based project.  
Pre: ISYS 215 or IT 214  
Fall, Spring

#### **ISYS 441 (4) Database Modeling for Applications**

Data modeling techniques such as E/R, UML, ORM, and LDS. Requirements analysis, conceptual data modeling, and transformation of models to SQL. Higher normal forms, advanced SQL, object-relational mapping, complex data models in business applications.  
Pre: ISYS 340 or IT 340  
Fall

#### **ISYS 450 (4) Information Warfare**

Information warfare principles and technologies, including information warfare concepts; protocols, authentication, and encryption; network attack techniques, methodologies, and tools; network defense; malware: trojans, worms, viruses, and malicious code; electronic crimes and digital evidence.  
Pre: ISYS 350 or IT 350  
Fall

#### **ISYS 480 (4) Software Quality Assurance and Testing**

Developing quality software, assessing and maintaining software quality. Software testing at unit, module, subsystem, and system levels. Automatic and manual generation of test data, static and dynamic analysis, functional testing, inspections, and reliability assessment.  
Pre: ISYS 380 or IT 380  
Spring

#### **ISYS 482 (4) Human Computer Interaction**

Human factors issues in the development of software and design of user interfaces for interactive systems. Theories, models, usability studies, and controlled experimentation are used to evaluate software development with user-interface-development environments.  
Pre: ISYS 380 or CS 110 or IT 380  
Fall

#### **ISYS 484 (4) Software Engineering**

Principles, methods, and techniques for construction of software systems. Software architecture, design, and implementation. Project management, planning, quality assurance, and product maintenance. Application of software engineering techniques to homework assignments and team projects.  
Pre: ISYS 480 or IT 480  
Fall, Spring

#### **ISYS 497 (1-12) Internship**

Participants gain experience in real-world business environment under direction of full-time staff member. (At most 3 hours toward a major in this department.)  
Pre: Permanent admission to the ISYS major, ISYS 340 or IT 340, and ISYS 380 or IT 380  
Variable