

# INFORMATION SYSTEMS TECHNOLOGY MANAGEMENT (ISTM)

## Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

### **ISTM 3119. Introduction to Programming. 3 Credits.**

Introductory course in writing simple computer programs using Python; data-analytic thinking and business applications through hands-on practices. No prior knowledge or experience in programming is required.

### **ISTM 4120. Business Systems Development. 3 Credits.**

Analysis, design, and implementation of management information systems (MIS). Structured methodologies and techniques for various stages of the MIS development process. Computer-aided software engineering tools. May be taken for graduate credit with permission of the program director and instructor. Prerequisites: CS 1111 or ISTM 3119; or permission of the instructor.

### **ISTM 4121. Database Principles and Applications. 3 Credits.**

Theory, architecture, and implementation of database management systems in corporate and organization information systems; fundamental concepts of database management and processing; hands-on experience with database management packages. Prerequisites: CS 1111 or ISTM 3119; or permission of the instructor.

### **ISTM 4123. Business Data Communications. 3 Credits.**

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

### **ISTM 4123W. Business Data Communications. 3 Credits.**

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BADM 2301.

### **ISTM 4130W. Writing On The Ethics of Technology. 3 Credits.**

Complex ethical dilemmas inherent in the introduction of new technologies and the influence human behavior asserts on these problems. Students write stories to explore and evaluate specific ethical problems relative to technology from various perspectives. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

### **ISTM 4215. Human-Computer Interaction. 3 Credits.**

An introduction to and overview of the field of human-computer interaction (HCI), an interdisciplinary field that integrates theories and methodologies from computer science, cognitive psychology, design, and other areas. Readings cover current theory and practice in interface specification, design, and evaluation, and include current and classic research papers in the field.

### **ISTM 4223. Innovation Ventures. 3 Credits.**

Process of innovation entrepreneurship used to launch and build new ventures; technology ventures; organizing for innovation, raising venture capital, wealth creation, managing the growing innovation venture, marketing technology products and services. (Same as ISTM 6223).

### **ISTM 4233. Emerging Technologies. 3 Credits.**

New developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space; forecasting technological advances and assessing their economic and social effects. Students enrolled at the graduate level are expected to do additional work. (Same as ISTM 6233).

### **ISTM 4900. Special Topics. 3 Credits.**

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

### **ISTM 4900W. Special Topics. 3 Credits.**

Experimental offering; new course topics and teaching methods. May be repeated once for credit. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

### **ISTM 4995. Independent Study. 3 Credits.**

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

### **ISTM 6200. Python Program Database Applications. 3 Credits.**

Introduction to Python programming language, Structured Query Language (SQL), relational database design, data wrangling, and rudimentary data analysis.

**ISTM 6201. Information Systems Development and Applications. 3 Credits.**

The information systems life cycle evaluated in terms of technologies, impact, and management. Structured and object-oriented analysis, prototyping, software reuse, testing, life-cycle costs, software development environments, and organizational and behavioral aspects of development projects. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6202. Relational Databases. 3 Credits.**

Introduction to the theory of relational databases and commences an in-depth discussion of Relational database theory and design at the conceptual, logical, and physical levels. Structured query language (SQL) is covered in depth. Completion of an undergraduate database course with a grade of B or above may be accepted for the prerequisite. Restricted to students in the MS in information systems technology program or with permission of the department. Prerequisites: ISTM 4121 or ISTM 6200.

**ISTM 6203. Telecommunications and Enterprise Networks. 3 Credits.**

The technologies and applications of telecommunication systems in the commercial and public sectors with emphasis on wireless, mobile, and Internet communication protocols. Systems technology and configurations to support business application requirements. Functional characteristics of network technologies. Restricted to students in the MS in information systems technology program or permission of the department.

**ISTM 6204. Information Technology Project Management. 3 Credits.**

Project and program management practices with an emphasis on information technology projects. The basic tools of project management: work breakdown structure, cost, schedule and performance goal setting, and risk analysis. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6205. Internet Computing. 3 Credits.**

Concepts, architectures, frameworks, and technology of web application development; the Internet as hardware and software architecture for creating business applications; web and web application servers, system development methods and techniques, client-side and server-side scripting. Completion of an undergraduate database course with a grade of B or above may be accepted for the prerequisite. Restricted to students in the MS in information systems technology program or with permission of the department. Prerequisites: ISTM 3119 or ISTM 6200.

**ISTM 6206. Information Systems Security. 3 Credits.**

Comprehensive examination of computer security issues from the design, management, and business information system ownership perspectives. System security concepts, methods, and policies from the design and planning stages to multi-level system implementation. Design of risk assessment strategies to achieve security goals. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6207. Information Resources Management. 3 Credits.**

Information resources management strategically assesses and exploits information technology assets for competitive advantage. The CIO role in information resources management, planning, security, information integration, enterprise model development, and data administration. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6209. Web and Social Analytics. 3 Credits.**

Concepts, techniques, and tools of collecting, analyzing, and reporting digital data concerning how users interact with organizations through the Internet and social media; business intelligence; key performance indicators; new business models. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6210. Integrated Information Systems Capstone. 3 Credits.**

Students apply conceptual and technical knowledge in analyzing, planning, and designing an online information system. Culminates with system proposal/design presentations. Restricted to students in their final semester in the MSIST program or with departmental approval. Prerequisites: ISTM 6201, ISTM 6202, ISTM 6204, ISTM 6205, ISTM 6206 and ISTM 6209.

**ISTM 6211. Data Warehousing and Online Analytical Processing. 3 Credits.**

Introduction to the theory of data warehousing, dimensional data modeling, and online analytical processing (OLAP) through case studies, technology, and a design project. Restricted to students in the MS in information systems technology program or with permission of the department. Prerequisite: ISTM 6202.

**ISTM 6212. Data Management for Analytics. 3 Credits.**

Relational databases, data warehousing, and dimensional modeling. Practical experience with these and other traditional and contemporary methods for managing and analyzing data at scale, including Unix command line and Apache Spark.

**ISTM 6213. Enterprise Web and Database Applications. 3 Credits.**

Enterprise applications concepts, architecture, and technologies for emerging technologies and IT frameworks. The Internet as a major resource for globally distributed applications using grid and utility computing. Web servers, development methods and techniques, data stores for massively distributed applications, and client/server side scripting. Restricted to students in the MS in information systems technology program or with permission of the department. Prerequisites: ISTM 6202 and ISTM 6205.

**ISTM 6214. Advanced Programming and Business Applications. 3 Credits.**

Advanced programming design, development, and analysis topics with an emphasis on business applications. Problem modeling and development of algorithm solutions. Basic data structures and algorithms, such as linked list, stack and tree, graph theory, sorting and searching. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6215. Human-Computer Interaction. 3 Credits.**

Human-computer interaction as an interdisciplinary endeavor integrating theories and methodologies from computer science, cognitive psychology, design, and many other areas. Theory and practice in interface specification design and evaluation, and research. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6221. Management Perspectives in Electronic Commerce. 3 Credits.**

The tools, skills, and business concepts surrounding the emergence of E-commerce and its information technologies from operational and strategic perspectives. E-commerce security, privacy, content selection and rating, authentication, encryption, acceptable use policies, intellectual property rights, and legal liabilities. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6222. IS/IT Strategy and Implementation. 3 Credits.**

The development and implementation of information systems and technology strategies designed to align with and maximize business strategy applications and approaches in a challenging and increasingly global business environment. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6223. Technology Entrepreneurship. 3 Credits.**

Case studies on the innovation-entrepreneurship processes used to launch and build new ventures based on information technology and on technology more broadly. Organizing for innovation, raising venture capital, managing the small technology-based venture, marketing technology products and services, intellectual property considerations, and new venture proposal development. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6224. Management of Technology and Innovation. 3 Credits.**

Business, technological, economic, and political factors that influence the development and deployment of new technology products, processes, and services. Concepts and practices useful in managing technology and enhancing corporate innovation, corporate organizational alternatives, new approaches, and sources of competitive advantages. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6225. Enterprise Architecture. 3 Credits.**

Concepts of enterprise architecture as a management tool for organizations to align their information technology assets, people, operations, and projects with operational characteristics. Service-oriented architectures, performance reference models, configuration management, system development life cycles, and tiered application architectures. Restricted to students in the MS in information systems technology program or with permission of the department.

**ISTM 6226. Principles of Information Systems. 3 Credits.**

Overview of all information systems, including integration of management, information, and systems concepts into a unified framework. Management information systems development, design, implementation, evaluation strategies.

**ISTM 6233. Emerging Technologies. 3 Credits.**

Exploration of new developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space. Emphasis on forecasting these technological advances and assessing their economic and social effects. The role of advancing technology in driving social change.

**ISTM 6234. New Venture Financing. 3 Credits.**

Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Same as FINA 6234.

**ISTM 6239. Sem:Competitiveness/Technology. 3 Credits.**

Capstone course integrating the field of management of science, technology, and innovation. Commercialization of technology in the private sector and the impact on competitiveness. Implementation of technology in the public sector. Technology development, from new product concept to utilization. Prerequisite: ISTM 6224 or MBAD 6253; ISTM 6232 or ISTM 6233 or permission of instructor.

**ISTM 6243. Human Factors in Information Systems. 3 Credits.**

The user-computer interaction, human factors of online dialogues, interfacing, and various approaches to user-system interaction; development and evaluation of user-computer interfaces.

**ISTM 6251. Info Systems Applications. 1.5 Credit.**

**ISTM 6290. Special Topics. 1-3 Credits.**

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

**ISTM 6297. International Technology and Innovation. 3 Credits.**

Growth and future potential and impact of the technology expansion within international arenas and the global economy. Social, economic, innovative start-ups, multinational firms.

**ISTM 6298. Directed Readings and Research. 1-3 Credits.**

**ISTM 8300. Thesis Seminar. 3 Credits.**

**ISTM 8333. Seminar: Management of Science, Technology, and Innovation. 3 Credits.**

**ISTM 8340. Philosophical Issues in Information Systems. 3 Credits.**

Seminar for doctoral students interested in information systems. Various philosophical traditions and insights from those traditions applied to problems in information systems.

**ISTM 8341. Advanced Topics in MIS Rsrch. 3 Credits.**

For information systems doctoral students. Seminal papers and leading methods and instruments as applied to MIS research.

**ISTM 8385. Special Topics in Research Methods. 3 Credits.**

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

**ISTM 8390. Philosophical Foundations of Administrative Research. 3 Credits.**

Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

**ISTM 8391. Advanced Problems in Research Methodology. 3 Credits.**

Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation.

**ISTM 8397. Doctoral Seminar. 1-3 Credits.**

Current research and scholarly issues in management science.

**ISTM 8398. Advanced Readings and Research. 1-12 Credits.**

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

**ISTM 8399. Dissertation Research. 1-12 Credits.**

Limited to doctoral candidates. May be repeated for credit.