

ITE100 Fundamentals of Information Systems and Technology**3 cr.****Catalog description:**

This course provides an overview of fundamental areas within the field of Information Technology, introducing basic vocabulary, central concepts, and typical applications. The topics discussed include computer hardware, software, communications fundamentals, system development, information management, workforce considerations, and related societal, legal and ethical issues. Three lecture hours per week.

Prerequisite: Fulfillment of the Basic Mathematics Competency Based Skills requirement and ability to use standard computer software (e.g., operating system features, word processing, email, and web browsers).

Course Narrative:

"Computing" as a discipline encompasses some subdisciplines, specifically including Information Technology, Computer Science, Information Systems, and Software engineering. This foundation course covers the fundamentals of computing that apply to all the fields mentioned above. After finishing this course, students will be able to understand what Computing as a discipline encompasses.

This course is an introduction to IT as a profession. Its emphasis is on the thorough understanding of IT as a discipline. Its purpose is to introduce students to basic components of IT and make them aware of areas of knowledge IT specialists must possess (computer architecture, principles of software, networking and Web, computer security, databases, etc.) The course acquaints students with the basic set of skills necessary for an IT specialist such as analyzing customer requirements, and then designing, creating, and managing an IT environment that satisfies these of requirements. Students will be made aware of social, legal, and personal issues brought in by pervasive nature of IT, the role it plays in the society, and its future - technologies, capabilities, and its effects on the society.

This course is structured in such a way that students will learn about an introduction of Information Systems such as information concepts, system concepts, and business information systems and the information systems in the organizations. Next, the course focuses on Information Technology concepts such as computer hardware, Input, process, output and storage devices), computer software and applications, Database Systems and Applications. Also, this course provides an introduction to telecommunication and networks, the Internet, and Web. Further, students will be able to understand the concepts in System development such as analysis, design, implementation, Testing, and Maintenance. Finally, Students will have an opportunity to explore electronic and mobile commerce, personal and social impact of computers.

Goals:

Upon successful completion of the course, a student should be able to do the following:

- G1: to acquaint the student with many of the major subdivisions within computing;
- G2: to provide a standard descriptive vocabulary for these topic areas;

G3: to provide a survey of the most information technology concepts in each topic area.;

Course Objectives:

Upon successful completion of the course, a student will have demonstrated the ability to:

- O1: use correct technical terminology to name and describe the information systems and differentiate between data, information, and knowledge, provide characteristics of quality information;
- O2: identify all the main components of a computer hardware, types of computers, Input and output devices and types of computer storage devices;
- O3: use correct terminology to describe the various measurements of capacity and speed relating to a computer system;
- O4: Describe types of computer software and various application software's, software issues and trends;
- O5: demonstrate knowledge of database systems, database applications, and database management systems;
- O6: understand the basics of computer networks;
- O7: demonstrate the basic understanding of Internet, web and web applications;
- O8: understand the concept of software development life cycle;
- O9: name and describe the concept of electronic and mobile commerce;
- O10: give a general description of such topics as the impact of computers on personal and social aspect, software piracy, liability, privacy concerns, and computer security, and current thinking and controversies in each area.

Program Objective / Course Objective matrix (For ABET Accreditation Purposes)

(The following Matrix maps the Program Objectives for Information Technology Program outlined by Accreditation Board for Engineering Technology (ABET) with the Course Objectives. The check marks below the course objective represent that those course objectives accomplish specific program objectives set forth by ABET. The program objectives that have a * in front of them means that that course does not address those program objectives.)

Program Objective	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
PO-A: An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline.	✓						✓			
PO-B: An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.								✓		
PO-C: An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.								✓		
PO-D: An ability to function effectively on teams to accomplish a common goal.						✓				

Program Objective	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
PO-E: An understanding of professional, ethical, legal, security and social issues and responsibilities.										✓
PO-F: An ability to communicate effectively with a range of audiences.										
PO-G: An ability to analyze the local and global impact of computing on individuals, organizations, and society.										✓
PO-H: Recognition of the need for and ability to engage in continuing professional development.										
*PO-I: An ability to use current techniques, skills, and tools necessary for computing practice.	✓	✓	✓	✓	✓	✓	✓	✓		
PO-J: An ability to use and apply current technical concepts and practices in the core information technologies.	✓					✓		✓		
PO-K: An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems.								✓		
PO-L: An ability to effectively integrate IT-based solutions into the user environment.										
PO-M: An understanding of best practices and standards and their application.										
*PO-N: An ability to assist in the creation of an effective project plan.										

Topics:

The column on the right-hand side represents the Body of Knowledge and number of hours (in parenthesis) set forth by ABET accreditation board for accomplishing minimum required hours assigned for different categories. More information on this body of knowledge can be found in Appendix A “The IT Body of Knowledge” on Page 68 of the following document.

<http://www.acm.org/education/curricula/IT2008%20Curriculum.pdf>

- An Introduction to Information Systems
 - Information Concepts
 - Data, Information, and Knowledge
 - The Value of Information
 - Characteristics of Quality Information
 - System Concepts
 - What is an Information System?
 - Input, Processing, Output, Feedback
 - Computer-Based Information Systems

ITF1(4), ITF2(2), ITF3(1)

- Business Information Systems
 - Electronic and Mobile Commerce
- Information Systems in Organizations ITF3(1), ITF4(1)
 - Organizations and Information Systems
 - Organizational Structures
 - Innovation
 - Reengineering and continuous improvement
 - Organizational Culture and Change
 - User Satisfaction and technology acceptance
 - Diffusion of Innovation Theory
 - Quality
 - Outsourcing, Offshoring, and Downsizing
- Hardware: Input, Processing, Output, and Storage Devices HCI1(1), IM1(1), ITF1(3), PT3(1)
 - Computer Systems: Integrating the Power of Technology
 - Hardware Components
 - Hardware components in Action
 - Processing and Memory Devices: Power, Speed, and Capacity
 - Processing Characteristics and Functions
 - Multiprocessing
 - Parallel Computing
 - Secondary Storage
 - Access Methods
 - Secondary Storage Devices
 - Input and Output Devices
 - Input Devices
 - Output Devices
 - Computer System Types
 - Portable Computers
 - Nonportable Single-user computers
 - Multiple-User Computer Systems
 - Data Centers
 - Green Computing
- Software: Systems and Application Software ITF1(2), SA4(1), SIA6(1)
 - An overview of software
 - Systems software
 - Application Software
 - Systems Software
 - Operating Systems
 - Mobile Operating Systems
 - Embedded Operating Systems
 - Utility Programs
 - Middleware
 - Application Software
 - Software Issues and Trends
- Database Systems and Applications ITF1(2)
 - Database Management
 - Hierarchy of Data
 - Data Entities, Attributes, and Keys

- The Database Approach
- Data Modeling and Database Characteristics
 - Data Modeling
 - Relational Database Model
 - Data Cleansing
- Database Management Systems
 - Overview of Database Types
 - SQL Databases
 - NoSQL Databases
- Database Applications
 - BigData
 - Data Warehouses and Data Marts
- Networks and Cloud Computing ITF1(3), NET6(1),
 - Overview of Telecommunications
 - Basic Telecommunication Channel Characteristics
 - Short-Range, Medium, Wide-area Network Types
 - Networks and Distributed Processing
 - Network Topologies, Network Types
 - Client/Server Systems
- The Internet, Web, Intranets, and Extranets SP1(3), SP2(2.5), SP7(1),
WS1(1), WS2(1)
 - Use and Functioning of the Internet
 - The world wide web
 - How the web works
 - Developing Web Content and Applications
 - Internet and Web Applications
 - Intranets and Extranets
- System Development: Investigation, Analysis, and Design SP4(2), SP5(2), WS6(1)
 - An Overview of Systems Development
 - Traditional Systems Development Life Cycle(SDLC)
- System Development: Construction, Integration and Testing, Implementation. Operation and Maintenance, and Disposal SP6(2)
- Electronics and Mobile Commerce
 - Intro to E-commerce
 - Intro to Mobile Commerce
 - Electronic and Mobile Commerce Applications
 - Strategies for successful E and M-commerce
 - Technology Infrastructures required for support of E and M-commerce
- The Personal and Social Impact of Computers IAS1(1)
 - Computer Waste and Mistakes
 - Computer Waste and computer-related mistakes
 - Preventing Computer-Related waste and mistakes
 - Establishing policies and procedures, Implementing and Monitoring
 - Computer Crime
 - The Computer as a Tool to commit crime
 - Cyberterrorism
 - Identify Theft
 - Computer Theft

- The Computer as a Tool to fight crime
 - Recovery of Stolen Property
 - Monitoring Criminals
 - Accessing Crime Risk for a Given Area
- The Computer as the Object of crime
 - Illegal Access and Use
 - Spyware
 - Information and Equipment Theft
 - Patent and Copyright Violations
 - Computer-Related Scams
 - International Computer Crime
- Preventing Computer-Related Crime
- Privacy Issues

Student Experiences:

Organization of the course

The course consists of lectures, in-class exercises, homework assignments, quizzes, and two exams – a midterm and a final. In addition to the textbook, Internet resources are widely used during the course by the instructor as well as students.

In-class exercises

In-class exercises may consist of:

- Discussions of the material presented during the lecture
- Analysis of components used to create IT infrastructures, their characteristics, and properties
- Exercises in using tools that belong to an IT professional toolbox

Group discussion time and presentations will be scheduled as a part of lectures to ensure student's involvement and active participation in the process.

Assignments

Homework assignments, given weekly, will exercise theoretical principles discussed during the lectures through practical exercises. Assignments require students to use the information given during the lectures and in textbooks and to perform Internet research for necessary materials. Regular writing assignments include but are not limited to:

- review of textbooks and related Internet materials as a part of research assignments;
- discussing and proposing solutions for constructing proper IT infrastructures;
- analysis of requirements and written presentations of research findings;

Specific requirements for each assignment will be stated when the assignment is distributed; all written submissions will be graded against the Writing Rubric. Presentations will be assessed based on the Presentation Rubric.

Other than the Homework Assignments, there will be quizzes, projects, a midterm, and a cumulative final. Quizzes will be given based upon the topics covered in previous class(s).

Grading

Final grades will be determined on the basis of the following approximate weights:

- Homework assignments, Quizzes, in-class exercises, Projects 60%
- Midterm exam 20%
- Final exam 20%

Student Experiences by Course Outcome (Objective) matrix:

	O1	O2	O3	O4	O5	O6	O7	O8	O9	O10
In-class exercises	✓	✓	✓	✓	✓		✓	✓		✓
Homework assignment	✓	✓	✓	✓	✓	✓			✓	
Quizzes	✓		✓				✓			
Midterm exam	✓	✓	✓			✓		✓	✓	✓
Final Exam	✓		✓	✓	✓		✓		✓	✓

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