

**Department of Information
Technology**

Overview

The overarching goal of the Bachelor of Science in Information Technology degree program in the college of computer and information sciences in Majmaah University is to prepare students as information technologists and professionals who can assist general users, including individuals and organizations, in evaluating needs and solving problems related to information technology, as well as in applying IT effectively in a global work environment driven by rapidly changing technology. The program provides students with broad, integrated knowledge in selected areas of information technology, including database management, visual programming, multimedia and web design, system integration, intelligent systems, data transmission and computer networks, system administration and maintenance, cloud computing, information and administration and storage technology, enterprise architecture and system design, infrastructure environment and network servers, global information management, mobile and wireless networks, web development and content management systems, and mobile applications. Students learn how to evaluate current and emerging technologies; identify user needs; design user-friendly interfaces; apply, configure and manage these technologies; and assess their impacts on individuals, organizations and the society. The program is offered through Information Technology Department in the college of computer and information sciences. The program includes two specialized tracks, the first track is "Network and Systems Administration" and the second track is "Web and Multimedia Applications".

Vision

The vision of the information Technology Department is to provide recognized education and creative research to be pioneer in the field of information technology.

Mission Statement

to serve students and society through distinctive education in Information Technology, offer students the state of art education and to meet the labor market needs from high quality IT professionals, and explore new advances in IT field and its applications.

Program Objectives

The educational objectives of the B.S. in Information Technology program define the skills, knowledge and attributes that will be needed and achieved by the graduates for a successful career and professional accomplishments three to four years after graduation. The program will produce graduates who:

1. Practice as computing professionals in different areas of IT with focus on business domain.
2. Enhance their skills and embrace new computing technologies through self-directed professional development or post-graduate education.
3. Follow a path that can lead to managerial jobs in IT field.

Student Learning Outcomes

The learning outcomes of the information technology program is following the ABET recommendation for the IT academic programs learning outcomes, which are:

1. An ability to apply knowledge of computing and mathematics appropriate to the discipline.
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
3. An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
4. An ability to function effectively on teams to accomplish a common goal.
5. An understanding of professional, ethical, legal, security, and social issues and responsibilities.
6. An ability to communicate effectively with a range of audiences.
7. An ability to analyze the local and global impact of computing on individuals, organizations, and society.
8. Recognition of the need for and an ability to engage in continuing professional development.
9. An ability to use current techniques, skills, and tools necessary for computing practice.
10. An ability to use and apply current technical concepts and practices in the core information technologies.
11. An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of computer-based systems.
12. An ability to effectively integrate IT-based solutions into the user environment
13. An understanding of best practices and standards and their application.
14. An ability to assist in the creation of an effective project plan.

Offered Degrees

The program of Information Technology is concerned with preparing graduates who can meet the needs of the users within the organization through the selection, application design, integration, and administration of computing technologies. The curriculum of the bachelor of information technology requires five academic years. English will be the language for teaching specialized courses and basic sciences. Students together with some of their colleagues will participate in the implementation of a graduation project during their final

year of study. Students can choose between two main tracks of information technology program: (1) Networks and Systems Administration; or (2) Web and Multimedia Applications.

1. Bachelor of Science in Information Technology /Network and Systems Administration

The Network and Systems Administration program develops the knowledge and skills of the students to perform management, administration, development, implementation, and design of different networks and systems. At Majmaah University, graduates of this program will earn a Bachelor of Information Technology /Network and Systems Administration.

2. Bachelor of Science in Information Technology /Web and Multimedia Application

The Web and Multimedia Application program prepares students for developing ,designing, maintaining, and managing web and multimedia applications through set of mandatory and elective courses course, senior project and training in this domain. At Majmaah University, graduates of this program will earn a Bachelor of Science in Information Technology /Web and Multimedia Application

Career Opportunities

The offered degrees from Information Technology Department at Majmaah University provide not only a strong theoretical background but also a practical experience gained through training, modern labs, and senior projects. This provides the graduates to obtain wide range opportunities in the industry as one of the following:

- Systems Analyst
- System Administrator
- Systems Developer
- Systems Consultant
- Systems Integrator
- Systems Designers
- Network Administrator
- Database analyst
- Researcher
- Internet and Web Developer
- Web Designer
- Database Administrator
- Interface Specialist

Program Requirements and CURRICULUM

Units required for the B.Sc. degree in the Department of Information Technology.

REQUIREMENTS	CREDIT HOURS
Preparatory Year Requirements	29
University Requirements	12
College Requirements	42
Departmental Required Core Courses	51
Departmental Elective Courses	12
Departmental Professional Elective Courses	6
Training	1
TOTAL	153

Departmental Required Core Courses (51 Cr. hrs)

Course Code and No.	Course Title	Credit Hours	Prerequisites
MATH107	Linear Algebra	3	MATH 112
CS101	Information Management	3	-
IT200	Information Technology Fundamentals	3	
CS311	Computer Organization	3	MATH 111
IT311	Database Lab	2	IS 231
IS241	Systems Analysis & Design	3	CS 210
CS360	Software Engineering	3	CS 210
IT210	Visual Programming	3	CS 120
IT321	Multimedia & Web Design	3	IS 231
IT331	Human Computer Interactions	3	CS 210 IT 210
IT332	Systems Integration	3	CS 360
IT333	Intelligent Systems	3	CS 210
IT341	Data Transmission & Computer Networks	3	IS 240
IT432	Systems Administration and Maintenance	3	CS 360
IT342	Computer Networks Lab	2	IT 341
IS445	Information Security	3	IT 341
IT498	Graduation Project 1	2	120 Units
IT499	Graduation Project 2	3	IT 498
TOTAL		51	

Departmental Elective Courses (12 Cr. hrs)

The student has to choose four courses from one of the following Tracks

"NETWORKS AND SYSTEMS ADMINISTRATION" Track

Course Code and No.	Course Title	Credit Hours	Prerequisites
IT421	Information Administration and Storage Technology	3	IS 231
IT 422	Infrastructure Environment and Network Servers	3	IT 341

IT 423	Database Management Systems	3	IS 231
IT 424	Global Information Management	3	IS 334
IT 425	Enterprise Architecture and Systems Design	3	CS 360
IT 426	Mobile & Wireless Networks	3	IT 341
IT 427	Concepts of Multimedia Processing & Transmission	3	IT 321 IT 341
IT 428	Selected Topics in Networks	3	>100
IT 429	Selected Topics in System Administration	3	>100
TOTAL		12	

"WEB AND MULTIMEDIA APPLICATIONS" Track

Course Code and No.	Course Title	Credit Hours	Prerequisites
IT423	Database Management Systems	3	IS 231
IT 451	Web Site Management	3	IS 334 IT 341
IT 452	Web Development Using Content Management Systems	3	IT 321
IT 453	Digital Technology Applications	3	IT 321 IT 341
IT 454	Information Visualization	3	IT 201 IT 331
IT 455	Advanced Web Applications Development	3	IT 321
IT 456	Mobile Applications	3	IT 321
IT 446	Selected Topics in Web Technologies	3	>100
IT 447	Selected Topics in Multimedia	3	>100
TOTAL		12	

Departmental Professional Elective Courses (6 Cr. hrs)

The student has to choose three courses from the attached professional elective courses

A TYPICAL PROGRAM FOR INFORMATION TECHNOLOGY STUDENTS

1stYear

1st Semester

2nd Semester

Course Code and No.	Course Title	Credit Hours	Course Code and No.	Course Title	Credit Hours
ENG001	Preparatory English 1	8	ENG002	Preparatory English 2	6
MATH001	Introduction to Mathematics 1	2	ENG003	English for science and Engineering	2
CS001	Computer Skills	2	MATH002	Introduction to Mathematics 2	4
SKL001	Learning & Communication Skills	2	PHY001	General Physics	3
TOTAL=14			TOTAL=15		

2ndYear

3rd Semester

4th Semester

Course Code and No.	Course Title	Credit Hours	Course Code and No.	Course Title	Credit Hours
SALM101	Elective Islamic Culture (1)	2	ARAB101	Arab	2
CS110	Programming 1	4	CS120	Programming 2	4

MATH112	Calculus1	3	MATH126	Calculus 2	3
MATH111	Discrete Mathematics	3	ENG127	Technical English 2	2
PHY104	Physics 1	3	IT200	Information Technology Fundamentals	3
ENG114	Technical English 1	2	STAT102	Probability and Statistics	3
TOTAL=17			TOTAL=17		

3rdYear

5th Semester

6th Semester

Course Code and No.	Course Title	Credit Hours	Course Code and No.	Course Title	Credit Hours
SLAM102	Elective Islamic Culture (2)	2	IT301	Information Management	3
CS210	Data Structure	3	CS240	Operating Systems	3
IT250	Elective Professional Course 1	2	CS312	Computer organization	3
IS231	Fundamental of Database	3	IT311	Database Lab	2
MATH 107	Linear Algebra	3	CS360	Software Engineering	3
IT210	Visual Programming	3	---	Elective General Course 1	2
TOTAL=16			TOTAL=16		

4thYear

7th Semester

8th Semester

Course Code and No.	Course Title	Credit Hours	Course Code and No.	Course Title	Credit Hours
---	Elective General Course 2	2	IS241	Systems Analysis & Design	3
IT321	Multimedia & Web Design	3	IS 334	Project Management	3
IT 331	Human Computer Interactions	3	IT 432	Systems Administration and Maintenance	3
IT 332	Systems Integration	3	IT 342	Computer Networks Lab	2
IT 341	Data Transmission & Computer Networks	3	IS 445	Information Security	3
IT 481	Ethics & Professional Practice	2	IT399	Seminar	1

TOTAL=16	TOTAL=15
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5thYear

9th Semester

10th Semester

Course Code and No.	Course Title	Credit Hours	Course Code and No.	Course Title	Credit Hours
IT---	Elective Professional Course 2	2	SALM	Elective Islamic Culture (3)	2
IT---	Track Course	3	IT---	Track Course	3
IT333	Intelligent Systems	3	IT---	Track Course	3
IT--	Track Course	3	IT499	Graduation Project 2	3
IT498	Graduation Project 1	2	IT---	Elective Professional Course 3	2
IT400	Summer Training	1			
TOTAL=14			TOTAL=13		

Course Description

CS110 Programming I

Pre-requisite: N/A

This course introduces the students to the fundamentals of logic formulation together with their implementation in the C programming language. It introduces students to structured, top-down programming design and implementation. This course should serve as a foundation for students in the Computer Science program.

MATH112 Calculus (1)

Pre-requisite: N/A

The goal of this course is for students to gain proficiency in calculus computations. In calculus, we use three main tools for analyzing and describing the behavior of functions: limits, derivatives, and integrals. Students will use these tools to solve application problems in a variety of settings ranging from physics and engineering to business and economics.

MATH111 Discrete Mathematics

Pre-requisite: N/A

The general objective is to give basic knowledge in Discrete Mathematics, especially in the solution of combinatorial problems, the knowledge of some important algebraic structures

and basic knowledge of graph theory. Also the ability to perform logic, relations, functions, basic set theory, countability and counting arguments, proof techniques, mathematical induction, discrete probability, recursion, sequence and recurrence, elementary number theory, graph theory, and mathematical proof techniques.

PHY104 Physics (1)

This course includes the following topics: Electric fields, Coulomb's law, Gauss' Law, electric potential, capacitance and dielectric, currents and resistance, electrical energy and power, direct current circuits, Kirchoff's rules, magnetic fields, motion of charged particle in a magnetic field, sources of the magnetic field, Faraday's law of induction, Ampere's law, mutual inductance, alternating current circuits, the RLC series circuit(a resistor, an inductor, and a capacitor connected in series), power in an A.C. circuit, resonance in RLC services circuit.

ENG114 Technical English (1)

This course provides students with a solid foundation of basic sentence form and function. It concentrates on grammatical structures, vocabulary expressions often used in technical and professional contexts.

This course includes the following topics:

Basics: meeting people, using forms, following instructions, exchanging information, using checklists, using voicemail, ordering by phone, introducing yourself and others, describing components, using a product review, describing a product, talking about people's jobs, describing direction of movement, giving and following instructions, explaining fluid movement around a system, using a flow chart, explaining how cooling system work, material testing, properties of materials, buying using a customer call form, specifying dimensions, using a specification chart, future projects, taking an emergency call, reporting damage, dealing with a customer.

CS120 Programming (2)

Pre-requisite: CS110

This course is an introductory course in object oriented programming. The fundamental concepts of object oriented programming will be studied using the C++ programming language. Topics to be covered:

- Classes and Objects
- Functions
- Inheritance
- Polymorphism
- Operator Overloading
- File processing
- Templates

MATH126 Calculus (2)

Pre-requisite: MATH 112

This course includes the following topics:

Integration Techniques, Infinite series: Sequences and limit of a sequence, Vectors and Geometry of Space, Parametric Equations and Polar Coordinates Functions of several variables and Partial Differentiation: Functions of several variables, Partial derivatives, Total derivative, Chain rule. Multiple Integrals: Double and Triple Integrals in Cartesian Coordinates; Areas and Volumes, Double Integrals in Polar Coordinates; Triple Integrals in Cylindrical and Spherical Coordinates.

ENG127 Technical English (2)

Pre-requisite: ENG 114

Building on the content of Technical English, this course is intended to provide students of Computer Sciences and IT with more advanced and specialized technical English needed for studying their major and functioning in their future careers. This course contains the following topics: Computer users, computer Architecture, computer Applications, Operating systems, describe main operating system, users Interfaces, discuss diagrams related to computer interfaces, computer support, Networks, data security, People in computing, discuss professional life of people working in IT, practice note-taking write a detailed description of a technical problem and its solution

STAT102 Probability and Statistics

Pre-requisite: N/A

This course includes the following topics: Introduction to Sample space, Random events, Probability rules, Conditional probability, Baye's rule, Random variables, Definitions of Discrete and Continuous distributions, mean and variance of a random variable, and mean and variance of a linear combination of independent random variables. Discrete distributions (Binomial, Hyper geometric, Poisson) and continuous distributions (Uniform, Exponential, Normal), Sampling distributions of sample statistics: t-distribution, The concept of estimation methods: Point estimation and Confidence interval estimation, Concepts of Testing Hypotheses: Hypotheses testing of a single Population parameter (mean, proportion, difference between two means and difference between two proportions of independent populations), Concepts of simple linear correlation and linear regression.

CS210 Data Structure

Pre-requisite: CS120

The purpose of this course is to provide the students with solid foundations in the basic concepts of programming: data structures and algorithms. The main objective of the course is to teach the students how to select and design data structures and algorithms that are appropriate for problems that they might encounter. This course is also about comparing algorithms and studying their correctness and computational complexity. This course offers the students a mixture of theoretical knowledge and practical experience using C++.

IS231 Fundamentals of Database

Pre-requisite: CS120

Database concepts and architecture; data models, database schemes and instances, DBMS and the concept of program-data independence, database languages and interfaces, database models, relational data model and relational algebra, relational model constraints; domains, keys, and integrity constraints, the structured query language (SQL); data definition, queries, update, statements, and views in SQL, database design; functional dependencies, normal forms.

MATH107 Linear Algebra

Pre-requisite: MATH 112

This course includes the following topics:

Matrices and Gauss Elimination: Elementary row operations, Transpose of a matrix, Inverse of a square matrix, Linear equation systems and Gauss eliminations.

Determinants: Determinants and their properties, classical adjoint matrix; Cramer's rule.

Vector spaces: Basic definitions, subspaces, linear dependence and independence, bases and dimensions, Rank of a Matrix.

Linear transformations: Basic definitions, the matrix of a transform, Kernel and Range of a linear transformation, Matrices of linear transformations, Coordinates and change of basis.

Eigenvalues and Eigenvectors: Characteristic polynomial, diagonalization of matrices, Applications involving Powers of matrices.

CS101 Information Management

Pre-requisite: N/A

IT200 Information Technology Fundamentals

Pre-requisite: N/A

This course is introducing the fundamentals of Information Technology. Course coverage will include both theoretical understanding of Information technologies, and hands-on experience with applications. The course will teach the terms and concepts of information technology and explain technologies underlying all areas of IT that are needed in the world of work.

CS 311 Computer Organization

Pre-requisite: MATH 111

This course provides students with basic knowledge in: Basic computer organization, Data representation, Integer and floating-point arithmetic, Instruction sets and instruction formats, Addressing modes, Machine and Assembly language programming, Assembler function and design, Processor organization, ALU design, Micro-programmed CPU, Datapath and control unit, Interrupts, Memory system and cache memory.

IT 311 Database Lab

Pre-requisite: IS 231

This course covers the following topics: Selection of DBMS, Architecture of the chosen DBMS, DB creation, Indexing, Integrity Constraints triggers and assertions, Security management, Installation issues, Performance Management, Tuning, DB Backups, and Recovery issues. Other features of the DBMS: Integration with web technologies, DB connectivity tools, Data distribution, fragmentation, and replication issues, Management issues of the DBA activity..

IS 241 Systems Analysis & Design

Pre-requisite: CS 210

This course is concerned with the fundamental knowledge, methods and skills needed to analyze, design and implement computer-based systems. It addresses the role of the systems analyst, and the techniques and technologies used. The structured software development life cycle approach, modeling techniques (e.g., Entity-Relationship Models) and development phases are comprehensively discussed and reviewed. In modeling techniques, process models (e.g., Data Flow Diagrams), information models, system architecture models, and object oriented models are thoroughly described.

CS360 Software Engineering

Pre-requisite: CS 210

This course introduces concepts and techniques relevant to the production of large software systems. Students are taught a programming method based on the recognition and description of useful abstractions. Topics include modularity, specification, data abstraction, object modeling, design patterns, and testing. Students complete several programming projects of varying size, working individually and in groups. Topics to be covered

IT210 Visual Programming

Pre-requisite: CS 120

This course gives students the basis for developing visual applications. Using a selected visual programming language, the following topics are studied: Data structures review (vectors, linked lists, files). OO design and programming techniques, exception handling, modular programming, model View Control (MVC), GUI design rules, architecture, event handling, multithreading, swing components and model, networking (Client Server Model), and access to databases.

IT321 Multimedia & Web Design

Pre-requisite: IS 231

This course explores advanced and modern concepts and technologies used in the development of electronic business applications. It introduces multimedia and web computer graphics. Focuses on development of web-enabled multimedia applications from practical business perspective. Introduces and discusses technological, aesthetic, and human factors.

IT331 Human Computer Interactions

Pre-requisite: CS 210 and IT 210

This course helps to build competence, knowledge, and skills in the field of Human-Computer Interaction Design. The course covers the following topics: Introduction to Human-Computer Interaction (HCI) and Human Cognitive Systems; Understanding Users; Interaction Frameworks, Paradigm and Styles; Evaluation of User Interfaces using Heuristic Evaluation and Usability Testing. The course covers also the underlying Design Principles and Designing Interaction including: Interaction Design Process, User-Centered Design and Prototyping, Conceptual and Physical Design, Interface Design Standards, Task Analysis and Discovery, Design Principles. Different Features of Interaction and User Interfaces will also be presented: Color, Interface Components (e.g. Windows, Icons, Menus, Pointers etc.), Icons, Text, Speech, Touch, Augmented Reality, and Haptics. Students participate in group projects on the design, development and evaluation of user interfaces.

IT332 Systems Integration

Pre-requisite: CS 360

This course focuses on the integration of information systems in organizations, the process by which different computing systems and software applications are linked together functionally or physically. It examines the methods and strategies for combining a set of interdependent systems into a unified and functioning integrated system, where two or more applications are seamlessly interacting and exchanging data. The course will demonstrate the use of tools and techniques in systems integration as well as prove practices for integration projects.

IT333 Intelligent Systems

Pre-requisite: CS 210

This course introduces Artificial Intelligence (AI) with emphasis on its use to solve real world problems. Students will get the basic and conceptual understanding of fundamental topics of Artificial Intelligence including knowledge representation and reasoning, searching, machine learning and rule based systems. Students will be able to acknowledge AI based technologies, review the incorporation of AI techniques by companies to improve traditional business applications. An exposure to PROLOG or another AI language would be beneficial for students. On completion of this module, students should relate what they have learned to what impact AI is making to society.

IT 341 Data Transmission & Computer Networks

Pre-requisite CS 240

Introduction to computer networks, Network architecture, OSI reference model, Transmission media, Transmission Impairments, Data encoding; Data Link: Error Detection, Medium Access control Protocols and standards, MAC Addressing, Link layer Switches, LAN standards & Devices: Ethernet and IEEE standards for LANs, Wireless networks; Network Layer: Virtual circuit and Datagram Networks, Router Structure, The Internet Protocol (IP), Routing Algorithms, Broadcasting and Multicasting; Transport Layer: TCP and UDP services,

designs, and performance, Principles of Reliable Data Transfer; Application layer: The Web and HTTP, FTP, Electronic Mail, and DNS.

IT432 Systems Administration and Maintenance

Pre-requisite:CS 360

This course aims to give students the fundamentals of operating Systems administration and maintenance. Focus will be on installation, maintenance and managing of several systems for multi-user environments.

IT342 Computer Networks Lab

Pre-requisite:IT341

This course provides students with hands on training regarding the design, configuration, troubleshooting, modeling and evaluation of computer networks. This course covers: Peer-to-Peer and Server-based networks, Transmission media, MAC & IP addressing, Address Resolution Protocol (ARP), basic troubleshooting tools, IP routing Protocols such as RIP, IGRP, and OSPF, Transport protocols: TCP and UDP, Virtual LANs, Wireless networks, and Network security.

Students will also be introduced to the network modeling and they will have the opportunity to build some simple networking models and evaluate their design approaches and expected network performance.

IS 343 Information Security

Pre-requisite: IT 341

This course covers the following topics: Security models, mechanisms and policies for usage, availability, integrity and secrecy. Operating system mechanisms and models for mandatory controls, data models, concepts and mechanisms for database and software security, basic cryptography (private and public) and its applications, security in computer distributed systems, networks, control and prevention of viruses, and other malicious programs. In addition to that, incidence response, disaster recovery, physical security, and forensics are discussed.

IT 498 Graduation project 1

Pre-requisite: 120 credits

The student should take a B.Sc. project in related area to his specialization and with technical merit. This project is for two semesters, it is counted as two credits for the first semester and three credits for the second semester. At the end of the semester the student submits a report describing his project.

The projects are oriented toward providing experience in the establishment of objectives, criteria, analysis, construction, testing, and evaluation; solution of open-ended problems; design methodology.

IT 499 Graduation project 2

Pre-requisite: IS 498

The student should take a B.Sc. project in related area to his specialization and with technical merit. This project is for two semesters, it is counted as two credits for the first semester and three credits for the second semester. At the end of the semester the student submits a report describing his project.

The projects are oriented toward providing experience in the establishment of objectives, criteria, analysis, construction, testing, and evaluation; solution of open-ended problems; design methodology.

IT421 Information Administration and Storage Technology

Pre-requisite:IS 231

This course is concerned with the understanding of information storage technologies that prepares students to learn the concepts and technologies of information architectures, benefits and features of Intelligent Storage Systems, such as, long-term archiving solutions, storage networking technologies, business continuity solutions; replication and backup, information security, storage virtualization, and storage resource management.

IT422 Infrastructure Environment and Network Servers

Pre-requisite:IT 341

This course provides students with the knowledge and skills to manage and maintain network infrastructure servers. The course is concerned with the creation of plans for managing the server lifecycle, evaluating and developing baselines for managing and monitoring server roles, and analyzing the configuration and implementation of different server roles. The course will also focus on maintaining and analyzing network server security

IT423 Database Management Systems

Pre-requisite:IS 231

This course covers the following topics: DBMS architecture and administration; centralized and client-server approaches, system catalog, and data dictionary, transaction management; concepts, characteristics, and processing, recovery techniques, concurrency control techniques: serializability, deadlock, locking schemes, time-stamp ordering, multi-version, and optimistic techniques, DB security, distributed databases, data fragmentation and replication, distributed transactions management, object-oriented databases, and new emerging DB technologies and applications.

IT424 Global Information Management

Pre-requisite:IS 334

This course covers the following topics:

business/IT alignment, strategic planning, demand management, IT governance frameworks, IT service management (ITSM), ITIL, COBIT, the Balanced Scorecard, and other metrics and controls to enable technologies. Using case examples from global companies.

IT425 Enterprise Architecture and Systems Design

Pre-requisite:CS 360

This course introduces systems development in an enterprise systems environment. The course focuses on enterprise architecture, designing the system processes, developing a database, using data and processes residing within enterprise systems, designing user interfaces, designing the network (if applicable), designing and developing user.

IT426 Mobile & Wireless Networks

Pre-requisite:IT 341

This course covers the basic concepts of wireless communications and wireless network architectures. The following topics are included: standards of wireless communications, band-pass transmission for mobile radio, characterization of Wireless Channels, fading dispersive channels receiver techniques, cellular communications fundamentals, mobility management in wireless networks and multiple access techniques.

IT427 Concepts of Multimedia Processing & Transmission

Pre-requisite:IT 321, and IT 341

This course is concerned with the fundamentals of signal and image processing. It includes topics such as algorithms for signal processing, multimedia applications, voice recognition and coding, CD, DVD and streaming video technology.

IT428 Selected Topics in Networks

Pre-requisite:> 100 credit hours

This course intends to introduce special topics of current trends in Networks. The course is designed to enable students to study a variety of topics that are new and emerging in the discipline and are not covered in any core or elective courses of the department. Each semester, the contents of the course could cover a new topic or a mix of many topics and could be taught by one or more faculty members.

IT429 Selected Topics in System Administration

Pre-requisite:> 100 credit hours

This course intends to introduce special topics of current trends in Systems Management. The course is designed to enable students to study a variety of topics that are new and emerging in the discipline and are not covered in any core or elective courses of the department. Each semester, the contents of the course could cover a new topic or a mix of many topics and could be taught by one or more faculty members.

IT423 Database Management Systems

Pre-requisite: IS 231

This course covers the following topics: DBMS architecture and administration; centralized and client-server approaches, system catalog, and data dictionary, transaction management; concepts, characteristics, and processing, recovery techniques, concurrency control techniques: serializability, deadlock, locking schemes, time-stamp ordering, multi-version, and optimistic techniques, DB security, distributed databases, data fragmentation and replication, distributed transactions management, object-oriented databases, and new emerging DB technologies and applications.

IT 451 Web Site Management

Pre-requisite: IS 334, and IT 341

This course covers the following topics: website design, its role and importance, Introduction to managing websites, Setting up website files, defining folders and locating files, using Style Sheets Templates, Updating websites, Putting updated files onto the internet, Creating website, FTP files, Content Management System (CMS) and its use, Implementing CMS into a company website, Use of CMS for all employees, Web use of blogging and articles, information propagation

IT 452 Web Development Using Content Management Systems

Pre-requisite: IT 321

This course provides both a survey of the current content management systems and in-depth hands-on experience with one of the most used environments (e.g. Joomla). The course includes the basics related to content management and knowledge management on the web, and the guidelines of creating a personal web development project in an area of interest that mostly covers the design and content authoring, installation and maintenance aspects. It also provides an overview of the integrated media design including graphics, animation, text, sound, and video. This course will include hands on experience with existing technologies, e.g., Joomla! (<http://www.joomla.org/>)

IT 453 Digital Technology Applications

Pre-requisite: IT 321, and IT 341

In this course, digitizing video and audio for use in multimedia and web applications are studied, with a special emphasis on advanced skills and knowledge in digital audio and video digitizing, compression, and production from traditional media

IT 454 Information Visualization

Pre-requisite: IT 201, and IT 331

This course is about the organization and visualization of digital information. Data organization and representation are studied to enhance the technical aspects of information. Graphics principles, visualization principles, and statistical analysis of data are considered for information presentation. Several software tools are used for presenting information. Students will be able to design a website or a presentation to visualize a data for information retrieval.

IT 455 Advanced Web Applications Development

Pre-requisite:IT 321

In this course, Web application development topics are covered, including ASP.NET C#, JSP/Java Servlets, ADO.NET, AJAX, Java Beans. Hands-on experiences and technical foundations are combined with the Project-centered approach to implement real-world E-Commerce Web applications. Also, development life cycle for Web applications and secure Web transactions software is reviewed.

IT 456 Mobile Applications

Pre-requisite:>100

In this course, students will study the following topics: trends in the mobile industry, how to make a mobile application? why is it so hard to make mobile applications, easy ways to make mobile applications, how to test mobile applications, mobile business plans, how to get mobile applications out there.

IT 446 Selected Topics in Web Technologies

Pre-requisite:

This course intends to introduce special topics of current trends in Web Applications. The course is designed to enable students to study a variety of topics that are new and emerging in the discipline and are not covered in any core or elective courses of the department. Each semester, the contents of the course could cover a new topic or a mix of many topics and could be taught by one or more faculty members