

IT 2130

Systems Science

3 credits

Study the basics of systems (its inputs, outputs and environment, and its behavioral characteristics), general system theory, classification of systems, hierarchy of systems, and adaptability of system. Study various approaches

to system thinking such as cybernetic, cybernetic principles and applications, system dynamics, operations research, and systems analysis.

IT 2171	Programming Workshop	3 credits
Pre-requisite:	SC 1181 Computer Programming I	

This course extends the practical problem solving and programming concepts and skills developed in SC1181 and focuses on the further development of practical problem solving and programming skills using object-oriented concepts and the C++ language

IT 2210	File Structures and Processing	3 credits
Prerequisite:	IT 2171 Programming Workshop or SC 2181 Computer Programming II	

A study of file structures, file organizations, and basic data structures for file organizations and management. Study of different file organizations and accessing methods such as sequential file, relative file, indexed file, and multi-key file. Programming in Pascal, or C will be used for exercises involving the aforementioned Topics.

IT 2220	Computer System Concepts	3credits
Prerequisite:	IT 2231 Introduction to Information Technology	

A study of computer system organization, internal data representation, computer operations, an overview of computer system configuration (CPU, memory unit, I/O unit), and the fundamentals of operating systems e.g. compiling, linking, loading, and executing program instructions. Study of the instruction cycle, the basic instruction set, elements of an instructions, and addressing modes.

IT 2230	Information Structure	3 credits
Prerequisite:	IT 2171 Programming Workshop	

A study of various types of data structures (primitive, simple, structured, linear, and nonlinear data types), applications developed under aforementioned data structures, the tradeoffs and criteria for selecting the appropriate data structure, and searching and sorting techniques.

IT 2231	Introduction to Information Technology	3 credits
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A study of various types of information technology, the effect of information technology on the information systems, the computer operations, communication systems, information processing, I/O devices, storage and retrieval techniques, and the applications of current technology in information systems.

IT 2371	Object Oriented Programming I	3 credits
Prerequisite:	IT 2171 Programming Workshop	

This course introduces students to the widely used commercial object-Oriented programming language Java. The focus in this course is the development of basic object-oriented concepts and skills relevant to the design and coding of application programs in the environment of the Java language.

IT 3210	Database Management Systems	3 credits
Prerequisite:	IT 2230 Information Structures	

A study of data structure, principles of database, the database system, the database management system, and

the application of database in information systems.

IT 3211	Information Storage and Retrieval	3 credits
Prerequisite:	IT 3210 Database Management Systems	

A study of the kinds and characteristics of information systems, data files in computer systems, inverting files, analysis of the safety and integrity of information systems.

IT 3230	Management Information Systems	3 credits
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A study of the role of information systems that affect the decision making and the organization, the characteristics and structures of management information systems, the management and the decision-making styles, the information systems and the organization structures, the MIS planning, the MIS applications and other trends of information systems.

IT 3231	Information Systems Analysis	3 credits
Prerequisite:	IT 2231 Information Technology	

A study of the system development life cycle, analysis of the system's requirements, the information requirements for management, tools and techniques used to analyze an information system and determine system's requirements, the management and control of system development.

IT 3232	Information Systems Design	3 credits
Prerequisite:	IT 3231 Information Systems Analysis	

A study of the design techniques for information systems, the I/O design, the processing design, control design, file and database design, system testing, the implementation phases and procedures, and system maintenance and review.

IT 3253	Data Communication and Networking	3 credits
Pre-requisite:	IT 2231 Information Technology	

The course aims to study the different network types, various network media and topologies, the functions of each layer of the ISO-OSI model, including various alternatives in interconnecting networks such as routers, switches, bridges, and gateways. Fundamental concepts of data communication, transmission media, how computer and data equipment can be interfaced and interconnected, how valid information transfer, security issue, cost effectiveness of data communication are included.

IT 3351	Web Design and Development I	3 credits
Pre-requisite:	IT 2171 Programming Workshop	

This course introduces topic related to: web-based design and development, the internet, the worldwide web, HTML fundamentals, images and multimedia, page and site design issues, modern web development technologies, (e.g. ASP.NET), user interface and development environments.

IT 3352	Database Application Workshop	3 credits
Prerequisite:	Senior Students and by consent of instructor	

This course will instruct students to be able to develop multiple-form applications and how to organize and manage them across modules. The concepts of building forms and reports are discussed. Students will practice the

development of current applications with custom menus, reports, and charts. Advantages and disadvantages of various forms and report methods are demonstrated. Students will learn how to retrieve and display data through appropriate use of forms and reports using Oracle Developer 2000.

IT3371	Object Oriented Programming II	3 credits
Prerequisite:	IT 2371 Object Oriented Programming I	

This course extends the concepts and skills developed in IT2371 and focuses on developing the students' practical skills and ability to design and implement application programs using advanced features of the Java programming language.

IT3372	Visual Programming	3 credits
Prerequisite:	IT 2171 Programming Workshop	

This course introduces students to the practical use of visual programming concepts, tools and techniques. The focus is on the use of visual programming for the rapid development of user-centered applications.

IT 4299	Senior Projects	3 credits
Prerequisite:	The fourth-year students with at least 100 credits	

Students must do a specific project in which they will apply the knowledge acquired to design and develop a real information system. They must analyze the problem, define the solution, and design the system by applying information technology concepts. The instructors will advise student throughout the project development. The students will have an oral examination on their projects.

IT 4311	Introduction to Computer Graphics	3 credits
Prerequisite:	IT 2171 Programming Workshop	

A study of the foundations of computer graphics, characteristics of computer graphics on graphic monitors, computer software for three dimensional graphics, techniques for creating animation. The use of a sophisticated language such as C to enhance the computer graphic design.

IT4314	Software Engineering Concepts	3 credits
Prerequisite:	IT 3232 Information System Design	

A study of the software life cycle, analysis of requirements, structured software design, development, implementation, testing, and maintenance of software, reusable software, documentation and software manuals, and software project management.

IT 4315	Object Oriented Software Analysis and Design	3 credits
Prerequisite:	IT 3232 Information System Design	

The Object-Oriented software development paradigm is becoming an alternative of choice. This is due to its ability to model the real world and cope with complexity better than other approaches. The course is meant to equip IT students with basic knowledge to embark on an object-oriented software development endeavor. The students will use a standard modeling approach for describing object-oriented system design.

IT4316	Image Processing	3 credits
Prerequisite:	IT 2171 Programming Workshop	

This course introduces students to the concepts of image processing including: the study of digital image, image viewing, encoding images for memory storage and retrieving images from memory for processing as well as the analysis of images.

IT 4340	Introduction to Information Resource Management	3 credits
Prerequisite:	IT 2231 Information Technology	

A study of the management of information resources and database, the design acquisition, implementation and management of computer-based system. The objective of this course is to introduce a systematic approach to information resource management.

IT4352	Web Design and Development II	3 credits
Prerequisite:	IT 3351 Web Design and Development I	

This course presents advanced topics on developing web application, which include: using XML to extend web capabilities, creating and using web service, application configuration, tuning up performance, application deployment and security issues. The course covers selected advanced topics on database such as: using store procedure, persisting data with XML. Some standard web application architectures are also discussed such as e-commerce, portal site, community site.

IT4357	Human-Computer Interaction	3 credits
Prerequisite:	Senior Students and by consent of instructor	

This course provides basic knowledge about human behavior, the interaction between humans and computers and an overview of a number of research areas in human-computer interaction. This course is meant to encourage students to be able to design computer interfaces in order to fit with the concepts of usability, accessibility and trustworthiness.

IT 4358	Expert Systems	3 credits
Prerequisite:	Senior Students and by consent of instructor	

Students will develop basic knowledge of expert systems including techniques used to develop and implement expert systems with the analytical and validation method.

IT4359	E-Commerce	3 credits
Prerequisite:	Senior Students and by consent of instructor	

A study of various components that shape e-commerce systems, component's, inherent technologies, pertinent design and development issues, and management strategies for business-to-business, business-to-consumer, and intra-business domains. Specific topics include: information appliances, computing networks, application and service repositories, application access infrastructure, systems security, and implementation risks.

IT 4360	Multimedia Applications	3 credits
Prerequisite:	IT 2231 Information Technology	

A study of the basic ideas, theory, the practical uses for presenting and conveying information with multimedia, windows and multimedia, sound recording, image processing, animation, electronic composing, multimedia databases, virtual reality and cyberspace, and an overview of multimedia products.

IT 4363	Information System Security and Auditing	3 credits
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Prerequisite: Senior Students and by consent of instructor

The fundamentals of computer security including hardware security, software security, database security, computer networks and telecommunication security are introduced. Physical protection and microcomputer security and viruses are discussed. Cryptographic technology is also introduced. Disaster recovery and contingency planning are also discussed. Intrusion Detection and other applications are investigated. Attention to legal and ethical issues in computer security are stressed. Case studies, projects and group discussion are utilized.

IT 4366 Advanced Data Management Systems 3 credits

Prerequisite: IT 3210 Database Management System

This course reviews the relational database model introduced in IT 3210 and extends the student's understanding of data storage and management to include: object-relational and object-oriented databases; data mining; on line analytic processing; data marts; data warehousing; WWW database applications and the role of the database administrator.

IT 4400-99 Selected Topic 3 credits

Prerequisite: The fourth-year students and by consent of instructor

Special topics that the department and instructors think appropriate for students for detailed study and research. The topic selected is in accordance with students and instructors.