Information Technology and Security

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Requirements for a Major in Information Technology and Security (CIP 11.0103)
ITS majors must choose a concentration in Information Technology Management (ITM) or Information Security (IS). Majors must complete, with a “C” average or better, the following requirements.

If a student chooses to do a double-concentration in ITM and IS, the ITS courses outside the core requirements cannot be applied to both concentrations. Thus, double-concentrating students must take four ITM-specific courses and four distinct IS-specific courses.

Requirements for Information Technology Management Concentration (BS)
Core requirements: ITS 150, 200, 250, 275, 345, 351, 410, and 465
• ITS 235
• Three of the following courses: ITS 245, 280, 360, 365, 375, 420, 430, 450, and 470
• 12 credit hours in ACCT, ECON, and/or BADM at the 200 level or above.

Requirements for Information Security Concentration (BS)
Core requirements: ITS 150, 200, 250, 275, 345, 351, 410, and 465
• ITS 300
• Three of the following courses: ITS 235, 310, 360, 365, 375, 425, 450, 460, and 470
• 12 credit hours in CRIM or HSEC or combination of either CRIM or HSEC at the 200 level or above.

Requirements for Information Security Concentration (AA)
• ITS 150, 200, 235, 300, 310, and 6 hours of ITS electives
• ENGL 100, 101, 102; ENGL elective (3 hours); MATH electives (6 hours); HIST 111, 112; science lab course (4 hours); ART, MUSC, or THEA 131; RELG 125; PE 111 or 112, 185; and 6 hours of unrestricted electives.

Requirements for Information Technology Management Concentration (AA)
• ITS 150, 200, 235, 345, 351, and 6 hours of ITS electives
• ENGL 100, 101, 102; ENGL elective (3 hours); MATH electives (6 hours); HIST 111, 112; science lab course (4 hours); ART, MUSC, or THEA 131; RELG 125; PE 111 or 112, 185; and 6 hours of unrestricted electives.

Requirements for a Minor in Information Technology Management
A student must complete, with a "C" average or better, 18 semester hours including ITS 150, 200, 345, 351, and two additional approved ITS courses.

Requirements for a Minor in Information Security
A student must complete, with a "C" average or better, 18 semester hours including ITS 150, 200, 300, and three additional approved ITS courses.
Information Technology and Security Course Listing (ITS 000)

150 Fundamentals of Information Technology (3)
This course serves as a survey course that covers Microsoft Office software, computer number systems, basic of web publishing, introduction to computer programming, tactical Microsoft Windows tools, web resources, careers in Information Technology. Prerequisite: None

200 Internet Applications (3)
Understanding the WWW environment, servers, browsers, and search techniques. Major topics include Web page design, Web-based multimedia/graphics, CGI, Java Script, VBScript, DHTML, Active-X Controls, CSS, and XML programming. Database applications using WWW will be discussed. New Internet technologies will also be covered. Prerequisite: ITS 150.

235 Windows Operating Environment (3)
Study of windows-based operating systems. Windows client/server operating systems installation, configuration, and customization. Operating systems services, service packs, APIs, third-party utilities, OS security, migration strategies, virtualization, and server consolidation are also included. Prerequisite: ITS 150.

245 Portals, Blogs, and Semantic Web (3)
Personal and enterprise portal design, development, and management. Lightweight web publishing (blogging), semantic web technologies, XML-tagged data, Web-based data and their interrelationships, architecture of a portal based on Semantic Web Services (SWS), information presentation and exchange over the internet, and semantic blogging. Prerequisite: ITS 200.

250 Programming Language I (3)
Comprehensive study of computer programming involving computer logic and intuitive human computer interface mechanisms such as windows, forms, buttons, list and combo boxes, trees and others. The computer logic covers basic programming constructs. Interface design includes discussion of function for various common controls. The tools of debugging and compilation are explored. Also included are uses of object-oriented techniques. One of the following languages will be selected: C++, Java, and Visual Basic. Prerequisite: None.

275 Programming Language II (3)
The second programming language is a continuation of ITS 250. It includes built-in and user-defined data types, data structure, control structure, built-in and user-defined libraries, graphics programming, text files, data connectivity, web applications development, client and server components, and Internet deployment. Prerequisite: ITS 250.

280 Computer Graphics and Animation (3)
This project-based survey course provides background for building engaging interactive content with Adobe Photoshop, Macromedia Flash, and Sony Vegas. Also incorporated are animation, music, sound, video encoding features and code editing enhancements. The preparation and exportation of finished projects for Web and broadcast is included. Prerequisite: None.

300 Information Security and Countermeasures (3)
Security of information systems with emphasis on corporate security infrastructure, trusted systems, information security models, disaster recovery, business continuity planning, risk analysis, intrusion detection systems, and intrusion prevention. Countermeasure techniques at client, server, and network level are also explained. Prerequisite: ITS 200.
310 Threat Analysis and Management (3)
Identification, analysis, and classification of threats at individual and corporate level are discussed. Corporate assets vulnerabilities, threat management processes, mitigation strategies, reporting, counterintelligence and cyber threats are also explained. Prerequisite: ITS 300.

345 Database Management (3)
The structure, design, and development of databases are investigated with emphasis on using the database management software as an integral component of an information system. Emphasis is given to relational databases, object-oriented databases, client-server databases, enterprise data modeling, Internet database environment, and data warehousing. Prerequisite: ITS 200.

351 Systems Analysis, Design and Development (3)
The analysis and design of information systems. Students will learn the concepts involved in SDLC approach used in system design and development including all aspects of the analysis, design, implementation, and evaluation or computer systems. Use of CASE software will be emphasized. Prerequisite: ITS 200.

360 Knowledge Management (3)
Identification and organization of knowledge resources such as expertise, skills and competencies; knowledge organization methods such as classification, cataloguing taxonomies and metadata; search strategies, and information retrieval; acquiring knowledge in the digital age, knowledge discovery through data mining; management of information and knowledge organizations; organization of information and knowledge resources; competitive intelligence through knowledge representation. Prerequisite: ITS 345.

365 Web Mining (3)
Introduction to techniques of mining information from the web, data sources on the web, personalization, working with logs, forms, and cookies, user identification and path analysis, efficient text indexing, Web search including crawling, Web metadata text/Web clustering, text mining, link-based algorithms, Information Extraction (IE) enabling tools, semantic Web mining, Web Agents, domain-specific semantic search engines; applications in E-Commerce, Bio-Informatics, and business intelligence; site management, personalization, and use profiling; Web content mining and Web structure mining. Prerequisite: ITS 345.

375 Disaster Recovery and Business Continuity Planning (3)
Business continuity requirements and policies; crisis management, emergency response, damage assessment; fact finding, risk analysis, business impact analysis and time-sensitive business functions; business continuity strategies and recovery team concept; testing and maintenance of an effective recovery plan; vital records and off-site storage; emergency response procedures, command, control and emergency operations; resumption, recovery and restoration procedures; vendor contracts, corporate awareness program, reporting and audits; strategies to recover the infrastructure and processes; manage recovery teams. Prerequisite: ITS 300.

410 Networking and Telecommunications (3)
Topics include analog and digital voice; data, imaging, and video communications fundamentals, including signaling and data transmissions; networking and telecommunications techniques, applications technology, networking topologies and internetworking architectures; LAN fundamentals, such as Ethernet and token ring; WAN fundamentals, such as circuit-switching, packet-switching, X.25, frame relay, and Asynchronous Transfer Mode; computer networking using OS1 model; protocols and the technologies associated with each layer; network design and development; Internet/Intranet, TCP/IP, MANs, VPN, VLAN, SANs, PANs, VOIP, remote access, Wireless networks, Directory Services,
network security, and network management; evolving Internet Protocol (IP) technologies such as Internet 2. Prerequisite: ITS 200.

420 Wireless/Mobile Systems (3)
Fundamentals of application development for the mobile platform including cell phones, smart phones and PDAs. Applications include databases, UDP programming, graphics programming, web services, Bluetooth, Google applications, GPS, and GSM/GPRS. Prerequisites: ITS 250 and ITS 345.

425 Computer Forensics (3)
Role of computer forensics examiner, forensic evidence preservation and computer forensic tools; evidence analysis, chain of custody, and data retrieval from computer hardware and software applications; development of investigative thinking and awareness; study of data hiding techniques, encryption and password recovery; evidence gathering and documentation techniques; imaging digital media, hiding and discovering potential evidence, applying steganography techniques, manipulating alternate data streams, discovering information in mangled files, conducting e-mail investigations, reconstructing browser and Web server activity, establishing covert surveillance with key stroke loggers and remote access, configuring tools to detect a rootkit. Prerequisite: ITS 300.

430 Data Mapping and Exchange (3)
Concentrated study of emerging XML technologies such as web services: Google Earth Markup Language (KML), wireless markup language (WML), a language designed for transferring GPS data between software applications (GPX), Java Speech Markup Language (JSML): a language for annotating text input to speech synthesizers (JSML) and an open standard for broadcasting changes made in a wiki and publishing them on remote servers (WikiPing). Included is an exploration of DTD which validate markup languages. Prerequisites: ITS 200 and ITS 275.

450 Information Compliance Management (3)
Regulatory mandates, new standards for business practices, compliance requirements, tracking the originality of source code, visualization tools that support compliance, security and privacy regulations, technology for managing audits, identifying security vulnerabilities in software systems, trustworthy record keeping; Sarbanes-Oxley Act (SOX), HIPAA, Gramm-Leach-Bliley Act (GLBA), PCI Compliance, Control Objectives for Information and other Technologies (COBIT), USA PATRIOT Act, IT Governance, compliance convergence, ISO IEC 17799, and many other standards. Prerequisite: ITS 300.

460 Information Warfare (3)
This course will provide the student with a basic understanding of information warfare. It will build from a strategic understanding of warfare as reflected in the information realm. It will discuss both theoretical and practical aspects of dealing with information warfare. Included will be a discussion of how Information Warfare differs from cybercrime, cyberterrorism and other forms of online conflict. Information terrorism, cyberspace law and law enforcement, information warfare and the military, intelligence in the information age; IW policy, ethical issues, social issues, and political effects; high-level analysis of information warfare threats, like cyberterrorism, espionage, internet fraud, psyops, biometrics, intelligence activities, offensive and defensive tactics, Network Centric Warfare, information technology as a tool of warfare are also included. Prerequisite: ITS 300.
465 Senior Project (3)
An opportunity for students to function in a more realistic technology environment. The project will require students to apply their classroom knowledge to design and develop a project using structured systems development methodology. Systems flow charts, data/process models, forms design, report specifications, programming, and documentation would be produced. The systems development life cycle (SDLC) will be used to identify and complete various phases of the project. Students will submit a comprehensive report and present it in the class with supporting documentation for final evaluation. Prerequisites: ITS 345 and 351.

470 Issues in Information Technology, Security, and Intelligence (3)
Current issues in information technology, security, and intelligence are examined. In depth and comprehensive research is mandatory. Course content varies and will be announced in the schedule of courses by suffix and title. This course may be repeated for credit as topics vary. Prerequisites: Senior standing, superior academic performance, and permission of the instructor.