IT-Networking and Security

Program- and Course-Level Student Learning Outcomes

IT-Networking and Security Program-Level Learning Outcomes

- Describe major components of a corporate IT infrastructure.

- Understand the standards and technologies in networking and security that support making informed business decisions.

- Compare and contrast technologies in networking and security designed to solve similar problems.

- Present and defend IT and security recommendations for business solutions.

IT-Networking and Security Required Courses and Learning Outcomes

1. **ITSCM 180 / INTRODUCTION TO PROGRAMMING FOR BUSINESS APPLICATIONS**

    Course Description
    This course introduces the essentials of object-oriented programming for business application. Students will learn programming fundamentals, object-oriented design, file i/o, and fundamental data structures within the context of building tools for business end-users. Topics related to the business environment, such as eliciting software requirements and effective technical communication are also covered.

    Course-Level Learning Outcomes
    In the end of the course, students will be able to:
    - Describe fundamentals of procedural and object-oriented programming
    - Explain business programming concepts such as requirements and technical specifications
    - Gather business requirements and develop programs that meet the requirements
    - Use programs to manipulate files, handle execution errors, and manage data
    - Write scripts to automate tasks while working with computers

2. **ITSCM 221 / INFORMATION TECHNOLOGY INFRASTRUCTURE**

    Course Description

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This course includes a detailed investigation of the primary infrastructure components of modern information systems. In particular the course focuses on computer hardware and networking components, infrastructure troubleshooting methodologies and tools, and networking protocols.

Course-Level Learning Outcomes
In the end of the course, students will be able to:
- Be familiar with the major hardware components of corporate end-user computers
- Be familiar with the major components of a corporate network infrastructure
- Understand the standards and technologies that support corporate network infrastructure
- Understand how network components communicate with one another
- Compare and contrast technologies designed to solve similar problems
- Present and defend IT recommendations for business solutions
- Understand the concept of sustainability and how it relates to Information Technology

3. **ITSCM 314 / DATABASE DESIGN AND ADMINISTRATION**

Course Description
This course teaches students how to analyze, design and implement a computerized database. It further teaches students how to use a database to answer questions and support analyses. Students learn the basics of administering a database including providing security, performance tuning, backup and recovery, and other administrative tasks.

Course-Level Learning Outcomes
In the end of the course, students will be able to:
- Understand the database development process and the role of modeling in that process
- Compose SQL queries against a relational database
- Understand the processes involved in physical database design and be able to convert a logical design into an appropriate physical design
- Create and load a database using SQL and supporting tools
- Understand the concept of relational integrity and know how to apply it
- Explain the roles and responsibilities of database administration
- Understand the issues involved with database backup and recovery, understand issues of database security and procedures used to address them
- Explain basic concepts behind data warehousing
- Design a data warehouse and a datamart

4. **ITSCM 320 / BUSINESS ANALYSIS**

Course Description
The basic role of a business analyst is to serve as a liaison between business divisions and the technical staff by translating business goals into information-system requirements and

communicating those requirements to the technicians. This course provides students with the knowledge and techniques to perform this service.

Course-Level Learning Outcomes
In the end of the course, students will be able to:
- understand the development life cycle and appreciate development methodology alternatives.
- understand how to identify opportunities for business improvement
- know how to develop a business case for a proposed system.
- know how to model business processes.
- know how to model use cases.
- know how to model data for a computer application
- understand the issues involved in collecting and documenting system requirements
- know how to create a requirements document
- understand how requirements management is effectively done during the development process
- understand user stories

5. ITSCM 331 / SYSTEM ADMINISTRATION

Course Description
This course provides in depth coverage of the best practices for administering network systems. Students will be expected to demonstrate an ability to administer network operating systems (NOS) and applications.

Course-Level Learning Outcomes
In the end of the course, students will be able to:
- Analyze business needs and make Active Directory design recommendations
- Perform user management tasks
- Setup and maintain file management standards
- Configure DNS, DHCP and network file sharing
- Perform required network configuration tasks on Windows servers
- Configure and implement various group policy settings
- Perform various network analysis and performance monitoring tasks
- Explain the components and benefits of Data Center Virtualization
- Understand the fundamentals of Cloud Computing

6. ITSCM 332 / NETWORK MANAGEMENT

Course Description
This course provides in depth coverage of the best practices for managing wide area network (WAN) components. Students will be expected to demonstrate an ability to manage network interconnection devices, such as routers and switches. The course will focus on designing appropriate data link (OSI Layer 2) and Internet layer (OSI Layer 3) architectures.

Course-Level Learning Outcomes
In the end of the course, students will be able to:
- Configure and manage TCP/IP communication
- Understand the functions and differences of various internetworking devices, e.g., hub, bridge, router, etc.
- Perform basic CISCO router hardware setup
- Understand and operate with CISCO's IOS operating system
- Plan, implement, and manage CISCO-based internetwork projects
- Translate business technology requirements into an Information Technology plan and justify plan to financial and business executives.

7. ITSCM 385 / AGILE PROJECT MANAGEMENT

Course Description
This course is designed to allow students from all disciplines to understand how to manage agile projects. PM presents a methodology for managers to balance their time, cost, risks, resources, and people while ensuring quality goals are built into the project. The genesis of agile PM is covered using live cases and examples.

Course-Level Learning Outcomes
In the end of the course, students will be able to:
- Demonstrate high level knowledge of project management industry, terms, and approaches
- Describe agile project management and how it is different from traditional, waterfall project management methodology
- Recognize how critical and creative thinking aid project management
- Apply project management techniques and produce project management deliverables in a real world project
- Use different tools and techniques for managing a real world project
- Apply processes to identify biases and enhance problem formulation

8. ITSCM 451 / MANAGING INFORMATION TECHNOLOGY SERVICES

Course Description
This course covers material appropriate for individuals who may be expected to manage IT people and resources. Topics include business continuity planning, developing service level agreements, change management / revision control, capacity planning, impact analysis, testing, communication with vendors, customers and other constituents, and managing IT professionals.

Course-Level Learning Outcomes
In the end of the course, students will be able to:
- Define IT Service Management, processes, functions and roles

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- Define agile project management and how it is different from traditional, waterfall approaches to project management
- List and describe the stages, major processes, and roles in the ITIL Service Lifecycle
- Compare and apply the stages of the ITIL Service Lifecycle to the Project Management and Software Development Lifecycles
- Select relevant ITSM processes to implement for an organization, given the specific context
- Use agile techniques to evaluate a real-world business need and recommend appropriate system- and process-based solutions.
- Demonstrate the ability to integrate the knowledge, skills, abilities, and values learned throughout the IT undergraduate program, based on program major, minor and emphasis.

9. ITSCM 452 / INFORMATION ASSURANCE AND SECURITY

Course Description
This course provides an in depth investigation into meeting the security needs of modern IT systems. Students will be expected to demonstrate an ability to establish security policies and configure security devices and software.

Course-Level Learning Outcomes
In the end of the course, students will be able to:
- Understand the development and implementation of security policy and procedures.
- Design, implement and maintain the most common security solutions in an integrated IT infrastructure. This includes; Firewalls, Virus and spyware protection, Intrusion prevention and detection, Wireless Security, Server Hardening, Physical Security, etc.
- Demonstrate knowledge and skills of:
    - Attackers and their attacks
    - Security baselines
    - Securing the network infrastructure
    - Web security
    - Protecting business applications
    - Policies and procedures
    - Security management
    - IT security audit procedures and practices