

Information Technology (ITEC) Courses

ITEC2081 Network Protocols I

This course develops students' knowledge of computer networks, network appliances and network protocols. They are introduced to methods of developing protocols, including interpretation of standards, finite state machines and state-full transition. Students gain a conceptual framework useful in the adaptation of network protocols to network appliances and internetworking design. Through the use of network protocol analyzers students conduct in-depth examinations of the 802.3, ARP, IP (versions 4 and 6), ICMP and RIP protocols. Comparison of protocols is made by type. Students develop a basic understanding of the software paradigms used to construct protocols. In homework and lab assignments, students develop skill competencies needed to troubleshoot protocol issues. Students connect, configure and program a range of network devices; work with network protocol analyzers; examine the software internals of protocol implementations; and map the path of a data packet on a network. Prerequisite(s): CSIS1101 or CSIS1020 or ENGN2009.

Offered at Charlotte, Online, Providence
3 Semester Credits

ITEC2082 Network Protocols II

This course expands on the core network engineering and protocol concepts developed in Network Protocols I through an in-depth examination of the Internet Protocol (IP), RIP II and OSPF, ICMP, and VOIP. Students examine the details of software implementation of these protocols. Students understand the interplay of these protocols and the associated end node, enterprise, autonomous region and internet backbone structures in support of efficient and effective movement of information across the internet. Students use network design simulation software to explore the complex interactions of these protocols with each other and with the architectures they support. Prerequisite(s): ITEC2081, MATH2001 (or concurrent).

Offered at Charlotte, Providence
3 Semester Credits

ITEC2085 Distributed Systems with TCP/IP

In this course, students learn how client/server systems evolved and how those systems continue to adapt to business needs. Students develop an understanding of distributed programming techniques and of how distributed applications (databases, transactions, processors, ERP systems, etc.) work within networks. The course also covers the three main types of systems (Two Tier, Three Tier and N Tier) and how they relate to one another. In homework and lab assignments, students develop skill competencies needed to solve day-to-day business problems in maintaining and customizing databases and other applications. Students configure and implement their own client/server network, which gives them an opportunity to develop a professionally focused understanding of how such a network is designed and built. This course focuses on the upper layers of the OSI model (especially the application layer).

Prerequisite(s): ITEC2081, MATH2001.
Offered at Providence
3 Semester Credits

ITEC3031 Router Internals and Integration

This advanced networking course gives students an in-depth view of router internals, protocol design and operation, as well as network modeling and design. Students learn about the intricacies of network design, choosing the right technological tool, network modeling and simulation, and network testing and benchmarking. Students examine the requisite hardware and software constructs necessary for successful router development and use. Students also examine advanced topics such as convergence, first mile/last mile, QOS and switching and routing fabrics. Students examine the behavioral complexities that emerge as a result of distributed autonomous routing and switching cohorts. Students receive professionally focused experience in lab exercises by designing their own networks and dissecting a router (hardware and software).

Prerequisite(s): CSIS1050 or CSIS1112, ITEC2082.
Offered at Providence
3 Semester Credits

ITEC3040 Systems Analysis

This course presents a systematic approach to the development of business systems. By following this approach, students learn to design business systems that efficiently meet the goals and objectives of management. A major element of this course is a team project, where students utilize the systems approach in analyzing and designing a business system. This class is required for majors in this program and highly recommended for non-computer majors.

Prerequisite(s): CSIS1112 or FIT1040.

Offered at Providence

3 Semester Credits

ITEC3050 Information Security with Cryptography

Encrypting information is one of the most effective ways to control information, verify authenticity of information and maintain confidentiality, integrity and non-repudiation. This course presents all aspects of computer and information security including symmetrical and asymmetrical data encryption, zero-knowledge based proofs, public key infrastructure systems, digital signatures, crypto currencies and security procedures using encryption. This course makes students aware of the various threats to computers and data and identifies methods and techniques for providing counter-measures to those threats.

Prerequisite(s): Sophomore status.

Offered at Charlotte, Online, Providence

3 Semester Credits

ITEC3070 Systems Modeling and Simulation

This course addresses the process of modeling systems, including business systems, network systems, dynamic vehicle systems and client-server systems, to name a few. The modeling process is the prerequisite for the simulation and subsequent analysis, design and assessment of a system with respect to specific performance criteria. The roles of modeling in simulation are presented within the context of the systems engineering process. Modeling encompasses everything from functional through mathematical modeling; simulation includes the development and use of software for systems analysis and design. Team projects from students' areas of interest are an integral part of the course.

Prerequisite(s): MATH2001.

Offered at Online, Providence

3 Semester Credits

ITEC3075 Network Security

This course provides the students with a comprehensive introduction to the field of network security. Critical network security aspects are identified and examined from the standpoint of both the user and the attacker. Network vulnerabilities are examined, and mitigating approaches are identified and evaluated. Concepts and procedures for network risk analysis are introduced. Network architectures and protocols and their impact on security are examined. TCP/IP security is examined in conjunction with the IPSec and IKE protocols. Integration of network and computer security is introduced. The course also discusses the building of trust networks, key management systems, and physical network security. The course emphasizes the implementation of intrusion detection and prevention methods.

Prerequisite(s): ITEC2081, ITEC3050.

Offered at Charlotte, Providence

3 Semester Credits

ITEC3083 Wireless Networking

This course covers the design and implementation of wireless networks and mobile systems. Students are acquainted with best industry practices and standards. Topics include practical wireless communication systems, cellular and wireless mesh networks, antenna theory, signal transmission basics, wireless network security, and management. This course also discusses recent advances in wireless such as network coding, interference alignment and cancellation, and emerging security and management techniques.

Prerequisite(s): ITEC2082 or ITEC2085, MATH2020.

Offered at Charlotte, Providence

3 Semester Credits

ITEC6514 Decision Support Systems

This course focuses on design, development and implementation of effective systems for meeting information needs of management decision-makers. The course explains both model-based and data-based decision support systems and their use by business managers. Decision Support Systems (DSS) are addressed at three levels: general theory, implications for DSS design, and code/rule-based development. Data mining, developing business intelligence with analytics and modeling are reviewed. Data warehousing and DSS across cultures associated with transnational systems are also addressed.

Offered at Providence

3 Semester Credits

ITEC6524 Enterprise Data Management

This course focuses on the problems and issues surrounding distributed data management integration and the concepts of grid computing. Also examined are management and administration of very large and /or distributed database architectures within national or international companies or organizations. Topics also include the fundamentals of business functions as they relate to enterprise data management.

Offered at Providence

3 Semester Credits

ITEC6534 Strategic Management of Information Technology

This course examines four dimensions of strategic IT management: IT environment scanning, IT planning and control, IT acquisition and implementation, and strategic use of IT (use of IT to increase your firm's profitability). Special attention is given to the IT/IS alignment within the organization. Professional abilities and attributes of successful IT managers (knowledge, systems, strategies and technology) are also emphasized.

Offered at Providence

3 Semester Credits

ITEC6544 Current Trends and Issues in Information Technology

This course provides current theory, trends, and issues in the field of information technology. Global topics of infrastructure, hardware, software, security, quality control are examined. Social and cultural impacts of technology, virtual digital communication, data mining and government regulations are also considered. E-business, planning, budgeting and electronic commerce within the context of information management are also assessed. Students develop an area of interest and formulate a research proposal for further study in IT management.

Offered at Providence

3 Semester Credits