

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

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.

Offered at Charlotte, 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