

Weekend Format – Planned Degree Plan – Security Engineering

Cost Per Course: \$4,170 (tuition and fees)

Credit Hours: 3 hours per course

Course Delivery Method: Classroom

CSE 7314. Software Testing and Quality Assurance. The relationship of software testing to quality with an emphasis on testing techniques and the role of testing in the validation of system requirements. Includes module and unit testing, integration, code inspection, peer reviews, verification and validation, statistical testing methods, preventing and detecting errors, selecting and implementing project metrics, and defining test plans and strategies that map to system requirements. Testing principles, formal models of testing, performance monitoring and measurement.

CSE 7339. Computer System Security. Investigates a broad selection of contemporary issues in computer security, including an assessment of state-of-the-art technology used to address security problems. Includes sources for computer security threats and appropriate reactions, basic encryption and decryption, secure encryption systems, program security, trusted operating systems, database security, network and distributed systems security, administering security, and legal and ethical issues.

CSE 7343. Operating Systems and System Software. Theoretical and practical aspects of operating systems, including an overview of system software, time-sharing and multiprogramming operating systems; network operating systems and the Internet; virtual memory management; interprocess communication and synchronization; file organization; and case studies.

CSE 7349. Data and Network Security. The course will cover conventional as well as state-of-the-art methods in achieving data and network security. Private key and public key encryption approaches will be discussed in detail with coverage on popular algorithms such as DES, AES and RSA. In the network security area, the course will cover authentication protocols, IP security, Secure Socket layer, Web security and system level security.

CSE 7359. Software Security. As software is delivered across networks and Web – based environments, security is critical to successful software deployment. Focuses on software security issues that pertain to the network application layer in the classic OSI model. At the application network layer, issues related to encryption, validation and authentication are handled programmatically rather than at the network level. Students will work with APIs for cryptography, digital signatures and third-party certificate authorities. Also explores issues related to XML and Web services security by examining standards and technologies for securing data and programs across collaborative networks.

CSE 8349. Advanced Network and System Security. In-depth analysis of secure networks and systems, security audit, intrusion detection and prevention, storage security, firewall configurations, security log analysis, DMZs, honeypots, malicious codes, and mobile and grid computing security

CSE 7359 Advanced Software Security. As software is delivered across network and web-based environments, security is critical to successful software deployment. This course will focus on software security issues that pertain to the network Application Layer in the classic OSI model. At the application network layer, issues related to encryption, validation, and authentication are handled programmatically rather than at the network level. Students will work with APIs for cryptography, digital signatures and

third party certificate authorities. The course will also explore issues related to XML and Web Services security by examining standards and technologies for securing data and programs across collaborative networks. Prerequisite: Programming experience in Java and/or C++.

CSE 8394: Border and Transportation Security (BTS). Securing our nation's air, land, and sea borders is a difficult yet critical task. As per the Department of Homeland Security, the United States has 5,525 miles of border with Canada and 1,989 miles with Mexico. Our maritime border includes 95,000 miles of shoreline, and a 3.4 million square mile exclusive economic zone. Each year, more than 500 million people cross the borders into the United States, some 330 million of whom are non-citizens. Prevention of intrusion at the border with continued tracking of goods and people inside is highly desirable to ensure security.