Bachelor of Science in Information Security

WASHINGTON TECHNOLOGY UNIVERSITY

PROGRAM DESCRIPTION

The Bachelor of Science in Information Security at Washington Technology University is designed to provide an in-depth understanding of information technology as well as prepare students to address a wide range of vulnerabilities and threats that affect private, corporate, and government computer information systems. This program prepares students to design and implement key technologies and processes needed to protect critical information in cyberspace.

Program Requirements (90 Credits)

Technology Core (45 Credits)

MATH 200 Quantitative Tools and Methods
CPSC 210 Computer Systems Foundations
CPSC 220 Operating Systems Foundations
CPSC 250 Programming Fundamentals
CPSC 310 Database Management Systems
INSE 300 Legal and Ethical Issues in Information Security
INSE 310 Systems Analysis and Design
INSE 320 Data Communications and Networking
INSE 335 Project Management

Depth of Study (40 Credits)

INSE 400 Fundamentals of Information Security
INSE 410 Corporate Governance, Policy, Risk, Cybercrime
INSE 415 Computer and Network Security
INSE 420 Security Strategies for Operating Systems and Applications
INSE 425 Computer and Network Forensics
INSE 430 Compliance Auditing the IT Infrastructure
INSE 435 Hacker Tools and Techniques
INSE 440 Internet, Wireless, and Mobile Device Security

Capstone (5 Credits)

INSE 495 Capstone Project

Course Descriptions

Math 200 - Quantitative Tools and Methods (5cr)

Explore ways to collect, define, describe and communicate real-world facts. Tools, techniques and methodologies commonly used for analysis, computation, decision making and quantification, conditional probability, statistics, discrete mathematics, Boolean logic, functions, distributions, reasoning, methodologies are covered.

CPSC 210 - Computer Systems Foundations (5cr)

This course introduces students to computers, computer systems, and basic structures supporting computer programming and data communications. Throughout this course, fundamental concepts in Computer Science are covered. Topics include digital building blocks of computers, computer networks, operating systems, and large-scale computing.

CPSC 220 - Operating Systems Foundations (5cr)

Learn the basic elements of a computer operating system in this course. Explore the history of modern operating systems, learn how they operate, understand what it takes to manage them and become familiar with different types. Topics feature memory management, process control and task scheduling.

CPSC 250 - Programming Fundamentals (5cr)

Key structural concepts such as functions, modules, interfaces and libraries are covered. Immerse yourself in the subject through examples and programming exercises. By the end of the course you should have the ability to design and build basic software applications.

CPSC 310 - Database Management Systems (5cr)

Learn about data modeling, design, normalization, data dictionaries, client server architecture, SQL, relational databases, and MySQL in this foundational level course. Special focus is provided on understanding the critical nature of information resources and why they must be carefully managed.

ISNE 300 - Legal and Ethical Issues in Information Security (5cr)

The course explores the historical, theoretical, and thematic dimensions of ethics as it relates to information technology and cybersecurity. Historical context, frameworks, challenges and theories are explored. Information security standards, computer viruses, hacktivism, cyberstalking and ethical behavior using social media are topics covered.

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INSE 310 - Systems Analysis and Design (5cr)

Real world case studies and applied assignments teach analytical reasoning, critical thinking, and problem-solving skills and systematic decomposition of problems into solutions. Data and systems modeling are covered along with common approaches to system and software design mythologies.

INSE 320 - Data Communications and Networking (5cr)

Learn how this technology provides access, transmission, security, and routing of information within an organization over wide geographical areas. Understand how networks are interconnected, how they are designed and how they communicate with each other.

INSE 335 - Project Management (5cr)

Key concepts, tools, techniques, and standards needed to deliver products or services in a timely manner and on budget are covered. Special emphasis is placed on task scheduling, resource management, and risk planning. Upon completion, students should be able to apply basic project management concepts.

INSE 420 - Security Strategies for Operating Systems and Applications (5cr)

Computer operating systems and software applications are commonly exploited by hackers. An in-depth understanding of characteristic risks, threats, vulnerabilities associated with specific modern operating systems and applications is important in order to protect them.

INSE 425 - Computer and Network Forensics (5cr)

Explore tools and techniques used to find, follow, and extract digital markers from computers and networking devices used in cybercrimes. The course examines the fundamentals of system forensics including an overview of forensics, a discussion of computer crime, the challenges of system forensics, and forensics methods.

INSE 430 - Compliance Auditing the IT Infrastructure (5cr)

Learn how compliance laws are used to safeguard organizational and consumer data. Learn the details of operational requirements for proper documentation and implementation of security controls and protocols within an organization. Audit standards, frameworks, security controls, and personnel certifications are covered.

INSE 400 - Fundamentals of Information Security (5cr)

A review of compliance law, best practices in IT security, principles of network security, and an overview of operation security process and methodologies are covered. Specific focus is given on application data and computer security, threat identification, vulnerability assessments, access control, identity management and cryptography.

INSE 410 - Corp. Governance, Policy, Risk, and Cybercrime (5cr)

Learn how to manage cybersecurity risks as they relate to modern information systems. Topics include risk identification, threat categorization, and vulnerability assessments. Relevant laws are presented along with approaches to risk mitigation and organizational planning. Organizational impact analysis and continuity planning are reviewed.

INSE 415 - Computer and Network Security (5cr)

This course provides a review of network vulnerabilities, common attack vectors, and methods for preventing, detecting and techniques for minimizing the effects of network attacks using commonly available software tools. Learn how to best implement network security and incorporate best practices into an organization to defend networks.

INSE 435 - Hacker Tools and Techniques (5cr)

Discover the history of hacking and understand the difference between ethical and black-hat hacking in this course. Examine how attackers target networks and the methods they use including foot printing, port scanning, enumeration, malware, sniffers, denial of service, and social engineering.

INSE 440 - Internet, Wireless, and Mobile Device Security (5cr)

Explore network security threats and vulnerabilities for wireless and mobile devices in this course. Security solutions and risks to wireless networks and mobile devices are covered as are models for information security and risk mitigations as they relate to mobile devices and wireless networks.

INSE 495 - Capstone Project (5cr)

This course begins with the selection of a project, a collection of project requirements, a review of background information which could be research or customer requirements. Students will build a short timeline of deliverables and list of necessary resources. Finally, students will implement the project.

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