

Cyber Operations (CYB) Courses

CYB2010 Computer Architecture with Assembly Language Programming

This course is designed to provide students with an understanding of the relationship between hardware and software through the use of the machine and assembly language facilities. Topics include how simple statements translate into processor commands and how various types of storage and programming structures are implemented in the system. Program design, charting, coding, debugging, testing, execution and documentation are accomplished for all concepts that are introduced. Advanced understanding of the relationship between hardware and software is accomplished through the use of assembly language and higher level language (C programming language) facilities. Creating programs that interface with computer hardware is explored. Additional topics include using debug, decision structures, looping structures, addressing constructs, data types, program segments, memory models, subroutines, arrays, video, keyboard and file I/O, parallel processing, terminate-and-stay-resident programs, recursion, inter-language communication, device drivers and embedded programming concepts.

Prerequisite(s): CSIS1112.

Offered at Charlotte, Online, Providence

3 Semester Credits

CYB3038 HCI/Usable Security

This course focuses on how to design and build secure systems with human-centric focus. Basic principles of HCI (including the basics of humans' cognitive abilities, principles of usability, design techniques and evaluation methods) are discussed. Through professionally focused exercises, students apply these techniques to the design, building, evaluation and critique of secure systems, while developing security measures that respect human performance and their goals within the system. Focus is on authentication devices, password protection techniques, browsing security, social media and mobile device security.

Prerequisite(s): ITEC3050.

Offered at Charlotte, Online, Providence

3 Semester Credits

CYB4010 Computer and Network Forensics

This course introduces students to the nature of digital evidence, the tools and techniques used to acquire such evidence, and the practices used to preserve its integrity through the use of lectures and hands-on exercises. Students are also introduced to the process of testifying and ethics for the expert witness.

Prerequisite(s): Senior status.

Offered at Charlotte, Online, Providence

3 Semester Credits

CYB4026 Cyber Intelligence

This course examines the emerging stages to the current operational and political impact of cyber intelligence. Students explore a full range of cyber capabilities from exploitation, attack and defense. Students analyze and discuss several case studies that demonstrate the challenges and benefits of cyber intelligence to the cyber operations and security environment.

This course demonstrates how cyber security and operations have changed the nature of intelligence collections, operations and analysis across the intelligence communities.

Prerequisite(s): CYB3038.

Offered at Charlotte, Online, Providence

3 Semester Credits

CYB5000 Network & Systems Foundations

This course provides a comprehensive introduction to computer networks and systems as the foundation for advanced cybersecurity concepts. Students examine the OSI and TCP/IP models, network architecture, addressing and routing. Emphasis is placed on understanding the configuration and analysis of protocols, subnets and network devices. Through virtualized labs and simulations, students develop the practical skills required to interpret RFCs, manage system interconnections and troubleshoot communication issues in modern enterprise environments.

Offered at Online, Providence

3 Semester Credits

CYB6010 Cybersecurity Foundations & Principles

This course introduces the fundamental principles of cybersecurity including confidentiality, integrity, availability and zero-trust architecture. Students apply national and international security frameworks to organizational contexts, evaluate threat models and communicate security concepts to technical and non-technical audiences. Emphasis is placed on linking security design principles to real-world business and government operations, integrating risk management, governance and the practical application of cybersecurity strategy.

Offered at Online, Providence

3 Semester Credits

CYB6020 Networked Systems Security

This course examines modern enterprise networks, their vulnerabilities and methods of defense. Students apply intrusion detection and prevention tools, design segmented and zero-trust networks, and evaluate security considerations in emerging technologies such as SDN and 5G. The course emphasizes hands-on application of network security concepts through analysis of packet flows, log data and system configurations within simulated environments.

Prerequisite(s): CYB6010.

Offered at Online, Providence

3 Semester Credits

CYB6030 Risk, Law, Ethics & Governance

This course examines risk management, compliance and ethical issues in cybersecurity. Topics include frameworks such as NIST and ISO, privacy and regulatory obligations, policy development and ethical decision-making in the global security environment. Students analyze real-world case studies to explore the relationship between governance, organizational culture and cyber risk, emphasizing the balance between legal compliance, ethical responsibility and strategic business goals.

Prerequisite(s): LAW2001 or LAW2005.

Offered at Online, Providence

3 Semester Credits