CYBERSECURITY (CSCY)

CSCY 2930 - Practical System Administration (2 Credits)
Introduces students to essential system administration topics including, but not limited to, IT design and configuration methodologies, desktop support, building and configuring production level servers, network technologies and troubleshooting, security, virtualization, storage, and server operating systems. Prereq: CSCI 1410 or an equivalent introductory computer programming course. Max Hours: 2 Credits.
Grading Basis: Letter Grade
Prereq: CSCI 1410
Typically Offered: Spring.

CSCY 3740 - Computer Security (3 Credits)
Introduces basic knowledge from the computer security area. Topics covered in this course include: Cybersecurity Ethics, Penetration Testing, Secure Programming Practices, and Life-Cycle Security. Students will gain the understanding of ethics in cybersecurity with the tools for ethical decision making, learn methods of exploiting vulnerabilities and perform penetration testing on a simple network, understand the characteristics of secure programming with the ability to implement programs that are free from vulnerabilities, and understand security related concerns in a system Life-Cycle and how security principles can be applies to improve security throughout a system. Prereq: Grade of C- or higher in CSCI 2421. Restriction: Restricted to Cybersecurity Majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCI 2421. Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Spring.

CSCY 3765 - Secure Network and Systems Programming (3 Credits)
This course provides a deep understanding of operating system and TCP/IP networking architecture, and the low-level interfaces that are required to build secure system-level, multithreaded, and network applications, including file and process operations, inter-process communications, creating and implementing networking protocols and sockets-based programming. Students will learn how to design secure applications, write secure code that can withstand attacks, and conduct security testing and auditing and apply it to real world problems. Prereq: Grade of C- or higher in CSCI 3761. Restriction: Restricted to Cybersecurity Majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCI 3761. Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Fall.

CSCY 3800 - Special Topics (3 Credits)
Credit and subject matter to be arranged. Restriction: Restricted to Cybersecurity Majors (CSCY-BS). Repeatable. Max hours: 12 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 12.
Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Fall, Spring.

CSCY 3840 - Independent Study (3 Credits)
Restriction: Restricted to Cybersecurity Majors (CSCY-BS). Repeatable. Max hours: 9 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 9.
Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Fall, Spring, Summer.

CSCY 4407 - Security and Cryptography (3 Credits)
A broad overview of cryptography and its relation to computer security. Topics include basic standard cryptographic techniques, a history of codes and ciphers, RSA, DES, AES, Elliptic Curve Cryptography, ElGammal, and applications to current and future technologies. Prereq: Grade of C- or higher in CSCI 3412. Restriction: Restricted to Cybersecurity Majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCI 3412. Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Spring.

CSCY 4738 - Senior Design I (3 Credits)
This is an advanced practical course in which students design, implement, and document and test secure software systems for use in industry, non-profits, government and research institutions. The course offers practical experience by working closely with project sponsors. It also offers extensive experience in oral and written communication throughout the software life cycle. Prereq: Grade of C- or higher in CSCI 3453, CSCY 4741, CSCY 4742 and CSCY 4743. Restriction: Restricted to Cybersecurity Majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCI 3453, CSCY 4741, CSCY 4742 and CSCY 4743. Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Fall.

CSCY 4739 - Senior Design II (3 Credits)
This course is a continuation of Senior Design I. Students must have taken Senior Design I in order to enroll for Senior Design II. In this course, the projects begun in Senior Design I are completed and presented. Prereq: Grade of C- or higher in CSCY 4738. Restriction: Restricted to Cybersecurity majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCY 4738. Restriction: Restricted to Cybersecurity majors (CSCY-BS).
Typically Offered: Spring.

CSCY 4741 - Principles of Cybersecurity (3 Credits)
Focuses on the most common threats to cybersecurity as well as ways to prevent security breaches or information loss. Topics will include: understanding and thwarting hacker methods, authentication, cryptography, programming security, malware analysis, web, database and file server security, network and enterprise security methods. Prereq: Grade of C- or higher in CSCI 3287 and CSCI 3761. Restriction: Restricted to Cybersecurity Majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCI 3287 and CSCI 3761. Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Fall.

CSCY 4742 - Cybersecurity Programming and Analysis (3 Credits)
Focuses on cybersecurity related programming and analysis skills. Topics include: network and security application development, intrusion detection, automating security hardening. Students will design and develop security applications in multiple programming languages. Undergraduate algorithms and programming knowledge expected. Prereq: Grade of C- or higher in CSCY 3740 and CSCY 3765. Restriction: Restricted to Cybersecurity Majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCY 3740 and CSCY 3765. Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Spring.

CSCY 4743 - Cyber and Infrastructure Defense (3 Credits)
Presents analytical study of state-of-the-art attack and defense
paradigms in cyber systems and infrastructures. Analysis will focus on:
theoretical foundations of cybersecurity, practical development of novel
technical defense techniques and analysis of alternatives. Prereq: Grade
of C- or higher in CSCI 3761. Restriction: Restricted to Cybersecurity
Majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCI 3761. Restriction: Restricted to
Cybersecurity Majors (CSCY-BS).
Typically Offered: Spring.

CSCY 4772 - Mobile and IoT Security (3 Credits)
This course concentrates on the computing of emerging mobile and
IoT systems security in the Computer Science domain. The seminar will
discuss recent research on computing for mobile user authentication,
vulnerability risk detection of mobile/IoT systems, and software based
defense mechanism. Prereq: Grade of C- or higher in CSCI 3453 and
CSCI 3761. Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in CSCI 3453 and CSCI 3761. Restriction:
Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Fall.

CSCY 4800 - Special Topics (3 Credits)
Credit and subject matter to be arranged. Restriction: Restricted to
Cybersecurity Majors (CSCY-BS). Repeatable. Max hours: 12 Credits.
Grading Basis: Letter Grade
Repeatable. Max Credits: 12.
Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Fall, Spring, Summer.

CSCY 4950 - Cybersecurity Risk Analysis and Management (3 Credits)
The course will cover the technical components of risk assessment and
management, applying knowledge in networking, design, programming,
and systems to analyze and assess vulnerabilities of infrastructures
and enterprise networks. Prereq: Grade of C- or higher in the following
courses: CSCY 3740 and CSCI 3761. Restriction: Restricted to
Cybersecurity Majors (CSCY-BS). Max hours: 3 Credits.
Grading Basis: Letter Grade
Prereq: Grade of C- or higher in the following courses: CSCY 3740 and
CSCI 3761. Restriction: Restricted to Cybersecurity Majors (CSCY-BS).
Typically Offered: Spring.