CYBERSECURITY (CYB)

CYB 3840 Introduction to Cybersecurity 3 Credits
An introduction to the principles of computer security. Topics include computer and system security, authentication, access control, malicious software, and software security. The course also examines how system designs, network protocols, and software engineering practices can result in vulnerabilities. The course explores how to design and implement systems to mitigate vulnerabilities. In addition, the course explores how to detect and mitigate vulnerabilities in existing systems.
Components: Class
Prereqs/Coreqs: P. C- or better in COMPUTER 3830

CYB 3850 Cryptography 3 Credits
An introduction to the fundamentals of applied cryptography. Topics include encryption and decryption, symmetric and asymmetric algorithms, pseudorandom functions, block ciphers, hash functions, digital signatures, key exchange, message authentication, and public-key certification. This course also covers common attacks and suggested countermeasures with appropriate cryptographic protocols and techniques. Hands-on labs will provide students with real-world experiences.
Components: Class, Discussion, Laboratory
Prereqs/Coreqs: P. C- or better in CYB 3840

CYB 3910 Introduction to Network Security 3 Credits
An introduction to network security principles and applications. Topics include security protocols and services, authentication applications, network management security, web security, wireless network security, mobile security, and system security. This course will examine different network architectures, threats and attack surfaces exploited by these threats.
Components: Class, Laboratory, Discussion
Prereqs/Coreqs: P. CYB 3840

CYB 3930 IT Security Management 3 Credits
An introduction to the formal process used to develop and maintain appropriate security levels for an organization with a focus on risk management. The process of risk management ensures that an organization protects itself from unexpected financial and reputation losses and discerns appropriate controls. Topics include security program, planning, strategies, controls, auditing, risk assessment and analysis models, risk measurement, business continuity and incident management, security awareness, and legal and ethical issues.
Components: Discussion, Laboratory, Class
Prereqs/Coreqs: P. CYB 3840

CYB 3960 Software Security 3 Credits
This course introduces the fundamental security principles in software development lifecycle to minimize the vulnerabilities and threats in software development. Students will be exposed to the security techniques in designing, developing, and testing software. Hands-on labs allow students to experiment with threads/attacks and defenses in software development.
Components: Class, Laboratory, Discussion
Prereqs/Coreqs: P. C- or better in CYB 3840

CYB 4110 Cybersecurity Seminar 1 Credit
The course consists of lectures/discussions presented by both cybersecurity faculty and students enrolled in the class.
Components: Class, Discussion
Prereqs/Coreqs: P. Junior/senior standing

CYB 4330 Cybersecurity Project I 3 Credits
This course builds on the concepts of computer science and cybersecurity with an emphasis on applying skills and knowledge learned in previous courses to a large, team-based, capstone project that spans two semesters. The capstone project integrates problem-solving techniques and the development of viable solutions to meet an identified technology or design need in a business or institutional environment.
Components: Practicum
Prereqs/Coreqs: P. Senior standing and (C- or better in CYB 3930 or department consent)

CYB 4730 Cybersecurity Project II 3 Credits
This course is a continuation of CYB 4330 Capstone Project I, where the project will be continued and carried to completion. The capstone project integrates problem-solving techniques and the development of viable solutions to meet an identified technology or design need in a business or institutional environment. The course will also introduce current research issues in cybersecurity/computer science.
Components: Class, Laboratory, Field Studies
Prereqs/Coreqs: P. C- or better in CYB 4330