CYBER ENGINEERING TECH (CETE)

CETE 3370 Cloud Cmpt Infrastrct Security
Credits: 3 (3-0-0)
This course introduces the cloud computing reference model for building cloud infrastructure. This model includes five fundamental layers (physical, virtual, control, orchestration, and service) and three cross-layer functions (business continuity, security, and service management). For each layer and cross-layer function, this course covers the comprising technologies, components, processes, and mechanisms. This course takes an open-approach to describe the concepts and technologies, and addresses the security issues associated with cloud computing infrastructure. TSI Restriction(s): Reading, Math, and Writing

Prerequisites: Grade of C or better in each of: MATH 1314, CSCI 1436 (or CSCI 1336 and 1136), CSCI 1437 (or CSCI 1337 and CSCI 1137).

Restrictions: Graduate level students may not enroll.

CETE 4375 Wireless and Mobile Security
Credits: 3 (3-0-0)
This course examines the concepts, principles, and applications of wireless and mobile security. It discusses the evolution of wireless and mobile technology and explores security and privacy including risks, threats, vulnerabilities, and security mechanisms in wireless and mobile devices, Internet, and internetworking systems. TSI Restriction(s): Reading, Math, and Writing

Prerequisites: Grade of C or better in each of: MATH 1314, CISA 2306 (or CISA 4306).

Restrictions: Graduate level students may not enroll.

CETE 4380 Applied Cryptosystems
Credits: 3 (3-0-0)
This course begins with an overview of necessary background in algebra and number theory, private- and public-key cryptosystems, applied cryptography, and basic signature schemes. The course will cover number theory and basic theory of Galois fields used in cryptography history of primality algorithms and the polynomial-time test of primality; discrete logarithm based cryptosystems including those based on elliptic curves interactive protocols, including the role of zero-knowledge proofs in authentication; construction of untraceable electronic cash on the net and quantum cryptography, and one or more of digital watermarking, fingerprinting, and steganography. TSI Restriction(s): Reading, Math, and Writing

Prerequisites: Grade of C or better in each of: MATH 1314, CSCI 1436 (or CSCI 1336 and 1136), CSCI 1437 (or CSCI 1337 and CSCI 1137), and CSCI 2436 (or CSCI 2336 and CSCI 2136) or CISA 3309 (or CISA 4309) and CSCI 3321 (or CISA 3321).

Restrictions: Graduate level students may not enroll.

CETE 4385 Cyber Security Architecture
Credits: 3 (3-0-0)
This course will cover subjects related to security designs and architecture. The course links to a new job role called: Security Architect. A security architect designs, builds, and oversees the implementation of network and computer security for an organization. The course will be built on NIST NICE cyber framework. TSI Restriction(s): Reading, Math, and Writing.

Prerequisites: Grade of C or better in each of: MATH 1314, CSCI 1436 (or CSCI 1336 and 1136), CSCI 1437 (or CSCI 1337 and CSCI 1137), and CSCI 2436 (or CSCI 2336 and CSCI 2136) or CISA 3309 (or CISA 4309) and CSCI 3321 (or CISA 3321).

Restrictions: Graduate level students may not enroll.

CETE 4390 Cyber-Physical Sys Security
Credits: 3 (3-0-0)
This course prepares students to securely design and operate physical systems with embedded software and firmware. Topics include, but are not limited to, the Internet of Things (IoT), industrial control systems, and ground, air and maritime vehicles. Cyber physical systems pose unique lie safety risks to system users and the public, while the rapidly expanding role of IoT is introducing new security and privacy risks to the public. Methods to assess and mitigate risk from cyber physical systems are examined. TSI Restriction(s): Reading, Math, and Writing

Prerequisites: Grade of C or better in each of: MATH 1314, CSCI 1436 (or CSCI 1336 and 1136), CSCI 1437 (or CSCI 1337 and CSCI 1137), and CSCI 2436 (or CSCI 2336 and CSCI 2136) or CISA 3309 (or CISA 4309) and CSCI 3321 (or CISA 3321).

Restrictions: Graduate level students may not enroll.

CETE 4392 Big Data Analytics & Security
Credits: 3 (3-0-0)
This course will introduce students to the concepts, principles, and application of big data analytics in the context of security. It will provide knowledge on big data analytics tools and platforms including MapReduce, Hadoop, and explore the applicability of big data analysis to identify security threats and to develop intelligent security solutions for securing software applications and business processes. TSI Restriction(s): Reading, Math, and Writing

Prerequisites: Grade of C or better in each of: MATH 1314, CSCI 1436 (or CSCI 1336 and 1136), CSCI 1437 (or CSCI 1337 and CSCI 1137), and CSCI 2436 (or CSCI 2336 and CSCI 2136) or CISA 3309 (or CISA 4309).

Restrictions: Graduate level students may not enroll.

CETE 4394 Cyber Intelligence
Credits: 3 (3-0-0)
This course will integrate knowledge from introductory security courses with knowledge from data science and analytics. Major subjects include: cyber operations and management, cyber defense and offense, malware analysis, and reverse engineering. This course will be built based on NIST NICE cyber framework. TSI Restriction(s): Reading, Math, and Writing

Prerequisites: Grade of C or better in each of: MATH 1314, CSCI 1436 (or CSCI 1136 and 1336), CSCI 1437 (or CSCI 1137 and 1337), and (CSCI 2436 (or CSCI 2336 and 2136) or CISA 3309 (or CISA 4309) and (CSCI 3321 or CISA 4321).

Restrictions: Graduate level students may not enroll.

CETE 4396 Internship Cyber Engineer Tech
Credits: 3 (0-0-3)
An off-campus learning experience allowing the acquisition and application of cyber engineering technology skills in an actual work setting. TSI Restriction(s): Reading, Math, and Writing

Prerequisites: Senior standing and department chair permission.

Restrictions: Enrollment limited to students with a semester level of Senior.Graduate level students may not enroll.

CETE 4481 Penetration Test Using Python
Credits: 4 (3-1-0)
This four credit course will introduce Python programming language for information and cyber security applications. Students will learn the necessary theoretical background in the lecture and will learn writing Python codes in the lab for different subjects including: socket communication, web security and testing, penetration testing, ethical hacking tools and applications, encryption, operating system communication, and APIs, etc. TSI Restriction(s): Reading, Math, and Writing

Prerequisites: Grade of C or better in each of: : MATH 1314, CSCI 1436 (or CSCI 1336 and 1136), CSCI 1437 (or CSCI 1337 and CSCI 1137), and CSCI 2436 (or CSCI 2336 and CSCI 2136) or CISA 3309 (or CISA 4309).

Restrictions: Graduate level students may not enroll.