CYBER SECURITY AND INFORMATION ASSURANCE (CSIA)

CSIA 150 - COMPUTER SCIENCE I
General problem solving and the algorithm development process. Simple data types, sequence, selection, repetition, functions, records, files, and one-dimensional arrays. Concepts of top-down program design, testing, functional decomposition, and documentation using good programming style. A computer use course; higher level language such as C++ or Java.
Credits: 4
Prerequisites: MATH 116 or MATH 121

CSIA 217 - INTRO TO PROB. & STATS
Credits: 3
Prerequisites: MATH 116 or MATH 121 or MATH 110 or Accuplacer College Math with min score of 41

CSIA 236 - PYTHON SCRIPT PROGRAMMING
Using the Python programming language to learn the best-practices of programming and script-writing in a security and utility conscious environment.
Credits: 3
Prerequisites: CST 150 or CSIA 150

CSIA 246 - DATA COMMUNICATIONS
Foundations of a data communication network architecture and the concepts of data representation in the data transmission process. Data communication methods and data services offered by common carriers. Data communication network management and design issues.
Credits: 3
Prerequisites: MATH 116 or MATH 121
Course Notes: or instructor consent.

CSIA 250 - COMPUTER SCIENCE II
Continuation of CSIA 150; development of problem solving using a high level language including abstract data types, multidimensioned arrays; strings; records and structures; function design, construction, and parameter passing methods; recursion; introduction to objects and classes; pointers: lists, stacks, queues, and trees; and file I/O. Multiple sorting and searching algorithms including concepts of program complexity. Extensive programming required. A computer use course.
Credits: 4
Prerequisites: CST 150 or CSIA 150
Course Notes: Math 245 recommended.

CSIA 255 - OPEN SOURCE COMMUNITIES
Exploration of the Open Source world, its history, and its contribution to current topics such as social justice, information freedom, equality and the nature of democracy. Discussion of the role it has played in recent events. Investigation of the politics of the open source world and their relationship to traditional geopolitics. In addition, this course will also seriously examine the practical side of open source and its economic impact on both businesses and households in the developed and developing worlds.
Credits: 3
Prerequisites: ENG 102

CSIA 261 - COMPUTER ORGANIZATION
Introduction to computer hardware structure using assembler language. Internal hardware and software structure of a CPU that is normally hidden from programmers using a high level language. Extensive programming in the assembler language of the CPU. A computer use course.
Credits: 3
Prerequisites: CST 150 or CSIA 150

CSIA 301 - COMPUTER NETWORKING
This is an introductory course on the design and analysis of computer networks. It covers Internet protocols, application layer protocols, routing, wireless communication, and basic network security problems.
Credits: 3
Prerequisites: CST 250 or CSIA 280 or CSIA 236 or CST 236

CSIA 317 - OPERATING SYSTEMS
An in-depth study of the components and functions of computer operating systems. Topics include system services, file system management, memory management, resource allocation, scheduling, processing levels, multitasking, deadlocks, and interprocess protection mechanisms. Programming projects involve use of system calls in UNIX and Windows. A computer use course.
Credits: 3
Prerequisites: CSIA 236 or CSIA 250

CSIA 318 - UNIX AND SYSTEM ADMINISTRATION
Programming on a UNIX-based computer system. How to use standard UNIX utilities such as ssh, scp, vi, awk, grep, sed, emacs, as well as script writing in Perl. How to use X Windows and UNIX GUI tools. UNIX programming environment with an overview of the UNIX process model. Basic UNIX administration including system tool and configuration files.
Credits: 3
Prerequisites: CSIA 150 or CST 150

CSIA 319 - CYBER OPS
The Cyber Ops certification prepares candidates to begin a career working with associate-level cybersecurity analysts within security operations centers. The Cyber Ops certification program provides practical, relevant, and job-ready certification curricula aligned closely with the specific tasks expected of these in-demand professionals. The Security Operations Center (SOC) Analyst increasingly must focus on design, configuration, and support responsibilities as the technical consultant and device specialist or expert on a security team. Therefore, the curriculum is specific to the best practices of network security administrators, engineers, and experts.
Credits: 3
Prerequisites: CST 100 or CST 101

CSIA 327 - SOFTWARE ENGINEERING
In depth examination of criteria for software quality and the types of development processes that support its creation. Best practices in software development are examined as well as case studies in software design and maintenance. Individual assignments and some group work as well.
Credits: 3
Prerequisites: CSIA 250 or CST 250

CSIA 333 - DATABASE SYSTEMS
Theory and practice of databases with emphasis on how to create, maintain, and query a database with SQL. Relational databases and relational algebra; queries and data manipulation in SQL, constraints, triggers, views, controlling security, data modeling, and normalization, recursive queries, indexing, XML, and other topics.
Credits: 3
Prerequisites: MATH 121 or MATH 122 or MATH 231

CSIA 335 - ETHICAL HACK & COUNTERMEASURES
This is a hands-on Cyber Security course that will prepare students for the Certified Ethical Hacker certification. The course is an introduction to ethical hacking tools and incident handling. Areas of instruction include various security tools and vulnerabilities of operating systems, software and networks used by different type of hackers to access unauthorized information. This course also addresses incident handling techniques used when information security is compromised.
Credits: 3
Prerequisites: (CST 150 or CSIA 150) and (MATH 116 or MATH 121)

CSIA 336 - PRACTICAL COMPUTING WITH DATA IN PYTHON
Focuses on using a simple programming language python to work with data when Excel, SPSS and similar tools are not adequate. When tables are too big or the desired result is difficult or impossible to express in terms of formulas, using python can be the quickest, easiest and most productive way to derive value from data in a scientific or enterprise setting. This course provides the skills and understanding required to succeed in these situations.
Credits: 3
Prerequisites: CSIA 236 or CST 236 or CSIA 250 or CST 250

CSIA 352 - NETWORK DESIGN
Communication system organization, and structure. Detailed examination of various communication protocols, routing mechanisms, and interfaces used in digital networks.
Credits: 3
Prerequisites: CSIA 301 or CST 301

CSIA 354 - INTRODUCTION TO PROGRAMMING
An introduction to the methods and procedures for the development of logical, well-structured computer programs using the Java programming language. The three logical constructs of sequence, selection, and iteration are emphasized. In addition, we'll focus on Object-oriented programming including abstract data types, inheritance, and polymorphism, fundamental data structures used throughout Computer Science, and algorithm analysis. Extensive programming required. A computer use course.
Credits: 3
Course Notes: Restricted to graduate student in bridge program as this covers requirements for 150/250.

CSIA 355 - APPLIED CRYPTOGRAPHY
Cryptography provides algorithms and protocols for secure communication over an insecure channel. These tools are also used in many other aspects of information security such as access control or digital signature. Cryptography plays a crucial role in a wide scope of real-world applications, from the classical military and national security applications to email and online banking. The course focuses on concepts and techniques underlying public-key cryptography. It also covers more advanced cryptographic tasks, for example, identification schemes.
Credits: 3
Prerequisites: CST 150 and MATH 245

CSIA 359 - INTRO TO COMPUTER SECURITY
This course provides an introduction to computer and network security. It covers the basic concepts in computer and network security. The course also provides examples of intrusions and corresponding defense. Some topics in security research will be covered.
Credits: 3
Prerequisites: CSIA 317 or CST 317 or CSIA 301 or CST 301

CSIA 368 - INTERNET SECURITY
Security issues pertaining to Internet, intranet, and the Web. Web security from the point of view of the user, programmer, and system administrator. HTTP authentication, proxy servers and firewalls; Internet security protocols and Secure Socket Layer; electronic payment systems; certificate management and network access layer security; executable content and scripting languages; mobile code and copyrights. Privacy protection; legal and ethical issues; anonymous browsing and censorship; available security tools.
Credits: 3
Prerequisites: CSIA 301 or CST 301

CSIA 389 - SP TOP.CYBER/INFO SECURITY
Special Technical Topics in Cyber/Information Security.
Credits: 3

CSIA 390 - SP TOP.CYBER/INFO SECURITY
Special Topics in Cyber Security and Information Assurance. Topics may vary.
Credits: 3

CSIA 394 - CYBER/INFO SECURITY INTERSHIP
Credits: 3
Course Notes: Consent of Cyber Security Center Director required.

CSIA 395 - INDEPENDENT STUDY
Students must obtain a cyber faculty sponsor; prepare a written proposal that includes course objectives, time table, and measurable evaluation criteria; and receive approval from both the faculty sponsor and director of the Cyber Security Center.
Credits: 1-3
Course Notes: Approval of Cyber faculty sponsor and Cyber Security Center Director required.

CSIA 399 - SENIOR PROJECT
Project to be undertaken at the end of the program of study. Students must obtain a cyber faculty sponsor; prepare a written proposal that includes course objectives, time tables, and measurable evaluation criteria; and receive approval from both the cyber faculty sponsor and Director of the Cyber Security Center. Approval of Cyber faculty sponsor and Cyber Security Center Director.
Credits: 3
Course Notes: Approval of Cyber faculty sponsor and Cyber Security Center Director.