

COMPUTER MAINTENANCE AND NETWORKING (CMNW)

CMNW 101, A+ CERTIFICATION PREPARATION I 4 (6)

A+ Certification Preparation I is designed to cover the exam objectives of the CompTIA A+ Core 1 Certification. Students will learn hardware and networking concepts, components, installation, and troubleshooting. Additionally, this course will introduce students to system security, virtualization concepts, and cloud models. Students will gain the ability to effectively communicate, maintain a safe working environment, and demonstrate their competency in IT hardware and network support. Additional topics will be covered to maintain alignment with the current A+ Core 1 objectives. Laboratory required. (A special fee will be assessed.)

General Education: GEO1, GEO2, GEO3, GEO4, GEO5, GEO6

Typically Offered: Summer, Fall and Spring Semesters

CMNW 120, CYBER-FOREN CYBER CRIME THE LAW 4 (6)

This course explores computer related crime in cyber space and covers digital forensics and data discovery methods, tools and techniques used by forensics professionals to discover, retrieve and document pertinent data. Ethical and criminal infractions in personal and work related situations are studied from a digital forensics perspective. Laboratory required. (A special fee will be assessed.)

General Education: GEO1, GEO2, GEO6

Typically Offered: Summer and Fall Semesters

CMNW 121, DATA COLLECTION ANALYSIS AND FORENSIC TOOLS 4 (6)

This course is an introduction to the science of computer forensics. Topics include how data is stored; where forensics data is located; how to recover data using commercial and open source utilities and hardware devices to conduct digital forensics data investigations; and computer forensics investigation in a virtual environment. Students will gain hands-on experience in the laboratory. Laboratory required. (A special fee will be assessed.)

General Education: GEO1, GEO2, GEO6

Typically Offered: Fall and Spring Semesters

CMNW 141, COMPUTER DIAGNOSTIC AND REPAIR 3 (5)

In Computer Diagnostics and Repair students will learn to design, troubleshoot, repair, and upgrade computers. Additionally, students will install, configure, and troubleshoot small office/home office networks. This course provides hands-on experience with computer hardware, software, and SOHO networking devices. Students will learn computer hardware compatibility, installation and diagnostic techniques as well as storage and backup management. Laboratory required. (A special fee will be assessed.) (CTAG, MTAG)

General Education: GEO1, GEO2, GEO3

Typically Offered: Fall and Spring Semesters

CMNW 145, NETWORK INSTALLATION & DIAGNOSTICS 4 (6)

Network Installation & Diagnostics prepares students to plan, design, install, configure, secure, and troubleshoot networks. Students will identify and analyze various network topologies, transmission media (cable and wireless standards), network protocols, and hardware devices. Students will understand and evaluate network installations, components, hardware and software requirements, and identify short- and long-term LAN requirements for various environments. Additional topics will be covered to maintain alignment with the current Network+ standards. Laboratory required. (A special fee will be assessed.)

General Education: GEO1, GEO2, GEO3

Typically Offered: Summer, Fall and Spring Semesters

CMNW 201, A+ CERTIFICATION PREPARATION II 4 (6)

A+ Certification Preparation II is designed to cover the exam objectives of the A+ Core 2 Certification. Students will learn to compare, install, manage, troubleshoot, and optimize current operating systems and software. Students will implement security measures and apply malware prevention techniques. Students will build upon the operational procedures learned in A+ Preparation I including documentation, safety, and communication. This course will also introduce basic change management, business continuity, and disaster recovery procedures. Additional topics will be covered to maintain alignment with the current A+ Core 2 objectives. Laboratory required. (A special fee will be assessed.) (CTAG, MTAG)

General Education: GEO1, GEO2, GEO3, GEO6, GEO8

Course Entry Requirement(s): Prerequisite: CMNW 101

Typically Offered: Summer, Fall and Spring Semesters

CMNW 221, PROGRAMMING IN C & C++ FOR ENGINEERING TECHNOLOGY APPLICATIONS 4 (6)

This course covers fundamental program structuring to provide optimized solutions for problems commonly found in engineering technologies. Laboratory required. (A special fee will be assessed.)

General Education: GEO1, GEO2

Course Entry Requirement(s): Prerequisite: MTHM 155 or MTHM 150 or instructor approval

Typically Offered: Summer, Fall and Spring Semesters

CMNW 223, NETWORK FORENSICS AND INVESTIGATIVE TECHNIQUES 4 (6)

This course covers topics of network and server forensics. Topics include the fundamentals of networks and server digital forensics, techniques for collecting, reconstructing and analyzing network packets, spoofing, port scanning, worms and other network vulnerabilities; identification of forensic data locations on a network; deployment of open-source network tools to collect and analyze network traffic; and development of per-incident network forensic collection plans, including the appropriate collection tools and their location on the network; data preservation and analysis. The course covers advanced topics in forensics such as cryptography, automatic intrusion detection, pattern matching and statistical techniques, and vulnerability scanning. Students will utilize case studies to test different scientific and investigative approaches. Classroom concepts will be applied in a laboratory setting where students will employ basic standard operating procedures. Laboratory required. (A special fee will be assessed.)

General Education: GEO1, GEO2

Course Entry Requirement(s): Prerequisite: CMNW 120 or CMNW 121

Typically Offered: Fall and Spring Semesters

CMNW 224, CELL PHONE AND MOBILE DEVICE FORENSICS 4 (6)

This course covers cell phone and mobile device seizure, isolation techniques, unlocking handsets, physical and logical data acquisition and examination, forensic SIM clone structure and evidence location, recovering deleted data, legal considerations and court reporting. Emphasis will be placed on determining the location, and forensic extraction of information bearing data for the most widely used chat apps such as Viber, Whatsapp, Tongo and others. The laboratory is based on multiple commercial and open-source digital forensic tools. Hands-on instruction covers the acquisition and analysis of current and emerging technologies to include GSM, CDMA and iDEN mobile phones to include Android, iOS and Windows platforms. (A special fee will be assessed.)

General Education: GEO1, GEO2, GEO4

Course Entry Requirement(s): Prerequisite: CMNW 121 or Instructor Approval

CMNW 230, DATA COMMUNICATIONS 5 (7)

The course content presents the basic principles and building blocks used in analog and digital electronics with emphasis on their application to communication systems. Topics covered include: Analog and digital electronic devices and applications, bandwidth considerations, the handshake process between computers and communication equipment, noise analysis, error detection and correction methods, communication protocols, delta and pulse modulation, digital signal encoding format, computer and network communication, frequency shift keying, fiber optic communication and wireless communications. Laboratory required. (A special fee will be assessed.)

General Education: GE01, GE02, GE04, GE06, GE07

Course Entry Requirement(s): Prerequisite: ELCT 121 or AETC 121

Typically Offered: Spring Semester

CMNW 241, ADVANCED COMPUTER AND NETWORK DIAGNOSTICS 5 (7)

This course covers advanced topics in computer and network diagnostics as well as virtualization and cloud configuration. It includes diagnostic techniques, processes, and optimization procedures systems and infrastructure. Students will configure, install, and troubleshoot on-premises and cloud servers to ensure proper communication and operation between them to establish a hybrid server environment. Students will also learn project planning and implementation strategies to be applied to the creation of a functioning and secure domain. Laboratory required. (A special fee will be assessed.)

General Education: GE01, GE02, GE04, GE05, GE06, GE07

Course Entry Requirement(s): Prerequisite: CMNW 141 and CMNW 145

Typically Offered: Fall and Spring Semesters

CMNW 246, INDUSTRIAL COMPUTER APPLICATIONS CAPSTONE 5 (7)

This capstone course integrates learning from the core courses in the Industrial Computing Applications Specialist major with the courses from the rest of the academic experience. IT requires the applications of that learning to design optimal solutions and to solve sector-specific technical problems related to the field of study in Computer Engineering Technology. Students are required to develop technical proposals, design, implement, and present in verbal and written form, instructor approved projects, which serve as instruments of evaluation. Laboratory required. (A special fee will be assessed.)

General Education: GE01, GE02, GE03, GE06, GE07

Course Entry Requirement(s): Concurrent: CMNW 220, Concurrent: CMNW 220

Typically Offered: Fall and Spring Semesters

CMNW 248, COMPUTER FORENSICS AND PROJECT MANAGEMENT CAPSTONE 6 (8)

Topics presented in this course prepare students to recover computer data as a result of computer damage or a security incident. Students will learn to use the tools required to recover data from computer systems that run both Windows and Linux operating systems. Laboratory required. (A special fee will be assessed.)

General Education: GE01, GE02, GE06

Course Entry Requirement(s): Prerequisite: CMNW 121

Typically Offered: Spring Semester

CMNW 287, WORK-BASED LEARNING I - CMNW 1-3 (1)

This course provides supervised work experience building on experience in Work-Based Learning with approved employer(s) in an area related to the student's program. Emphasis is placed on integrating classroom learning with work experience. Students will be able to evaluate career selection, demonstrate employability skills, and satisfactorily perform work-related competencies. Activities are coordinated and evaluated by college personnel.

General Education: GE01, GE02, GE06, GE08

Course Entry Requirement(s): Prerequisite: Minimum 2.0 GPA overall and division approval

Typically Offered: Offer as required

CMNW 288, WORK BASED LEARNING II - CMNW 1-3 (1)

Building on experiences from Work Based Learning I, this course provides supervised, paid work experience with approved employer(s) in an area related to the student's program. Emphasis is placed on integrating prior or concurrent classroom learning with work experience through career readiness competencies. Students will be able to evaluate career selection and satisfactorily demonstrate work-related competencies.

General Education: GE01, GE02, GE06, GE08

Course Entry Requirement(s): Prerequisite: CMNW 287

Typically Offered: Offer as required

CMNW 289, WORK BASED LEARNING III - CMNW 1-3 (1)

Building on experiences from Work Based Learning II, this course provides supervised, paid work experience with approved employer(s) in an area related to the student's program. Emphasis is placed on integrating prior or concurrent classroom learning with work experience through career readiness competencies. Students will be able to evaluate career selection and satisfactorily demonstrate work-related competencies.

General Education: GE01, GE02, GE06, GE08

Course Entry Requirement(s): Prerequisite: CMNW 288

Typically Offered: Offer as required

CMNW 299, INDIVIDUALIZED STUDIES IN COMPUTER MAINTENANCE AND NETWORKING 1-3 (1)

An in-depth study of areas in computer maintenance and networking presented by discussion and/or individual research and reading. Topics will vary. Repeatable up to six (6) times for a total of six (6) credit hours.

Course Entry Requirement(s): Prerequisite: Second-year standing and division approval

Typically Offered: Offer as required