COMPUTER MAINTENANCE AND NETWORKING (CMNW)

CMNW 101, A+ CERTIFICATION PREPARATION I 4 (6)
This course is the first of a two-course sequence designed to cover topics required for the A+ Certification standard examination. Students will learn computer terminology, basic safety guidelines, system components and architectures, portable systems specifications, software setup, and other topics as required by the most current A+ standards. Laboratory required. (A special fee will be assessed.)
General Education: IN1, IN2, IN5
Course Entry Requirement(s): None
Typically Offered: Summer, Fall and Spring Semesters

CMNW 111, INTRODUCTION TO COMPUTER HARDWARE 2 (2)
An introductory course designed to acquaint the student with the following topics: computer terminology, basic hardware building blocks, computer organization, I/O devices, computer classifications, role of software, examples of representative hardware available in the marketplace, and career opportunities. (A special fee will be assessed.)
General Education: IN1
Course Entry Requirement(s): None
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: IN1, IN2
Course Entry Requirement(s): None
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: IN1, IN2
Course Entry Requirement(s): None
Typically Offered: Fall and Spring Semesters

CMNW 141, COMPUTER DIAGNOSTIC AND REPAIR 3 (5)
The topics presented in this course cover diagnostics, repair and upgrade of computers and other commonly used peripheral devices. This course provides hands-on experience with computer hardware, software set-up and conflict resolution between devices and device drivers. Students will learn: computer architectures, processor specifications, memory types, memory installation, memory management, hard disk drive set-up, partitioning, installation of multiple types of drives, computer optimization techniques, input and output device evaluation and installation such as CD-ROM drives and tape drives, system resources such as interrupts, DMA channels and I/O port addresses. Laboratory required. (A special fee will be assessed.) (CTAG, MTAG)
General Education: IN1, IN2, IN5
Course Entry Requirement(s): None
Typically Offered: Fall and Spring Semesters

CMNW 145, NETWORK INSTALLATION/DIAGNOSTICS 4 (6)
Topics presented in this course prepare students to plan, design, install, configure, and troubleshoot a variety of commonly used local area networks. Students will identify and analyze various local area networking topologies, transmission media (cable standards), network protocols, and internet working devices. Students will develop criteria for network components, hardware and software requirements, procurement, comparison and evaluation, and identify short and long term LAN requirements for various environments. Laboratory required. (A special fee will be assessed.)
General Education: IN1, IN2
Course Entry Requirement(s): None
Typically Offered: Summer, Fall and Spring Semesters

CMNW 181, INDUSTRY SPECIFIC DIRECTED STUDIES 4 (6)
This course is designed to explore students to practical industrial computing applications. Students will conduct industry-specific projects and explore the work environment in their chosen industry sector.
General Education: IN1, IN2
Course Entry Requirement(s): Prerequisite: Divisional approval
Typically Offered: Fall and Spring Semesters

CMNW 201, A+ CERTIFICATION PREP II 4 (6)
This course is the second of a two-course sequence designed to cover topics required for the A+ Certification standard examination. Students will learn to compare, install, manage, troubleshoot and optimize current operating systems as required by the most current A+ Certification standards. Laboratory required. (A special fee will be assessed.) (CTAG, MTAG)
General Education: IN1
Course Entry Requirement(s): Prerequisite: CMNW 101
Typically Offered: Summer, Fall and Spring Semesters

CMNW 220, DATA COMMUNICATIONS 4 (6)
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: IN1, IN2
Course Entry Requirement(s): Prerequisite: ELCT 121
Typically Offered: Spring Semester

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: IN1, IN2
Course Entry Requirement(s): Prerequisite: MTHM 121 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: IN1, IN2
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: IN1, IN2, IN4
Course Entry Requirement(s): Prerequisite: CMNW 121 or Instructor Approval

CMNW 241, ADVANCED COMPUTER AND NETWORK DIAGNOSTICS 5 (7)
This course covers advanced topics in computer diagnostics. It includes software and hardware set up and diagnostics techniques and processes, as well as proper optimization upgrading procedures, and conflict resolutions for computers running current operating systems. Laboratory required. (A special fee will be assessed.)
General Education: IN1, IN2, IN3, IN4, IN5
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: IN1, IN2, IN5
Course Entry Requirement(s): Concurrent: CMNW 220, Concurrent: CMNW 220
Typically Offered: Fall and Spring Semesters

CMNW 247, COMPUTER FORENSICS AND DATA RECOVERY CAPSTONE 4 (6)
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: IN1
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, 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: IN1, IN2, IN3, IN4
Course Entry Requirement(s): A student must be pursuing a degree seeking program at LCCC; have completed 12 semester hours with a minimum of 6 semester hours in the discipline of placement; have a min GPA of 2.5 in the discipline and a 2.0 overall GPA; and have 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: IN1, IN2, IN3, IN4
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: IN1, IN2, IN3, IN4
Course Entry Requirement(s): Prerequisite: CMNW 288
Typically Offered: Offer as required

CMNW 299, INDIVIDUALIZED STUDIES IN COMPUTER MAINTENANCE AND NETWORKING 1-2 (1)
An in-depth study in areas of computer maintenance and networking presented by discussions and/or individual research and reading. Topics will vary. Repeatable up to a total of four (4) credit hours.
Course Entry Requirement(s): Prerequisite: Second-year standing and division approval
Typically Offered: Offer as required