Program Overview
The Computer Networking Technology program will prepare you to troubleshoot hardware and software problems in microcomputer systems and networks. This is accomplished through in-depth training in basic electronics, computer operating systems, programmable controller systems, and computer networks. A fourth-semester work-based learning course provides you with the opportunity to work with a local employer one day a week.

Special Features
This program is unique in the state.

Student Profile
As a Computer Networking Technology student, you should:
- See similarities or differences in color
- Use independent judgment
- Communicate ideas and information clearly and effectively
- Enjoy scientific and technical work
- Assume responsibility for the quality of your work
- Demonstrate physical ability with fine motor skills

Preparation for Admission
Knowledge in the following areas will help you prepare for this program:
- Energy
- Electronics
- Algebra
- Physics
- Principles of Technology
- English
- Speech
- Creative Writing
- Computers

Program Outcomes
Employers will expect you, as a Computer Networking Technology graduate, to be able to:
- Install, manage, and maintain workstation operating system software.
- Design and implement local area network from pulling and terminating network cable to managing network resources such as routers and switches.
- Apply knowledge of DC, AC, solid-state, and digital circuits to troubleshoot electronic equipment.
- Install, manage, and maintain network operating system software.
- Use hand tools to fabricate and repair electronics equipment and cable.
- Develop, test, and troubleshoot simple PLC and microcontroller interfaces.
- Use communication and human relation skills to be successful in the workplace.

Career Outlook
After graduating from the program, you will be ready to start your career as a:
- Computer Network Technician
- Computer Maintenance Technician
- Network Technician
- Computer Service Technician
- Field Service Technician
- Electronic Technician
- Electronic Instrument Repair Technician
- Microcomputer Sales and Service Technician
- Microcomputer System Installation Technician
- Network Administrator

Curriculum

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PROGRAM REQUIREMENTS 66

- This course requires a prerequisite and/or corequisite, and must be completed with a grade of "C-" or better.
- Appropriate placement score or Introduction to College Writing course required.
10631116 Workstation Management 1 - Credits: 3
This course is an introduction to workstation components and operating systems. Students learn how to assemble, configure, and troubleshoot workstation devices. Students also learn how the components of the workstations operate. Components include microprocessor, RAM, ROM, storage, I/O, media and data communication devices. Students also learn about data encoding and transmission. Students gain work experience by staffing the Computer Networking Technology Help Desk.

10631117 Workstation Management 2 - Credits: 3
This course is a continuation of Workstation Management 1. Students learn about how programs are executed and memory is organized. Operating system concepts such as processes, threads, virtual memory, and file system operations are covered. Students also learn how to perform basic operating system tasks such as adding users and groups. Management of users and groups with access control lists, policies, and profiles are also covered. Workstation security concepts are discussed. Students gain work experience by staffing the Computer Networking Technology Help Desk. PREREQUISITE: 10631116 Workstation Management 1.

10631119 Networking 1 (Cisco 1) - Credits: 2
An introduction to computer networking. Topics covered include the OSI network reference model, networking media and topology, networking devices (hubs, bridges, routers, and switches) and the TCP/IP network protocol. Laboratory practice emphasizes UTP and fiber optic cable termination and testing, and network design. PREREQUISITE: 10631116 Workstation Management 1.

10631123 Programmable Controllers 1 - Credits: 3
The study of microcontrollers and programmable logic controllers. Using the Intel 8052 microcontroller, students in this class will learn how the basic building blocks of a computer - the CPU, memory, and I/O - are interconnected to form a microcomputer system. Software programs in 8052 BASIC will also be developed. Microcontrollers will be contrasted with programmable logic controllers (PLCs) and students will learn to write and debug ladder logic programs for the Allen Bradley SLC500. PREREQUISITE: 10631123 Digital Electronics.

10631124 Programmable Controllers 2 - Credits: 3
A continuation of Programmable Controllers 1, this course covers the design, test, and software development using BASIC of 8052 microcontroller I/O devices such as keypads, displays, stepper motors, and analog sensors. PLCs (programmable logic controllers) are also covered. Using the Allen Bradley SLC500, students in this course will practice developing advanced ladder logic programs that include data manipulation instructions, math instructions, and sequencer and shift register instructions. PLC data acquisition systems are also covered. PREREQUISITE: 10631123 Programmable Controllers 1.

10631127 Work-Based Learning - Credits: 2
This course is designed to provide students with work experience in a computer or electronics-related technical setting. Students plan and participate in activities that address technical needs and develop their academic, program, and core ability skills. Students will log and journal experiences to reflect their learning and may develop a portfolio to document skill development. PREREQUISITE: Successful completion of the first three semesters of coursework in the Computer Networking Technology program and permission of the instructor.

10631128 Networking 2 (Cisco 2) - Credits: 3
Continued study of computer network technology. Emphasis is placed on learning the Cisco Internet Operating System including individual interface and routing configurations. Basic troubleshooting practices using ping, trace route, and various show commands are covered. Laboratory practice includes router configuration using Hyperterminal, using a FTP server, using Telnet, using a Web browser, and using ConfigMaker. All students will wire and configure a five-router network as a final project. PREREQUISITES: 10631117 Workstation Management 2 and 10631119 Networking 1 (Cisco 1).

10631129 Networking 3 (Cisco 3 & 4) - Credits: 4
Continued study of computer network technology. Emphasis is placed on network design including switches, VLANs, router configuration, routing (RIP, IGRP) and routed (IP, IPX, AppleTalk) protocols and access control lists. Also included are wide area network technologies (PPP, ISDN, frame relay). Laboratory practice includes physical construction, and software configuration and troubleshooting of multiple router networks with multiple WAN connections. PREREQUISITE: 10631128 Networking 2 (Cisco 2).

10631131 Network Operating Systems 1 - Credits: 2
This course is a continuation of Network Operating Systems 1. Students will create a heterogeneous network that includes multiple network operating systems. They will also access network resources from multiple workstation operating systems. PREREQUISITE: 10631131 Network Operating Systems 1.

10631133 DC Circuits - Credits: 4
The study of DC circuits including current, resistance, voltage, and power in series, parallel, and series-parallel circuits. Laboratory practice includes the use of analog and digital voltmeters, ammeters, and multimeters. Computer practice includes Electronics Workbench, a common circuit analysis software program used throughout the program. It is strongly recommended that students complete a Technical Math or equivalent course prior to enrolling in this course.

10631134 AC Circuits - Credits: 4
The study of AC circuits including frequency, period, and phase angles. Also, inductance, capacitance, time constants, and resonance. Laboratory practice includes the use of AC voltmeters and ammeters, the oscilloscope, and function generator. Computer practice includes Electronics Workbench, a common circuit analysis software program used throughout the program. PREREQUISITE: 10631133 DC Circuits.

10631135 Electronics Fabrication - Credits: 2
This course emphasizes electronics fabrication skills including point-point wiring, soldering and desoldering with stranded and solid wire, single- and double-sided printed circuit board soldering and desoldering, and the installation and test of common electronic connectors. In addition, common electrical schematic drawing standards are covered using OrCAD Capture. The design and fabrication of single-sided printed circuit boards is also presented using OrCAD Layout. PREREQUISITE: 10631135 DC Circuits.

10631136 Digital Electronics - Credits: 4
The study of digital electronic devices including logic gates, flip-flops, counters, shift registers, decoders, encoders, displays, programmable logic devices, and analog-to-digital, and digital-to-analog converters. Laboratory practice includes the use of solderless breadboards, and the oscilloscope and logic probe for testing and troubleshooting. Electronics Workbench is used for circuit simulation. PREREQUISITE: 10631136 DC Circuits.

10631137 Network Operating Systems 2 - Credits: 3
Installation, operation, and troubleshooting of one or more network operating systems. Students will install the network operating system(s). Students will create and manage directory objects including users, groups, and file systems. Students will install and manage network resources such as printers. Students will use login security, rights, and permissions to limit access to network resources. They will also use network utilities to manage workstations. PREREQUISITE: 10631136 DC Circuits.

10631138 Photovoltaic Systems - Credits: 3
The study of photovoltaic (PV) systems. Major topics include solar cells, modules and arrays, site surveys and assessment, batteries, charge controllers, inverters, system sizing, mechanical and electrical integration, utility interconnection, and system cost analysis.

10890105 Job Quest - Credits: 1
This course is designed to enhance the student's ability to seek, obtain, and retain employment. Assessment of personal characteristics, job-seeking and retention skills, preparation of employment-related documents, and interviewing strategies are included.