Catalog Course Description:

This course covers networking, network terminology and protocols, network standards, LANs, WANs, the layers of the OSI reference model, cabling, cabling tools, routers, router programming, topologies, and IP addressing. Particular emphasis is given to the use of techniques in the maintenance and use of networking software, tools and equipment.

Entry Level Standards:

The student MUST be familiar with the architecture and operations of standard PCs. The student must have math, writing, verbal, and English language skills at the college level. Helpful: A++ certification; Microsoft Office skills; introductory programming or multimedia courses; introductory electronics

Prerequisites:

CST 1110 or equivalent

Textbook(s) and Other Reference Materials Basic to the Course:

Online Multimedia

I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>PC Hardware &amp; Software; Journal; Networking; Layered Communications. The OSI Model; Encapsulation; Layer 1</td>
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<tr>
<td>2</td>
<td>Layer 2; Internetworking Devices. Devices; IP Addressing</td>
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<tr>
<td>3</td>
<td>IP Addressing</td>
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<tr>
<td>4</td>
<td>Lab Exam #1. ARP and RARP</td>
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<tr>
<td>5</td>
<td>Media and Design</td>
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<tr>
<td>6</td>
<td>Topology; Lab Exam #2</td>
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II. Course Objectives*:

A. Develop a working understanding of the terminology, hardware devices, and system software associated with computer networks. I, II, IV

B. Exhibit a knowledge of basic and advanced features of Cisco network equipment. II, III

C. Exhibit a knowledge of the Cisco operating system. I, II, III, V

D. Exhibit a knowledge of diagnosing and troubleshooting Cisco internetworking equipment. I, II, III, IV, V

E. Exhibit a knowledge of installing, configuring, and upgrading Cisco components and software. II, VI

F. Exhibit proficiency in written and oral communications about networks. I, VII

*Roman numerals after course objectives reference goals of the Business and Computer Technologies department.

III. Instructional Processes*:

Students will:

1. Use the Cisco operating system commands and utilities to perform practical tasks for internet working. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Information Literacy Outcome, Transitional Strategy, Active Learning Strategy

2. Solve problems by diagnosing and troubleshooting Cisco problems. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy

3. Solve problems encountered in the installation, configuration, and upgrading of Cisco components and system software. Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy

4. Participate in problem-solving teams. Communication Outcome, Problem Solving and
5. Handle and examine modern computing devices. *Technological Literacy Outcome, Personal Development Outcome, Transitional Strategy*

6. Prepare documents for management explaining network system problems and the need for new systems, upgrades, networks, etc. *Communication Outcome, Problem Solving and Decision Making Outcome, Technological Literacy Outcome, Transitional Strategy, Active Learning Strategy*

7. Practice elements of the work ethic such as punctuality, professionalism, dependability, cooperation, and contribution. *Personal Development Outcome*

*Strategies and outcomes listed after instructional processes reference Pellissippi State’s goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:

1. Master basic content: OSI model, internetworking devices, IP addressing, LAN media and topologies, structured cabling, electronics. A, B

2. Master lab skills: PC hardware & software, patch cables, installation of structured cabling; use of test equipment. E

3. Master documentation skills: maintaining engineering journal; cable management techniques. F

4. Master people skills: working in engineering teams, self and project management, oral exams, presentations. F

5. Master basic content: review of 1st semester concepts; routing theory; router components; router setup and startup; router configuration; IOS; TCP/IP; IP addressing; routing protocols. A, B, C

6. Master lab skills: router configuration; associated hardware and software tools and techniques. D, E

7. Master documentation skills: maintaining engineering journal; cable management techniques. E, F

8. Master people skills: working in engineering teams, self and project management, oral exams, presentations. F

9. Achieve awareness and access: basic technological literacy; awareness of IT careers; preparation for 2 and 4 yr. EE, CS, and IT programs; access to well-paying, learning-oriented jobs; ability to design, install, and maintain internet works. B, C

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures: 70% of grade

1. Skill Exams: pass/fail
Mastery of Skills: PC hardware & software; making of cables; structured wiring installations; building and troubleshooting simple LANS. Individual router configuration; configuring networks of routers; building and troubleshooting simple LANS
2. Two concept-based exams:
Exams  40% Online Exams
Final Exam  30% Comprehensive Written, Oral, and Lab Practical Exams
There will be no make-up tests unless prior arrangements are made with the instructor.

B. Laboratory Expectations:
Lab attendance is required. Assignments must be completed and submitted by the assigned deadline. This is a coordinated laboratory class, and assignments must be completed as scheduled.

C. Field Work:

N/A

D. Other Evaluation Methods: 30% of grade

Homework 10% practice problems and designs
Journal 10% document all laboratory and project work completely
Portfolio 10% Semester Online Portfolio; posting physical and logical topologies
Pop-Quizzes and "Outside-Class" take-home assignments may be given.

E. Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90 - 100%</td>
</tr>
<tr>
<td>B</td>
<td>80 - 89%</td>
</tr>
<tr>
<td>C</td>
<td>70 - 79%</td>
</tr>
<tr>
<td>D</td>
<td>69 - 70%</td>
</tr>
<tr>
<td>F</td>
<td>0 - 60%</td>
</tr>
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VI. Policies:

A. Attendance Policy:
Students are expected to promptly attend all lecture and lab classes as assigned. Late arrivals will be treated as absences. Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course.

B. Academic Dishonesty:
Plagiarism, cheating, software piracy, non-educational use of computer systems and other forms of academic dishonesty are strictly prohibited.