

CATALOG INFORMATION

Dept and Nbr: CS 80.15 Title: IT ESSENTIALS 1
Full Title: IT Essentials 1: PC Hardware and Software
Last Reviewed: 8/14/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	4.00	17.5	Lecture Scheduled	70.00
Minimum	4.00	Lab Scheduled	0	8	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 140.00

Total Student Learning Hours: 210.00

Title 5 Category: AA Degree Applicable
Grading: Grade or P/NP
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly: CIS 56.11

Catalog Description:
Helps prepares students for A+ certification exams. This introductory course covers the fundamentals of computer hardware and software as well as advanced concepts. Students will be able to describe the internal components of a computer, assemble a computer system, install an operating system, and troubleshoot using system tools and diagnostic software. Students will also be able to connect to the Internet and share resources in a network environment.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: Helps prepares students for A+ certification exams. This introductory course covers the fundamentals of computer hardware and software as well as advanced concepts. Students will be able to describe the internal components of a computer, assemble a computer system, install an operating system, and troubleshoot using system tools and diagnostic software.

Students will also be able to connect to the Internet and share resources in a network environment. (Grade or P/NP)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area	Effective:	Inactive:
CSU GE:	Transfer Area	Effective:	Inactive:

IGETC:	Transfer Area	Effective:	Inactive:
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CSU Transfer:	Transferable	Effective:	Spring 2009	Inactive:
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UC Transfer:	Effective:	Inactive:
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CID:

Certificate/Major Applicable:

Not Certificate/Major Applicable

COURSE CONTENT

Outcomes and Objectives:

Upon completion of the course, students will be able to:

1. Integrate the components of a personal computer.
2. Describe and implement procedures to protect themselves against accidents and injury, protect equipment from damage, and protect the environment from contamination.
3. Specify the purpose of computer preventive maintenance.
4. Coordinate the installation of an operating system and upgrade components based on customer needs.
5. Manage the removal and replacement of select components of a laptop and upgrade components based on customer needs.
6. Manage the removal and replacement of select components of a printer/scanner.
7. Design and install a simple computer network based on customer needs.
8. Project-manage computer preventive maintenance and advanced troubleshooting.
9. Demonstrate good communication skills and professional behavior while working with customers.
10. Coordinate security upgrades based on customer needs.

Topics and Scope:

Topics will include but not be limited to:

- I. Introduction to the Personal Computer
 - A. The Information Technology (IT) industry
 1. Identify the education and certifications required
 2. Describe the A+ certification
 3. Identify advanced careers

- B. Differences between PCs based on implementation needs
- C. Determine the type of computer based on customer needs
- II. Safe Lab Procedure and Tool Use
 - A. Safe working conditions and procedures
 - B. Identify tools and software used with PC components and their purpose
 - C. Proper tool use
- III. Computer Assembly Step by Step
- IV. Preventive Maintenance and Troubleshooting
 - A. Purpose of preventive maintenance
 - B. The elements of the troubleshooting process
- V. Operating Systems (OS)
 - A. The purpose, limitations, and compatibilities of operating systems
 - B. Determine operating system based on customer needs
 - C. Install an operating system
 - D. Navigate a Windows Graphical User Interface (GUI)
 - E. Identify and apply common preventive maintenance techniques for OS
 - F. Troubleshoot operating systems
- VI. Laptops and Portable Devices
 - A. Laptops and the various portable devices currently available
 - B. Identify the names, purposes, and characteristics of laptops
 - C. Compare and contrast desktop and laptop components
 - D. Explain how to configure laptops
 - E. Define the various mobile phone standards
 - F. Troubleshoot laptops and portable devices
- VII. Printers and Scanners
 - A. Describe the types of printers currently available
 - B. Describe the installation and configuration process for printers
 - C. Describe the types of scanners currently available
 - D. Describe the installation and configuration process for scanners
 - E. Identify and apply common preventive maintenance techniques for printers and scanners
 - F. Troubleshoot printers and scanners
- VIII. Networks
 - A. Explain the principles of networking
 - B. Describe types of networks
 - C. Describe basic networking concepts and technologies
 - D. Describe physical components of a network
 - E. Explain (Open Systems Interconnections) OSI and TCP/IP (transmission control protocol/Internet protocol) Data Models
 - F. Identify names, purposes, and characteristics of other technologies for establishing connectivity
 - 1. Describe telephone technologies
 - 2. Define Electronic Wireline
 - 3. Define Broadband
 - 4. Define Voice Over Internet Protocol (VoIP)
 - G. Identify and apply common preventive maintenance techniques for networks
- IX. Security
 - A. Why security is important
 - B. Security threats
 - 1. Viruses, worms, and Trojan horses
 - 2. Internet security
 - 3. Adware, spyware, and grayware
 - 4. Denial of service

- 5. SPAM and pop-ups
- 6. Social engineering
- C. Identify security procedures
- D. Identify common preventive maintenance techniques for security
- E. Troubleshoot security threats
- X. Communication Skills
 - A. The relationship between communications and troubleshooting
 - B. Good communication skills and professional behavior
 - C. Ethics and legal aspects of working with computer technology
- XI. Advanced Personal Computers Topics
 - A. Overview of field, remote, and bench technician jobs
 - B. Explain safe lab procedure and tool use
 - C. Describe situations requiring replacement of computer components
 - D. Upgrade and/or configure PC components and peripherals
 - E. Identify and apply common preventive maintenance techniques for PC components
- XII. Advanced Operating Systems Topics
 - A. Select the appropriate OS based on the customer's needs
 - B. Install, configure and optimize OS based on the customer's needs
 - C. Describe how to upgrade operating systems
 - D. Describe preventive maintenance procedures for operating systems
 - E. Troubleshoot operating systems
- XIII. Advanced Laptops and Portable Devices Topics
 - A. Describe wireless communication methods for laptops and portable devices
 - B. Describe repairs for laptops and portable devices
 - C. Select laptop components
 - D. Describe preventive maintenance procedures for laptops
 - E. Describe troubleshooting laptops
- XIV. Advanced Printers and Scanners Topics
 - A. Describe potential safety hazards and safety procedures associated with printers and scanners
 - B. Install and configure a printer/scanner locally
 - C. Describe how to share a printer/scanner on a network
 - D. Upgrade and configure printers and scanners
 - E. Describe preventive maintenance techniques used with printers and scanners
 - F. Describe troubleshooting printers and scanners
- XV. Advanced Networks Topics
 - A. Identify potential safety hazards and implement proper safety procedures associated with networks
 - 1. Explain fiber optics safety hazards
 - 2. Explain cable, cable cutter, and cable cuttings safety hazards
 - B. Design and implement a network based on the customer's needs
 - C. Upgrade the customer's network
 - D. Describe installation, configuration, and management of a simple mail server
 - E. Describe preventive maintenance procedures for networks
- XVI. Advanced Security Topics
 - A. Outline security requirements for customer's needs
 - B. Select security components based on customer's needs
 - 1. Describe and compare security techniques
 - 2. Describe and compare access control devices
 - 3. Describe and compare firewall types
 - C. Implement customer's security plan
 - D. Perform preventive maintenance on security risks

E. Troubleshoot security risks

Assignment:

Reading assignments may include:

1. Online research of best practices and current equipment
2. Approximately 40 pages weekly from the textbook

Homework problems may include

1. Hands-on exercises to demonstrate proficiency with each topic
2. Online quizzes

Other assignments may include:

1. Objective examinations and quizzes
2. Skill demonstration examinations
3. Classroom scenario based exercises

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.

Writing
0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, creation of network design diagrams and layouts

Problem solving
15 - 30%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Class performances, performance exams, computer and network device installation configuration

Skill Demonstrations
20 - 30%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Matching items, Completion, simulated equipment configuration

Exams
20 - 30%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation in scenario based exercises

Other Category
10 - 25%

Representative Textbooks and Materials:

IT Essentials: PC Hardware and Software Companion Guide (3rd) Anfinson, David and Quamme, Kenneth. Cisco Press: 2008