CIS 040: INFORMATION & COMMUNICATION TECHNOLOGY ESSENTIALS

Originator

gwilliams

Justification / Rationale

A. The course textbook was changed for two reasons:
1. The two-part CompTIA A+ industry certification exam has been updated and this textbook includes new and revised material to address those changes.
2. The new e-textbook includes online virtual computer labs which allow students to practice, explore and try different solutions using real Cisco hardware and virtualized Windows, Linux and UNIX operating systems.
B. Course Objectives modified to align with current CompTIA A+ 2-part certification examination.
C. SLO's modify to comply with required standards.
D. Methods of Instruction and Evaluation and Other Out-of-Class Assignments modified to align with these updates.

Effective Term

Fall 2020

Credit Status

Credit - Degree Applicable

Subject

CIS - Computer Information Systems

Course Number

040

Full Course Title

Information & Communication Technology Essentials

Short Title

IT ESSENTIALS

Discipline

Disciplines List
Computer Information Systems (Computer network installation, microcomputer technology, computer applications)

Modality

Face-to-Face
100% Online

Catalog Description

CompTIA certifications help students build a solid foundation of essential knowledge and skills that will help them earn employment in technology-related careers. The CompTIA A+ certification assures employers that their applicant is prepared to enter the workforce as an entry-level computer support technician. Computer support technicians provide technical assistance to computer users. They may answer questions or resolve computer problems for clients in person, or via telephone or electronically. They may provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems. Completion of this course prepares students for the CompTIA A+ Core 1 (220-1001) and Core 2 (220-1002) industry certification exams.

Schedule Description

Introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level ICT professionals.

Lecture Units

3

Lecture Semester Hours

54

Lab Units
1
Lab Semester Hours
54

In-class Hours
108

Out-of-class Hours
108

Total Course Units
4
Total Semester Hours
216

Required Text and Other Instructional Materials

Resource Type
Book
Open Educational Resource
No

Author
Jean Andrews, Joy Dark, Jill West

Title
CompTIA A+ Guide to IT Technical Support

Edition
Tenth

City
Boston

Publisher
Cengage Learning

Year
2019

College Level
Yes

Flesch-Kincaid Level
11

ISBN #
ISBN: 978-0-357-10829-1

Resource Type
Web/Other

Year
2019

Description
Online resources integrated with the e-textbook including online virtual computer labs which allow students to practice, explore and try different solutions using real Cisco hardware and virtualized Windows, Linux and UNIX operating systems.

Class Size Maximum
32

Course Content
1. PC hardware
   - Identification orientation and operation of system boards.
   - Identification orientation and operation of internal and external components.
   - Hardware installation and upgrades.
   - Modular concepts and applications.
   - Selecting replacement computer components, and configurations for specialized computer systems.
   - Computer assembly.
   - Preventive maintenance.
   - General guidelines for creating preventive maintenance programs.
2. Networking
   - Provides an overview of network principles, standards, and purposes.
   - Types of network topologies, protocols, and logical models, in addition to the hardware needed to create a network.
   - Network software, communication methods, and hardware relationships.
   - Configuration, troubleshooting, and preventive maintenance.
3. Laptops
   - Know how to configure, repair, and maintain these devices.
   - Service laptops and portable devices.
4. Printers
   - How printers operate, what to consider when purchasing a printer, and how to connect printers to an individual computer or to a network.
   - Web-based printing in Windows.
5. Operational procedures
   - Document, procedures and operational guidelines.
   - Disaster recovery management.
   - Infrastructure for an IT security policy.
6. Operating systems
   - Types of operating systems (Windows, MAC, Linux, Mobile).
   - Understanding and using the GUI interface.
   - Installing and configuring operating systems.
   - Installing and configuring applications and utilities.
   - Maintaining and troubleshooting operating systems.
7. Security
   - Security threats, adware, spyware, and phishing attacks.
   - Identify viruses, worms, and virus protection software.
   - TCP/IP attacks.
   - Social engineering attacks.
   - Security procedures and security policy requirements.
   - Data encryption, data backups, and biometrics.
   - How to troubleshoot security issues, and how to work with customers to ensure that the best possible protection is in place.
8. Mobile devices
   - Know how to configure, maintain, and repair various mobile devices.
   - The many features of mobile devices and their capabilities, including configuration, synchronization, and data backup.
   - Become familiar with as many different mobile devices as possible.
9. Troubleshooting
   - Steps for advanced troubleshooting computer components.
   - Troubleshooting operating systems.
   - Common problems and solutions for operating systems.
   - Troubleshooting process to networks.

- Troubleshooting process to laptops.
- Troubleshooting process to security.

10. The IT Professional
    - Relationship between communication skills and troubleshooting.
    - Working with customer.
    - Ethical and legal issues in the IT industry.
    - Call center technicians.
    - Apply a troubleshooting process to solve computer problems.

Lab Content

- Practice exams for CompTIA A+ certification examination Cores 220-1001 and 220-1002).
- Watch instructional videos.
- Complete performance-based questions and simulations.
- Apply concepts discussed in lecture. For example: assembling computers from components, configuring those components, troubleshooting case studies, and configuring user privileges.

Course Objectives

	Objectives
Objective 1	Demonstrate ability to install, configure, use common laptop hardware and components. (Mobile devices)
Objective 2	Demonstrate ability to install, configure, use basic mobile device connectivity & application support. (Mobile devices)
Objective 3	Demonstrate the use and proper application of networking devices, ports & protocols. (Networking)
Objective 4	Configure a basic wire / wireless SOHO network. (Networking)
Objective 5	Explain common network and internet configuration concepts, features and types. (Networking)
Objective 6	Use appropriate networking tools to setup and troubleshoot a simple network. (Networking)
Objective 7	Identify common connector types and explain basic cable types, features, purposes. (Hardware)
Objective 8	Select, install, and configure storage devices, motherboards, CPUs, RAM, add-on cards, and basic peripheral devices. (Hardware)
Objective 9	Explain cloud computing concepts and set up and configure client-side virtualization. (Virtualization)
Objective 10	Troubleshoot problems related to motherboards, RAM, CPUs, power supplies, hard drives, RAID arrays and various peripherals. (Hardware and network troubleshooting)
Objective 11	Troubleshoot common wired and wireless network problems. (Hardware and network troubleshooting)
Objective 12	Demonstrate knowledge of common operating system types and purposes and features of Microsoft Windows versions. (Operating systems)
Objective 13	Use appropriate Microsoft command line tools, operating system features and tools and Windows Control Panel utilities in given scenarios. (Operating systems)
Objective 14	Demonstrate ability to install and configure applications. (Operating systems)
Objective 15	Use features and tools of the Mac OS and Linux client/desktop operating system. (Operating systems)
Objective 16	Explain and summarize physical security measures, logical security concepts, wireless security protocols, authentication methods and social engineering and other security threats and vulnerabilities. (Security)
Objective 17	Implement security best practices on a workstation, mobile device, and SOHO wireless and wired networks. (Security)
Objective 18	Implement appropriate data destruction and disposal methods. (Security)
Objective 19	Troubleshoot and resolve MS Windows OS and application problems and PC security issues. (Software troubleshooting)
Objective 20	Troubleshoot mobile OS application and application security issues. (Software troubleshooting)
Objective 21	Demonstrate use of best practice procedures for removing malware. (Software troubleshooting)
Objective 22	Explain common safety procedures and environmental impacts and appropriate controls. (Operational procedures)
Objective 23	Explain implementation of basic change management best practices and basic disaster prevention and recovery. (Operational procedures)
Objective 24	Demonstrate the use of proper communication techniques and professionalism. (Operational procedures)
Objective 25	Identify the basics of scripting and use of remote access technologies. (Operational procedures)

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Identify issues across a broad range of computing skills, both in software and hardware.
Outcome 2	Implement solutions to common problems and issues raised by customers.
Outcome 3	Demonstrate professional customer service relating to the course technical skills.
Outcome 4	Prepare to take the CompTIA A+ Certification Exams, Core 1 (220-1001) & Core 2 (220-1002).

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Activity	Example: Disassemble and re-assemble a desktop computer in a working state using proper troubleshooting tools and procedures.
Technology-based instruction	Examples: Videos/films/slides/audio tapes to demonstrate LANs/ WANs.Utilize simulations and other IT tools.
Supplemental/External Activity	Examples: Guest lecturers to broaden student understanding that this is real world and not just classroom discussions.
Lecture	Example: Lecture introducing new hardware or software or proper troubleshooting concepts.
Laboratory	Examples: Work throughout the course using hands on and courseware virtual computing devices and software.
Individualized Study	Example: Individual conferences to assist and work through problems.
Demonstration, Repetition/Practice	Examples: Class lectures, discussions and demonstrations to introduce and reinforce software and hardware hardware features, configuration, operation and troubleshooting
Collaborative/Team	Examples: Pair and small group activities/discussion of the value of good troubleshoot techniques. Cooperative learning tasks where teams of students develop and demonstrate proper communication techniques and professionalism.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	Example: Written reports by students documenting and discussing their selection of motherboard, processor and RAM for a moderately-priced desktop computer.	In and Out of Class
Mid-term and final evaluations	Final evaluation of student's knowledge of all Domains and Objectives of the CompTIA A+ Certification Exams, Core 1 (220-1001) & Core 2 (220-1002).	In Class Only
Tests/Quizzes/Examinations	Example: Weekly quizzes designed to assess students' mastery of the materials covered in previous weeks.	In Class Only
Product/project development evaluation	Example: Oral reports / presentations / demonstration of proper troubleshooting methods.	In and Out of Class
Laboratory projects	Examples: Various projects throughout the course using hands on and online virtual computing devices and software. Approximately 125 labs on various topics and of varying complexity are used during the course	In and Out of Class

Assignments

Other In-class Assignments

1. Given a scenario, configure settings and use BIOS/UEFI tools on a PC.
2. Explain the importance of motherboard components, their purpose, and properties.

3. Compare and contrast various RAM types and their features.
4. Install and configure storage devices and use appropriate media.
5. Install various types of CPUs and apply the appropriate cooling methods.
6. Compare and contrast various PC connection interfaces, their characteristics and purpose.
7. Given a scenario, select the appropriate components for a custom PC configuration, to meet customer specifications or needs.
8. Compare and contrast types of display devices and their features.
9. Identify common PC connector types and associated cables.
10. Install and configure common peripheral devices.
11. Install SOHO multi-function device / printers and configure appropriate settings.
12. Compare and contrast differences between the various print technologies and the associated imaging process.
13. Given a scenario, perform appropriate printer maintenance.
14. Identify the various types of network cables and connectors.
15. Compare and contrast the characteristics of connectors and cabling.
16. Explain properties and characteristics of TCP/IP.
17. Explain common TCP and UDP ports, protocols, and their purpose.
18. Compare and contrast various WiFi networking standards and encryption types
19. Given a scenario, install and configure SOHO wireless/wired router and apply appropriate settings.
20. Compare and contrast Internet connection types, network types, and their features.
21. Compare and contrast network architecture devices, their functions, and features.
22. Given a scenario, use appropriate networking tools.
23. Install and configure laptop hardware and components.
24. Explain the function of components within the display of a laptop.
25. Explain the characteristics of various types of other mobile devices.
26. Compare and contrast accessories & ports of other mobile devices.
27. Given a scenario, troubleshoot common problems related to motherboards, RAM, CPU and power with appropriate tools.
28. Given a scenario, troubleshoot hard drives and RAID arrays with appropriate tools.
29. Given a scenario, troubleshoot common video, projector and display issues.
30. Given a scenario, use appropriate Microsoft operating system features and tools.
31. Given a scenario, use Control Panel utilities.
32. Given a scenario, install and configure Windows networking on a client/desktop.
33. Perform common preventive maintenance procedures using the appropriate Windows OS tools.
34. Identify common features and functionality of the Mac OS and Linux operating systems.
35. Given a scenario, setup and use client-side virtualization.
36. Identify basic cloud concepts.
37. Summarize the properties and purpose of services provided by networked hosts.
38. Identify basic features of mobile operating systems.
39. Install and configure basic mobile device network connectivity and email.
40. Summarize methods and data related to mobile device synchronization.
41. Identify common security threats and vulnerabilities.
42. Compare and contrast common prevention methods.
43. Compare and contrast differences of basic Windows OS security settings.
44. Given a scenario, deploy and enforce security best practices to secure a workstation.
45. Compare and contrast various methods for securing mobile devices.
46. Summarize the process of addressing prohibited content/activity, and explain privacy, licensing, and policy concepts.
47. Demonstrate proper communication techniques and professionalism.
48. Given a scenario, explain the troubleshooting theory.

Other Out-of-class Assignments

Students will be assigned case-based assignments involving reading, computer manuals, and general textbook reading regarding the various topics covered in the course.

For example: Students are given a scenario to research and come up with solutions like the one below:

'As a computer and networking consultant to small businesses, you are frequently asked to find solutions to increasing demands for network and Internet access at a business. One business rents offices in a historical building that has strict rules for wiring. They have come to you asking for a solution for providing Wi-Fi access to their guests in the lobby of the building. Research options for a solution and answer the following questions:

1. Print or save webpages showing two options for a Wi-Fi wireless access point that can mount on the wall or ceiling. For one option, select a device that can receive its power by PoE from the network cable run to the device. For the other option, select a device that requires an electrical cable to the device as well as a network cable.
2. Print or save two webpages for a splitter that can be mounted near the second wireless access point and that splits the power from data on the network cable. Make sure the power connectors for the splitter and the access point can work together.
3. To provide PoE from the electrical closet on the network cable to the wireless access point, print or save the webpage for an injector that injects power into a network cable. Make sure the voltage and wattage output for the injector are compatible with the needs of both wireless access points.
4. You estimate that the distance for network cabling from the switch to the wireless access point is about 200 feet (61 meters). What is the cost of 200 feet of PVC CAT-6a cabling? For 200 feet of plenum CAT-6a cabling?
5. Of the options you researched, which do you recommend? Using this option, what is the total cost of the Wi-Fi hotspot?'

Grade Methods

Letter Grade Only

Distance Education Checklist

Lab Courses

Instructional Materials and Resources

Effective Student/Faculty Contact

Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?

Within Course Management System:

Timely feedback and return of student work as specified in the syllabus
Discussion forums with substantive instructor participation
Chat room/instant messaging
Regular virtual office hours
Private messages
Online quizzes and examinations
Weekly announcements

External to Course Management System:

Direct e-mail
Posted audio/video (including YouTube, 3cmediasolutions, etc.)
Teleconferencing
Telephone contact/voicemail

Other Information

MIS Course Data

CIP Code

11.0101 - Computer and Information Sciences, General.

TOP Code

070100 - Information Technology, General

SAM Code

C - Clearly Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status
Credit Course

Approved Special Class
Not special class

Noncredit Category
Not Applicable, Credit Course

Funding Agency Category
Not Applicable

Program Status
Program Applicable

Transfer Status
Transferable to CSU only

General Education Status
Not applicable

Support Course Status
Course is not a support course

Allow Audit
No

Repeatability
No

Materials Fee
No

Additional Fees?
No

Approvals

Curriculum Committee Approval Date
11/05/2019

Academic Senate Approval Date
11/14/2019

Board of Trustees Approval Date
12/19/2019

Chancellor's Office Approval Date
6/08/2020

Course Control Number
CCC000579564

Programs referencing this course
Liberal Arts: Business and Technology AA Degree (http://catalog.collegeofthedesert.eduundefined?key=27/)
Information Technology Technician (http://catalog.collegeofthedesert.eduundefined?key=316/)
Computer Information Systems Associate of Science (http://catalog.collegeofthedesert.eduundefined?key=323/)