CHT A290: SMALL OFFICE / HOME OFFICE: CASE STUDY I

Item	Value
Curriculum Committee Approval Date	11/03/2021
Top Code	070800 - Computer Infrastructure and Support
Units	3 Total Units
Hours	72 Total Hours (Lecture Hours 45; Lab Hours 27)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S), • Pass/No Pass (B)

Course Description

Challenges students to apply network concepts learned in previous courses to a case-study based problem in Small Office / Home Office environments. Includes various responsibilities and tasks required for a service engineer to design and execute a successful implementation. Prepares individuals for careers as a Network Engineer in the IT industry. ADVISORY: CHT A191, CIS A191, IT A191, CHT A161, CIS A261, IT A261, CHT A263, CIS A263 or IT A263. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Develop an implementation plan including a hardware and software cost analysis and protocol requirements applicable to the case study.
2. Develop required documentation for suggested solutions and present solutions through a formal presentation.
3. Build and configure a prototype environment demonstrating the implementation plan.

Course Objectives

- 1. Demonstrate leadership skills and team management.
- 2. Identify and document components of individual and team assignments
- 3. Define problem solving techniques required for this project.
- 4. Identify and specify network hardware, software, and protocols necessary to meet the requirements applicable to the case study.
- 5. Produce a “green Chart” labeling hardware power consumption.
- 6. Research for compatible hardware item by item having a better “green” factor producing a chart comparing their watts, amps and voltage requirements to actual equipment used.
- 7. Establish documentation; create documents representing personnel as well as technical requirements.
- 8. Demonstrate presentation skills; present the project solution to peers and to the community business partners.
- 9. Demonstrate technical finesse capitalizing on vendor interoperability.
- 10. Develop a thorough testing system to validate the functionality of each of the network components as well as their connectivity to all other planned components within the individual home-office connecting through the enterprise network.
- 11. Develop trouble shooting documentation for the help desk staff.

Lecture Content

As a case-study based class, the course content and scope is less structured in a more process directed. The scope of the course is as follows: The instructor will present the class with a networking issue needing resolution. The instructor will frame the case study issue and describe the format of the class in a problem-based learning experience. The instructor will initially lead the class to establish student ownership and then change his/her role from teacher/instructor to facilitator. Ownership of the class will allow students to define: Expanding and modifying the initial case study issue. Establishing their own fair assessment criteria for grading each student in the project. A weekly progress reporting mechanism. Formation of and management of teams. Completion and execute a formal project presentation including availability of their professional documentation. The content and topics are as follows: Produce an overall approved implementation plan using Project Management software. Establish requirements for your own/team home environment. Configure a WAN Area 0 backbone (representing the Internet) using Juniper routers. Configure Cisco 2800 routers representing ISPs. Configure a home network with 802.11 access points, IP phones, analog phones, laptop and desktop computers. Configure a PSTN back-up network. Establish various security measures with appropriate access-lists. Establish DHCP within each home and at the HQ site. Wireless and/or wired computer based teleconferencing. IP desktop phones attached computer for teleconferencing. Desktop computers: with RD insulated from the rest of the network. Call any (IP or analog) phone from any other phone on the entire network. Wireless computers can communicate with all other SOHO wireless computers on the network including the teleconferencing computers. Provide a server at HQs for all home offices to share applications. Develop a carefully planned testing procedure to thoroughly test each component and its associated counterparts.

Lab Content

Implement Small Network Infrastructure Install and Configure Router Install and Configure Wireless Networking Configure VPN access Install and Configure Windows Install and Configure security systems F ull SOHO IT design and implementation project Multi-month project: Analysis, design and implementation of all IT components to bring the “new business” live. This is a group project that is a combination of ALL projects individually performed over the course of the entire program.

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

Lecture and application of ideas Students will be presented material from several different sources, including, but not limited to study guides, “Web-based” curriculum, in-class demonstrations of systems integration and personal experiences of industry professionals.Individual and paired exercises During the lab portion of the class, students will be

required to perform many of the tasks of a network administrator. In order to complete several projects, students will need to work together in teams to build working local area networks.Interactive computer-based assignments Using computer and “Web-based” training tools, students will be working on simulated networks in order to solve problems.

Reading Assignments

Minimum of 3 hours per week (45 hours) reading from textbook material.

Writing Assignments

Program and configure a set of routers to create a simulated Wide Area Network (WAN) infrastructure.Given a minimum set of requirements, the student will design a recommended solution accommodating routing technologies using some combination of hardware and software. After the solution is designed, the student will create a presentation describing the results. Minimum of 3 hours per week creating and editing class and software projects.

Out-of-class Assignments

45 hours (3hrs/wk). Student performance on quizzes, tests, including short essays, and laboratory assignments will be used to determine proficiency

Demonstration of Critical Thinking

Reading and writing assignments Web-based research Term or other paper(s) Laboratory reports Problem solving demonstrations Exams Homework problems Skill demonstrations Performance exams Case study presentations Objective examinations, including Multiple-choice True/false Completion

Required Writing, Problem Solving, Skills Demonstration

Program and configure a set of routers to create a simulated Wide Area Network (WAN) infrastructure. Given a minimum set of requirements, the student will design a recommended solution accommodating routing technologies using some combination of hardware and software. After the solution is designed, the student will create a presentation describing the results.

Eligible Disciplines

Computer information systems (computer network installation, microcomputer ...: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience. Computer service technology: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Other Resources

1. Instructor provided materials