

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

COMPUTER AND INFORMATION SCIENCE 261 – NSSA DEGREE CAPSTONE

1 hour lecture, 3 hours laboratory, 2 units

Catalog Description

This Networking, Security and System Administration (NSSA) course allows students to verify skills and knowledge obtained in previous computer, networking, security, and telecommunications classes. Students will design, build, test, operate and maintain end-to-end converging and unified information and communication networks during the capstone's "hands-on" lab.

Prerequisite

Completion of 30+ units with a "C" grade or higher or "Pass" from the following courses: CIS 120, 121, 125, 140, 190, 191, 201, 202, 203, 204, 209, 210, 262, 263, 290, 291, 293, 294, 295, CS 119, 119L or equivalent

Entrance Skills

Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:

- 1) Ability to design, build and test simple copper, optical fiber and wireless telecommunication channels.
- 2) Ability to install and configure the following networking devices: hubs, repeaters, switches, bridges, routers, wireless access points.
- 3) Ability to use the OSI model to design a LANs/WANs.
- 4) Ability to configure TCP/IP network protocols.
- 5) Ability to install, configure and manage Windows/Linux client and server computers.

Course Content

- 1) Project Analysis
 - a. Working with clients
 - b. Developing specifications
 - c. Clarifying expectations
 - d. Selecting appropriate technologies
 - e. Developing a schedule
 - f. Working on teams
- 2) Project Design
 - a. In a team environment, develop a feasible design that meets all design standards
- 3) Implementation
 - a. Implement developed design
- 4) Evaluation
 - a. Test implemented design for end to end connectivity
 - b. Verify system meets design specifications
 - c. Analytics
- 5) Advanced topics as needed

Course Objectives

- 1) Work with a client to develop project specifications and implementation schedule
- 2) Select technological approaches that fit project requirements
- 3) Design a computer network to meet the project requirements
- 4) Implement the project design
- 5) Test end to end connectivity of the implemented design
- 6) Document the design, implementation and testing

- 7) Apply best practices to develop a network that is secure, usable, meets the client's requirements

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Exercises and labs that assess students' ability to identify typical telecommunications and convergent networking problems and address those problems with practical solutions such as troubleshooting voice, data, video and wireless networks.
- 2) Instructor critique that requires students to verbalize and apply feedback to improve their work based on criteria specified by the instructor.

Special Materials Required of Student

Computer networking equipment, cabling and software pertinent to the project requirements

Minimum Instructional Facilities

- 1) Laboratory with network computers connected to internetworking devices
- 2) Data communication software
- 3) Smart classroom
- 4) Audiovisual equipment

Method of Instruction

- 1) Lecture and demonstration
- 2) Hands-on lab exercises

Out-of-Class Assignments

- 1) Reading assignments
- 2) Practical application project design and implementation
- 3) Topical discussions on pertinent industry case studies and current events

Texts and References

- 1) Required: None
- 2) Supplemental: None

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Design, build, implement and test a computer network encompassing some or all of the following: client computers, servers, routers, switches, wireless access points, security, voice over Internet protocol (VoIP), and other technologies defined in the project requirements.