

**PALOMAR COLLEGE**  
**COURSE OUTLINE OF RECORD FOR**  
**DEGREE CREDIT COURSE**

  X   Transfer Course     X   A.A. Degree applicable course  
(check all that apply)

**COURSE NUMBER AND TITLE:** CSIS 133      Cisco Wide Area Network Design and Support

**UNIT VALUE:** 2

**MINIMUM NUMBER OF SEMESTER HOURS:** 70

**BASIC SKILLS REQUIREMENTS:** Appropriate language and computational skills.

**ENTRANCE REQUIREMENTS**

**PREREQUISITE:** CSIS 132: Cisco Advanced Routing and Switching

**COREQUISITE:** none

**RECOMMENDED PREPARATION:** none

**SCOPE OF COURSE:**

Development of knowledge and skills to design and configure advanced Wide Area Network (WAN) projects using Cisco IOS command set. This 70 hour course of instruction prepares the student for the Cisco certification examination.

**SPECIFIC COURSE OBJECTIVES:**

The successful student will be able to:

1. Describe serial communication on WANs, connection types, and encapsulation types.
1. Design, build, and document WAN technology.
2. Demonstrate implementation of point-to-point protocol (PPP)
3. Demonstrate implementation of integrated system digital network (ISDN).
4. Demonstrate implementation of frame relay.
5. Compare and contrast benefits of each protocol.
6. Design and test an advanced WAN project.

**CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:**

- I. Wide Area Network (WAN)
  - A. Serial communication
  - B. Connection types
    - 1. Dedicated
    - 2. Dial-on-demand
    - 3. Packet-switched
    - 4. Circuit-switched
  - C. Encapsulation types
    - 1. Point-to-Point Protocol (PPP)
    - 2. High level data link control (HDLC)
  
- II. WAN Design
  - A. Hierarchical design model
    - 1. Three layers
    - 2. Benefits
    - 3. Performance
  - B. Placement
    - 1. Integrated Services Digital Network (ISDN)
    - 2. Frame relay
  
- III. PPP (Point-to-Point Protocol)
  - A. Communication
    - 1. Components
    - 2. Connection
    - 3. Negotiation process
  - B. Frames
    - 1. Link Control Protocol (LCP)
    - 2. Network Control Protocol (NCP)
  
- IV. ISDN (Integrated Services Digital Network)
  - A. Components
  - B. Services
  - C. Standards
  - D. Configuration
  
- V. Frame Relay
  - A. Devices
  - B. Connections
    - 1. Virtual circuits
    - 2. Terms
  - C. Functions
  - D. Operations
  - E. Configuration
    - 1. Interfaces
    - 2. Commands

**REQUIRED READING:**

Amato, Vito. Cisco Networking Academy Program: 2<sup>nd</sup> Year Companion Guide. Second Edition. Boston: Cisco Press, 2001.

**SUGGESTED READING:**

None

**REQUIRED WRITING:**

Students are regularly required to do problem solving exercises that demonstrate that they have acquired the skills taught in the exercise. The skills demonstrated in these exercises include the ability to describe serial communication on WAN's, to demonstrate implementation of point-to-point protocol and to design an advanced WAN project. The students are required to complete a minimum of one page of writing per homework assignment.

**OUTSIDE ASSIGNMENTS:**

**Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.**

There are written homework exercises within each section of each chapter that are assigned, requiring an average of one hour to complete. In addition, numerous computer lab exercises are assigned, each ranging from one to ten hours to complete by the average student.

**INSTRUCTIONAL METHODOLOGY:****Check all that apply:**

- lecture
- laboratory
- lecture-laboratory combination
- directed study

**DISTANCE LEARNING:**

**This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.**

Yes  No

**If yes, check all that apply:**

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

**GRADING POLICY AND STANDARDS** (include methods of determining whether the stated objectives have been met by students): The student's grade for this course will consist of lab projects, online tests, an online final, the completion of an engineering journal, completion of the required lab manual exercises, and class participation. Grades will be calculated on the basis of points earned by the student. An example of how points will be earned in this class follows:

Online Tests	100 points
Final Exam	50 points
Engineering Journal	100 points
Lab Manual	100 points
Participation	50 points
	400 points total

**IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?**

Yes \_\_\_ No X Number of times course may be taken for credit: 1

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

**CONTACT PERSON:** Anthony Smith, x2630

**SIGNATURES ON FILE**