

I. COURSE DESCRIPTION:

This course continues the preparation for certification in the Cisco Certified Networking Associate (CCNA) program. The student will study advanced TCP/IP topics, router configuration and routed/switched network design. The student will also complete a case study that applies topics learned in this course to real network design requirements.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course the student will demonstrate the ability to:

1. Utilize Classless IP Addressing and routing to improve addressing efficiency.

Potential Elements of the Performance:

- Define Variable Length Subnet Mask (VLSM) and briefly describe the reasons for its use
- Divide a major network into subnets of different sizes using VLSM
- Define route aggregation and summarization as they relate to VLSM
- Configure a router using VLSM
- Identify the key features of RIP v1 and RIP v2
- Identify the important differences between RIP v1 and RIP v2
- Configure RIP v2
- Verify and troubleshoot RIP v2 operation

This learning outcome will constitute approximately 25% of the course.
Reference: Cisco Online Curriculum, Module 1

2. Utilize the OSPF routing protocol as an alternative to RIP.

Potential Elements of the Performance:

- Identify the key features of link-state routing and explain how link-state routing information is maintained
- Examine the advantages and disadvantages of link-state routing
- Describe key OSPF terms
- Identify the basics steps in the operation of OSPF
- Enable and configure OSPF on a router
- Describe the OSPF network types
- Describe the OSPF Hello protocol

This learning outcome will constitute approximately 20% of the course.
Reference: Cisco Online Curriculum, Module 2

3. Utilize the EIGRP routing protocol as an alternative to IGRP.

Potential Elements of the Performance:

- Describe the differences between EIGRP and IGRP
- Describe the key concepts, technologies, and data structures of EIGRP
- Understand EIGRP convergence and the basic operation of the Diffusing Update Algorithm (DUAL)
- Perform a basic EIGRP configuration
- Configure EIGRP route summarization
- Describe the processes used by EIGRP to build and maintain routing tables
- Verify EIGRP operations

This learning outcome will constitute approximately 20% of the course.
Reference: Cisco Online Curriculum, Module 3

4. Recognize potential network congestion problems and overcome these problems through network segmentation.

Potential Elements of the Performance:

- Describe the advantages of LAN segmentation.
- Describe LAN segmentation using bridges, routers and switches.
- Describe how switches can be used to implement VLANs
- Describe the benefits of VLANs
- Implement VLANs using Cisco Catalyst switches.
- Name and describe two switching methods.
- Describe the operation of the Spanning Tree Protocol and its benefits.

This learning outcome will constitute approximately 25% of the course.
Reference: Cisco Online Curriculum, Modules 4-9

5. Design a network and produce documentation relating to topics covered in CCNA 3 in a “Case Study” situation.

Potential Elements of the Performance:

- Use the resources provided (diagram and narrative) to set up the physical network
- Set up an IP subnetting scheme using VLSM
- Configure the routers as required
- Set up and configure the switches and VLANs as required
- Verify and troubleshoot all connections
- Provide detailed documentation in the appropriate format
- Provide a written final report

This learning outcome will constitute approximately 10% of the course.
Reference: Cisco Online Curriculum, Module CS

III. TOPICS TO BE COVERED:

1. Classless Addressing
2. OSPF
3. EIGRP
4. Switches and VLANs
5. VLSM and VLANS in a Case Study

IV. REQUIRED STUDENT RESOURCES/TEXTS:

NONE.

Optional Textbook: Cisco Networking academy Program CCNA3 and 4 Companion Guide” Third Edition, Cisco Press ISBN 1-58713-113-7

V. EVALUATION PROCESS/GRADING SYSTEM:

Online Cisco Chapter exams	30%
Final Cisco Exam	25%
Practical Test	15%
Lab Activities	15%
Case Study	15%

(The percentages shown above may vary slightly if circumstances warrant.)

NOTE: It is necessary to pass both the theory and the lab part of this course. It is also necessary to achieve a grade of 60% on the final Cisco exam in order to proceed to the next Cisco Certification course.

The following semester grades will be assigned to students in postsecondary courses:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00

D	50 – 59%	1.00
F (Fail)	49% and below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 2493 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.