

# CIST 2451 - Cisco Network Fundamentals ( version 201003L )

## Course Title                      Course Development      Learning Support

Cisco Network Fundamentals Standard                      No

### Course Description

This course provides students with classroom and laboratory experience in current and emerging network technology. Topics include basics of communication, converged networks, OSI and TCP/IP network models, Application layer protocols, services, and applications, Transport layer protocols and services, Network layer addressing and routing concepts, IPv4 and IPv6, calculating IPv4 subnets, Data Link layer and the encapsulation process, Physical layer components and data encoding, Ethernet and network protocol analysis, network cabling, and basic network configuration.

### Pre-requisites

Pre-requisites: All Required

Program Admission
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### Co-requisites

Co-requisites: None

### Course Length

	Minutes	Contact Hour	Semester Credit	WLU
<b>Lecture:</b>	<b>1500</b>	<b>30</b>		
<b>Lab 2:</b>	<b>3000</b>	<b>60</b>		
<b>Lab 3:</b>	<b>0</b>	<b>0</b>		
<b>Total:</b>	<b>4500</b>	<b>90</b>	<b>4</b>	
<b>Semester Credit Hours:</b>			<b>4</b>	<b>142.5</b>
<b>Breakout Detail of Lab 3</b>				
<b>Practicum/Internship</b>	<b>0</b>	<b>0</b>		
<b>Clinical</b>	<b>0</b>	<b>0</b>		

### Competencies & Outcomes

Order	Description	Lecture	Lab 2	Lab 3	Total Min	Credit Hrs	Pract Intern	Clinical
1	<b>Network Basics</b>	208	500	0	708	1	0	0
Order	Description						Learning Domain	Level of Learning
1	Identify the key components of a data network.						Cognitive	Knowledge
2	Describe the characteristics of network architectures: fault tolerance, scalability, quality of service and security.						Cognitive	Comprehension
3	Describe and compare OSI and TCP/IP network models.						Cognitive	Comprehension
4	Explain network addressing.						Cognitive	Knowledge
5	Understand the encapsulation process.						Cognitive	Comprehension
2	<b>Application Layer Protocols, Services, and Applications</b>	158	250	0	408	0	0	0

Order	Description	Learning Domain	Level of Learning
1	Describe peer-to-peer and client/server networking and applications.	Cognitive	Comprehension
2	Describe how the functions of the three upper OSI model layers provide network services to end user applications.	Cognitive	Comprehension
3	Describe the function of well-known TCP/IP applications.	Cognitive	Comprehension

3 **Transport Layer Protocols and Services** 158 250 0 408 0 0 0

Order	Description	Learning Domain	Level of Learning
1	Discuss how Transport layer services maintain multiple communication streams between applications.	Cognitive	Comprehension
2	Describe segmentation and reassembly.	Cognitive	Comprehension
3	Describe how the Transport layer provides reliability.	Cognitive	Comprehension
4	Explain the role of the two TCP/IP Transport layer protocols: TCP and UDP.	Cognitive	Knowledge

4 **Network Layer Addressing and Routing Concepts** 333 750 0 1083 1 0 0

Order	Description	Learning Domain	Level of Learning
1	Describe Network Layer protocols.	Cognitive	Comprehension
2	Explain subnets and broadcast domains.	Cognitive	Knowledge
3	Identify Network Layer devices.	Cognitive	Knowledge
4	Explain the routing process.	Cognitive	Knowledge
5	Explain IPv4 and IPv6 addressing.	Cognitive	Knowledge
6	Calculate IPv4 address subnetting.	Cognitive	Application

5 **Ethernet and Media Access Control** 333 750 0 1083 1 0 0

Order	Description	Learning Domain	Level of Learning
1	Describe the different types of media access control methods.	Cognitive	Comprehension
2	Explain Ethernet media access control.	Cognitive	Knowledge
3	Describe ARP (Address Resolution Protocol).	Cognitive	Comprehension

6 **Network Cabling** 158 250 0 408 0 0 0

Order	Description	Learning Domain	Level of Learning
1	Identify intranetwork devices.	Cognitive	Knowledge
2	Identify types of network media.	Cognitive	Knowledge

3 Construct making LAN connections.

Psychomotor Complex Response

7 **Basic Network Configuration** 152 250 0 402 0 0 0

Order	Description	Learning Domain	Level of Learning
1	Explain the Cisco IOS.	Cognitive	Knowledge
2	Define the purpose of the configuration file.	Cognitive	Knowledge
3	Identify IOS modes of operation.	Cognitive	Knowledge
4	Identify basic IOS commands.	Cognitive	Knowledge
5	Produce basic Cisco device configuration.	Cognitive	Application

<b>Competency Totals:</b>	<b>Lecture</b> 1500	<b>Lab 2</b> 3000	<b>Lab 3</b> 0	<b>Total Min</b> 4500	<b>Cred Hrs</b> 4	<b>Pract Intern</b> 0	<b>Clinical</b> 0
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