School of Computing and Information Sciences

Course Title: Advanced Applied Computer Networking   **Date:** 11/04/05

Course Number: CGS 4990

Number of Credits: 3

Subject Area: Networking	Subject Area Coordinator: Nagarajan Prabakar
	email: prabu@cs.fiu.edu
Catalog Description: Advanced principles of modern internetworking network design and implementation. Hands on experience with routers and ethernet and core internet protocols.	

Textbook: Networking with TCP/IP
            Douglas Comer
            ISBN 013-187671-6	

References:	
Prerequisites Courses: CGS 4283 or equivalent	
Corequisites Courses: None	

Type: Elective

Prerequisites Topics:

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Course Outcomes:

1. Master TCP/IP version 4 addressing and network design
2. Master modern network infrastructure support systems (DNS, DHCP, NTP, syslog)
3. Master network issue debugging techniques with tools such as Ethereal and tcpdump
4. Master installation and configuration of multiple vendors routing equipment
5. Be familiar with modern ethernet systems, including spanning tree and 802.1q VLANS
6. Be familiar with modern routing protocols (BGP, OSPF)
7. Be familiar with IPv6 addressing and network design
8. Be familiar with SNMP protocol and its uses in managing and monitoring networks.
9. Be familiar with Stateless IP firewalling concepts and commands

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Outline

Topic	Number of Lecture Hours	Outcome
• Network Design	1	1

• Router operation and configuration
   ○ IOS
   ○ JunOS
   ○ Linux/Zebra/Quagga
	1	1,3,4

• Static IP routing ICMP redirects and their effect	1	1,3,4

• Network support applications
   ○ DHCP
   ○ DNS
   ○ NTP
   ○ syslog
	2	1,2,3,4

• Interior Routing Protocols ○ OSPF	2	1,3,4,6
• Exterior Routing Protocols ○ BGP	1	1,3,4,6

• Advanced Switching.
   ○ Spanning Tree
   ○ VLANS
	1	5

• Firewalls	1	1,3,4,9
• SNMP	1	1,3,4,8
• IPv6	1	1,3,4,7

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Course Outcomes Emphasized in Laboratory Projects / Assignments

Outcome	Number of Classes
Basic Router Configuration Outcome 1,3,4	1
Static Routing Outcome 1,3,4	1
Network Support Applications Outcome 1,2,3,4	2
Internal Routing Protocols Outcome 1,3,4,6	2
Exterior Routing Protocols Outcome 1,3,4,6	2
Stateless Firewalls Outcome 1,3,4,9	1
SNMP Outcome 1,3,4,8	1
IPV6 Outcome 1,3,4,7	2

Oral and Written Communication:

Number of written reports: 8

Approximate number of pages for each report: 5

Number of required oral presentations: 0

Approximate time for each presentation: 0

Social and Ethical Implications of Computing Topics
none

Topic	Class time	Student performance measures

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Theoretical Contents

Topic	Class time
Network design	2

Problem Analysis Experiences

1. | 8 Labs |
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   | |

Solution Design Experiences

1. | 8 labs |
   | --- |
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