COURSE OUTLINE : CS/IS 190
D Credit – Degree Applicable
COURSE ID 005219
Cyclical Review: August 2020

COURSE DISCIPLINE : CS/IS

COURSE NUMBER : 190

COURSE TITLE (FULL) : Introduction to Computer Networks

COURSE TITLE (SHORT) : Intro to Computer Networks

CATALOG DESCRIPTION

CS/IS 190 introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP (Internet Protocol) addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for further study of computer networks. It uses the OSI (Open Systems Interconnection) and TCP (Transmission Control Protocol) layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. This course affords preparation for the CompTIA Network+ certification exam. The course includes labs to provide hands-on training.

Total Lecture Units: 2.00

Total Laboratory Units: 1.00

Total Course Units: 3.00

Total Lecture Hours: 36.00

Total Laboratory Hours: 54.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 90.00

Total Out-of-Class Hours: 72.00

Recommended Preparation: CS/IS 101 or equivalent.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	CS/IS	101	Introduction To Computer And Information Systems	Explain the concept of a network; identify hardware and software needed to create a network; compare and contrast wired vs. wireless networks; describe network security issues;	Yes
2	CS/IS	101	Introduction To Computer And Information Systems	demonstrate the importance of the technology infrastructure in an organization; identify major hardware components of a computer system; explain how to evaluate hardware components and what to look for in acquiring computer hardware; understand the interdependence of hardware and software; compare open vs. proprietary platforms;	Yes

EXIT STANDARDS

1 Apply the OSI networking model to a TCP/IP network;
2 configure all TCP/IP network nodes;
3 use common network tools to create a physical working network;
4 use network testing tools to identify and correct common network issues;
5 select the appropriate equipment for a network installation.

STUDENT LEARNING OUTCOMES

1 utilize the OSI networking model to troubleshoot common network issues;
2 explain the Transmission Control Protocol and Internet Protocol addressing systems.
3 demonstrate ability to create a network, test a network, and troubleshoot network;

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Network Models • The Open Society Institute (OSI) Model • Transmission Control Protocol/ Internet Protocol (TCP/IP) Model	3	0	3
2	Cabling and Topology • Network topologies • Cabling and connector • Networking industry standards	3	10	13

3	• Ethernet Basics • Ethernet • Early ethernet networks • Extending and enhancing ethernet network	3	0	3
4	Modern Ethernet • 100 megabit ethernet • Gigabit ethernet • Ethernet evolutions	3	0	3
5	Installing a Physical Network • Understanding structured cabling • Installing structured cabling • Network Interface Cards (NIC) • Diagnostics and repair of physical cabling	1.5	10	11.5
6	TCP/IP, Applications and Security • Standardizing network technology • TCP/IP Protocol Suite • CIDR and subnetting • IP address assignment • Port numbers • TCP/IP applications • Making TCP/IP secure • TCP/IP secure standards and applications	3	1.5	4.5
7	Routing • How routers work • Dynamic routing	1.5	1.5	3
8	Network Naming • Domain Name Systems (DNS) • DNS servers • Troubleshooting DNS	3	2.5	5.5
9	Advanced Networking • Client server and Peer-to-Peer topologies • Virtual Private Networks (VPN) • Switch management • Virtual LAN’s • Multilayer switches	3	5	8
10	IPv6 • Basics • Using IPv6 • Moving to IPv6	1.5	2.5	4
11	Remote Connectivity • Using remote access • WAN troubleshooting	3	1	4
12	Wireless Networking • Wi-Fi standards • Implementing Wi-Fi • Troubleshooting Wi-Fi	1.5	10	11.5

13	Virtualization and Cloud Computing • What is virtualization and why do we virtualize • Virtualization in modern networks • Cloud	1.5	0	1.5
14	Building a Real-World Network • Designing a network • Unified communications • Internet Connection Sharing (ICS)	1.5	10	11.5
15	Risk Management • Security policies • Change management • Patching and updates • Training • Points of failure • Security preparedness	3	0	3
				90

OUT OF CLASS ASSIGNMENTS

1 research projects (e.g. design, build, and implement a TCP/IP based LAN on paper showing all technical specifications and associated costs).
2 NetLab - troubleshooting network issues.
3 NetLab - switch and router configuration.
4 NetLab - creating a new netwrok.

METHODS OF EVALUATION

1 quizzes;
2 hands on projects;
3 midterm examination;
4 labs completion;
5 final examination.

METHODS OF INSTRUCTION

- [x] Lecture
- [x] Laboratory
- [ ] Studio
- [x] Discussion
- [x] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [x] Collaboratory Learning

- [x] Demonstration
- [ ] Field Activities (Trips)
- [x] Guest Speakers
- [x] Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
CompTIA Network+ Certification All-in-One Exam Guide, Seventh Edition (Exam N10-007)	Required	New York: McGraw-Hill	7	Digital or Paperback	Meyers, Mike	ISBN: 978-126012238 1	2018