COURSE OUTLINE

OPERATING SYSTEMS AND NETWORKS — Course Title

IT 115 — Dept. & Course Number

I. COURSE DESCRIPTION:

This course examines the role of telecommunications, networks, and operating systems in management information systems. Strategies, tools, and techniques for network planning, implementation, management, maintenance, and security will be explored. Different types of networks including local area networks (LANs), wide area networks (WANs), metropolitan area networks (MANs), and enterprise-wide networks will be examined.

II. SEMESTER CREDIT: 3

III. CONTACT HOURS PER WEEK: 3 Lecture | 0 Lab | 3 Total

IV. PREREQUISITES: IT 105, IT 110, EN 112

V. STUDENT LEARNING OUTCOMES:

At the end of the course, students will be able, with 65% accuracy, to:

1. Describe a basic computer network, identify essential network components, compare different types of networks, and select an appropriate network type for a small business.

2. Design a network layout by exploring the various standard networking topologies and selecting the best network topology for a given environment.

3. Define technical terms related to cabling and identify the major types of network cabling and wireless network technologies.

4. Explain how network adapters work, describe important characteristics for selecting adapter cards, and explain the role of driver software in network adapters.

VI. COURSE CONTENT

A. Networks and Networking Concepts

1. What Is Networking?
2. A Networking Lexicon
3. Network Types
4. Selecting the Right Type of Network

B. Network Design Essentials

1. Network Design
2. Standard Topologies
3. Hubs and Switches
4. Variations of the Major Topologies
5. Select and Constructing a Network Layout

C. Networking Media

1. Network Cabling: Tangible Physical Media
2. Primary Cable Types
3. Wireless Networking: Intangible Media

D. Network Interface Cards

1. Network Interface Card (NIC) Basics
2. Choosing Network Adapters Special-Purpose NICs
3. Driver Software

5. Describe the OSI reference model and the IEEE 802 networking model, and explain the OSI reference model's layers and their relationships to networking hardware and software.	E. Making Networks Work 1. OSI and 802 Networking Models 2. IEEE 802 Networking Specifications
6. Explain the function and structure of packets in a network, describe the function of protocols in a network and, and explain how channel access methods works.	F. Network Communications and Protocols 1. Function of Packets in Network Communications 2. Protocols 3. Putting Data on the Cable: Access Methods
7. Discuss the different major network architectures and identify the limitations, advantages, and disadvantages of each standard or architecture.	G. Network Architectures 1. Ethernet 2. Gigabit Ethernet 3. Token Ring 4. Apple Talk Environment 5. Other Networking Alternatives
8. Describe the various options to implement a network environment, the differences between a centralized and client/server computing, and the basics of Web-based computing environments.	H. Understanding Complex Networks 1. Multivendor Environments 2. Implementing Multivendor Solutions 3. Centralized versus Client/Server Computing 4. Client/Server Environment 5. Web-Based Computing Environments
9. Discuss the basic concepts associated with wide area networks (WANs) and identify the uses, benefits, and drawbacks of advanced WAN technologies.	I. Wide Area and Large-Scale Networks 1. Wide Area Network (WAN) Transmission Technologies 2. Advanced WAN Technologies 3. WAN Implementation Basics 4. WANs and Network Security

VII. MATERIALS AND EQUIPMENT

A. Student computers with Windows OS and Microsoft Word.
B. Server computer with Web and FTP server applications.
C. Projector
D. Routine classroom materials
E. 1 USB storage device (at least 1GB)—student-furnished

VIII. TEXT AND REFERENCES

A. Required Text:

Tomsho, Greg, Ed Tittel and David Johnson. Guide to Networking Essentials. Boston, MA: Thomson Publishing Co.

B. Supplementary References: handouts

IX. METHODS OF INSTRUCTION:

A. Lecture
B. Hands on Experience
C. Questions and Answers (Discussion)

X. METHOD OF EVALUATION

A. Description **Points**

Assignments	30%
Hands-On Projects	20%
Chapter Tests	30%
Midterm	10%
Final Exam	10%
	100%

B. Transmutation of percent to letter grade

90 - 100	A
80 - 89	B
70 - 79	C
65 - 69	D
0 - 64	F

Palau Community College
IT 115-Operating Systems and Networks
Course Learning Outcomes

During the course experience, the ***Course Learning Outcomes*** (CLOs) will be assessed through the use of signature assignments. A rating scale will be used to determine the students' proficiency level of each CLO using specifically aligned assignments. The numerical ratings of 4, 3, 2 and 1 are not intended to represent the traditional school grading system of A, B, C, D and F. The descriptions associated with each of the numbers focus on the level of student performance for each of the course learning outcomes listed below.

Rating Scale:
4----------Exceeds Expectations
3----------Meets Expectations
2----------Developing
1----------Below Expectations

CLO #1:

Numerical Value	**Identify and categorize different types of hardware and their functions.**
4	Perform all of the following tasks accurately and completely: • Identify different types of hardware by name. • Identify and categorize different types of hardware by functionality. • Compare hardware within a category by versions and vendors. • Identify areas of a network in which specific hardware are used.
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete.
2	Perform the tasks mentioned above with mixed quality, but most are inadequate or incomplete.
1	Perform the tasks mentioned above inaccurately or incompletely.

CLO #2:

Numerical Value	**Identify different types of cables, capacity and speed, and their functionality/capability.**
4	Perform all of the following tasks accurately and completely: • Identify and compare different types of coaxial cables and their characteristics. • Identify and compare different types of twisted pair cables and their characteristics. • Identify and compare different types of untwisted pair cables and their characteristics. • Identify and compare fiber optic cables and their characteristics.
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete.
2	Perform the tasks mentioned above with mixed quality, but most are inadequate or incomplete.
1	Perform the tasks mentioned above inaccurately or incompletely.

CLO #3:

Numerical Value	**Identify and compare different types of networks.**
4	Perform all of the following tasks accurately and completely: • Identify LAN networks and compare with other types of networks. • Identify WAN networks and compare with other types of networks. • Identify MAN networks and compare with other types of networks. • Identify Wireless networks and compare with other types of networks.
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete.
2	Perform the tasks mentioned above with mixed quality, but most are inadequate or incomplete.
1	Perform the tasks mentioned above inaccurately or incompletely.

CLO #4:

Numerical Value	**Plan and design a computer network based on a given scenario.**
4	Perform all of the following tasks accurately and completely: • Identify the best type of network to be implemented. • Identify all necessary hardware and software to make the network work. • Sketch a design of your network.
3	Perform the tasks mentioned above with mixed quality, but most are adequate and complete.
2	Perform the tasks mentioned above with mixed quality, but most are inadequate or incomplete.
1	Perform the tasks mentioned above inaccurately or incompletely.