KING FAHD UNIVERSITY OF PETROLEUM & MINERALS **ELECTRICAL ENGINEERING DEPARTMENT**

EE 400 – Telecommunication Networks **COURSE OUTLINE** **(071)**

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Office Hours: **Sun., Tues. (11:00AM - 1:00PM), OR by appointment via e-mail**

PREREQUISITE: **EE370 and EE315**

TEXTBOOK:

Leon-Garcia and Widjaja, *Communication Networks*, McGraw Hill, 2000.

Course Objectives:

The course objectives are to enable the students to:

1. Understand the fundamental concepts of networking and telephone switching.
2. Understand the protocols employed in different layers in communication networks.
3. Design basic networks from choosing the appropriate physical medium to designing IP addressing and subnetting.
4. Understand the effects of physical channels and random events on the performance of networks.

Learning Outcomes:

At the end of the course, the students will be able to:

1. Design communication networks to meet desired needs.
2. Function on multi-disciplinary teams.
3. Communicate effectively.
4. Apply the probabilistic methods and statistics to communication networks problems.
5. Use effectively the information technology tools to design, develop, and implement communication networks.

GRADING POLICY:

• Quizzes (5):	10%	Tuesday of Weeks 3, 5, 8, 10, 14.
• Exam I:	15%	Tuesday of Week 6, Class time
• Exam II:	15%	Tuesday of Week 12, Class time
• Project/Presentation:	10%	
• Lab:	20%	
• Final Exam:	30%	

- **Official Excuses:** Only excuses obtained from Students Affairs Dept. are accepted. Personal excuses are not accepted.
- **No make-up** tests will be provided. If an official excuse exists, the student will be given the average of his grades.

Topic	Chapter	# Lectures
INTRODUCTION TO NETWORKS: Network Services Network Topologies Circuit switching and packet switching	1.1 - 1.2	2
COMPUTER NETWORKS		
LAYER ARCHITECTURE: Concept of Layering, OSI Model, TCP/IP, IP Addressing	2.1-2.3, 8.1-8.2	4
PHYSICAL LAYER: Digital Transmission Fundamentals, Transmission Media, Devices and Components	3.1 - 3.8	4
DATA LINK LAYER (DLC) PROTOCOLS: Error Control, ARQ, Framing (external material)	3.9, 5.2	4
MEDIUM ACCESS CONTROL PROTOCOLS: ALOHA, CSMA, Polling, Token Ring	6.1 - 6.4	4
ROUTING: Routing Tables, Routing Algorithms, Shortest Path, ATM	7.3 - 7.6	4
LANs and PANs: Protocols, Ethernet, Token-Ring, FDDI	6.6	3
TELEPHONE NETWORK		
Network Elements, Multiplexing, Switching, Signaling, Traffic Analysis, Cellular Networks	4.1- 4.8	5