



Course Specifications

Program(s) on which this course is given:	Professional Masters (Telecommunications)
Department offering the program:	Electronics & Electrical Communications Engineering
Department offering the course:	Electronics & Electrical Communications Engineering
Academic Level:	Masters
Date	2016
Semester (based on final exam timing)	☒ Fall ☐ Spring

A- Basic Information

1. Title:	Fundamentals of Telecommunications Networks			Code:	ECP 602		
2. Units/Credit hours per week:	Lectures	2	Tutorial	Practical	1	Total	3

B- Professional Information

1. Course description:	This course covers the fundamental networking concepts, technologies and standards ranging from the basic data transmission technologies up to the different protocols used in the layers of the main telecommunication network architectures and standards. The conceptual and implementation aspects of the network application layer. The services offered by different transport protocols used in Telecom networks (TCP and UDP). Routing and network layer architecture. Data link layer and medium access control in both wired and wireless networks. The course includes extensive laboratory sessions and project assignments for network design and analysis of case studies, e.g., WLANs, Cellular, and the Internet.
2. Intended Learning Outcomes of Course (ILOs):	a) Knowledge and Understanding 1. Break down the conceptual and implementation aspects of network application protocols for both client-server and peer-to-peer models. 2. Differentiate the TCP and UDP transport-layer service models. 3. Explain the structures and protocols used in the IEEE 802.3 Ethernet and IEEE 802.11 wireless LAN and justify their designs in the context of local area networks. b) Intellectual Skills 1. Analyze and critique the performance of different network devices, architectures, service models and access technologies and be able to identify the best choice for a given set of requirements. 2. Develop an attitude to propose solutions for problems related to telecommunications networks through the investigation of different protocols and wired/wireless standards learnt throughout the course. c) Professional and Practical Skills 1. Design, calculate, and apply the appropriate masking and addressing to fulfill given requirements in IPv4 and IPv6 networks. 2. Build a simple Ethernet network using routers and switches. 3. Utilize common network utilities to verify small network operations and analyze data traffic. d) General and Transferable Skills

3. Contents			
Topic	Total hours	Lectures hours	Tutorial/ Practical hours
1. Fundamental Networking Concepts	4.5	1.5	
2. Application Layer Overview	1.5	0.5	
3. Transport Layer	6	1	1
4. Network/IP Layer	12	2	2
5. Data Link Layer	12	4	
4. Teaching and Learning Methods	Lectures (Y)	Practical Training/ Laboratory (Y)	Seminar/Workshop (Y)
	Class Activity (Y)	Case Study (N)	Projects (Y)
	E-learning (Y)	Assignments /Homework (Y)	Other:
5. Student Assessment Methods			
• Assessment Schedule		Week	
-Assessment 1; Practical/Laboratory work		Week 4, 5, 6, 7	
-Assessment 2; Project Assignment		Week 14	
-Assessment 3; Presentations		Week 12	
-Assessment 3; Midterm Exam		Week 9	
-Assessment 4; Final Exam		Week 15	
• Weighting of Assessments			
-Mid-Term Examination		10%	
-Final-term Examination		40%	
-Project		10%	
-Practical/laboratory work		30%	
-Seminar Report		10%	
-Total		100%	
6. List of References			
Jim Kurose, Keith Ross, “Computer Networking: A Top Down Approach”, 6th edition. Addison-Wesley, March 2012.			
CCIE Professional Development Routing TCP/IP, Volume I and II, Second Edition			
By Jeff Doyle - CCIE No. 1919, Jennifer Carroll - CCIE No. 1402			
7. Facilities Required for Teaching and Learning			
A computer Lab equipped with Cisco equipment.			
Course Coordinator:	Dr. Samy S. Soliman		
Head of Department:	Dr. Mohammad A. Sultan		