Course Specifications

Course Title:	Advanced Computer Networks
Course Code:	503546-3
Program:	Bachelor in Computer Engineering
Department:	Department of Computer Engineering
College:	College of Computers and Information Technology
Institution:	Taif University

Table of Contents

A. Course Identification

1. **Credit hours:**	3

2. Course type

a.	University ☐	College ☐	Department ☑	Others ☐
b.		Required ☐	Elective ☑	

3. Level/year at which this course is offered: 9/5

4. Pre-requisites for this course (if any)**:** 503443-4

5. Co-requisites for this course (if any)**:**
None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	3	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	45
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others** (specify)	
	Total	45

B. Course Objectives and Learning Outcomes

1. Course Description

This course provides in depth coverage of some basic topics in computer networks related to network layer, application layer, Multimedia Networking and Network Security. Topics include, routing protocols, application layer protocols, Multimedia networking applications and protocols, and Principles of Network Security and Cryptography.

2. Course Main Objective

1. Introduce students to advanced concepts in computer networks such as Routing protocols, Multimedia networking applications and protocols and VoIP.
2. The student should distinguish various application layer protocols and Multimedia networking applications and protocols.
3. Introduce students to Principles of Network Security and Cryptography.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Distinguish between Intra-AS routing protocols and Inter-AS routing protocol.	K1
1.2	Understand the principles of application layer and Multimedia networking.	K1
1...		
2	**Skills :**	
2.1	Analyze issues and identify protocols used for routing in the Internet.	S2
2.2	Analyze issues and identify techniques and protocols used for Multimedia Networking Applications, and Network Security.	S2
2...		
3	**Values:**	
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Link state and distance vector routing algorithms	3
2	Intra-AS routing protocols (RIP and OSPF)	3
3	Inter-AS routing protocol: BGP route attributes, route selection	4
4	Principles of Network Applications, Web and HTTP Protocols	5
5	application layer: File Transfer protocol (FTP), Email (SMTP, POP3, IMAP), Internet's Directory Service (DNS protocol), and P2P applications	5
6	Multimedia Networking Applications: Streaming Audio and Video	5
7	Streaming Stored Video: UDP Streaming and HTTP Streaming	5
8	Voice-over-IP (VoIP)	5
9	Protocols for Real-Time Conversational Applications: Real-Time Protocol (RTP) and Session Initiation Protocol (SIP)	5
10	Introduction to Network Security, Symmetric and public key algorithms	5
Total		75

D. Teaching and Assessment
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Distinguish between Intra-AS routing protocols and Inter-AS routing protocol.	Lecture Discussion Brainstorming	Written Exams Quizzes Assignments
1.2	Understand the principles of application layer and Multimedia networking.	Lecture Discussion Brainstorming	Written Exams Quizzes Assignments
…			

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Analyze issues and identify protocols used for routing in the Internet.	Discussion Brainstorming Problem Solving	Written Exams Quizzes Assignments Oral Test
2.2	Analyze issues and identify techniques and protocols used for Multimedia Networking Applications, and Network Security.	Discussion Brainstorming Problem Solving	Written Exams Quizzes Assignments Oral Test
…			
3.0	**Values**		
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments	Continues	5%
2	Midterm Exam	7	20%
3	Project	8	15%
4	Quizzes	Continues	10%
5	Final Exam	16	50%
6			
7			
8			

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :
Teaching staff provide at least 6 office hours for students to help them in the course as well as in any other academic issues.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	James F. Kurose and Keith W. Ross, Computer Networking: A Top-Down Approach Featuring the Internet, 06 th edition, Addison Wesley, Pearson.2012
Essential References Materials	- Larry L. Peterson, Bruce S. Davie, Computer Networks: A Systems Approach (The Morgan Kaufmann Series in Networking) 6th Edition-2021 - Hans W. Barz and Gregory A. Bassett, Multimedia networks protocols, design, and applications, John Wiley and Sons (2016)

Electronic Materials	
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Traditional Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes	Students	Indirect (Survey)
Effectiveness of teaching and assessment	Students	Indirect (Survey)
Extent of achievement of course learning outcomes	Faculty	Course Report

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	

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