



Course Specifications

Course Title:	Advanced Computer Networks
Course Code:	CSI 431
Program:	Computer Science and Information Program
Department:	Department of Computer Science and Information
College:	College of science Zulfi
Institution:	Majmaah University

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A. Course Identification

1. Credit hours:
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input type="checkbox"/> Elective <input checked="" type="checkbox"/>
3. Level/year at which this course is offered: Level 7
4. Pre-requisites for this course (if any): CSI 322
5. Co-requisites for this course (if any):

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	
4	Others (specify)	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

This course is an advanced topic in design and analysis of computer networks. It comes as a second

level module of the curricula which includes:

- Modeling, performance evaluation and queuing theory applied to computer networks.
- Traffic flow management and error control.
- Routing algorithms and protocols.
- Switch and router architectures.
- Selected issues in high-speed network design.
- Optical networks.

2. Course Main Objective

Briefly describe any plans for developing and improving the course that are being implemented :Page 3 Of 7

1. Increasing the ability of the students to implement the methods and practices that are presented in the course.
2. Formative exams during the term with a feedback to the students, so these examinations can be used as a method of learning..
3. Using group discussion through the internet with course attending students.
4. Updating the materials of the course to cover the new topics of the field.
5. Help students to develop their knowledge about the topics that are presented in the course.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1		
1.2		
1.3		
1...		
2	Skills :	
2.1		
2.2		
2.3		
2...		
3	Values:	
3.1		
3.2		
3.3		

CLOs		Aligned PLOs
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Layered communication architecture: layers, services, protocols, layer entities, service access points, protocol functions...	2
2	Advanced Routing algorithms (1)	2
3	Advanced Network Congestion Control algorithms (1)	2
4	Quality of service (1)	2
5	Quality of service (2)	2
6	Real Time Transport Protocol	2
7	Internetworking (1)	2
8	Internetworking (2)	2
9	Performance Issues	2
10	Overview on VPN networks	2
11	Overview on Wireless Networks and Mobile Networks: LAN, PAN, Sensor Networks, Adhoc Networks	2
12	Mobile IP	2
13	Mobile TCP 1 2	2
14	IP Security	2
Total		28

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	The basic concepts associated with network security	Lectures Lab demonstrations Case studies Individual presentations Team work Exercises	Written Exam Homework assignments Lab assignments Class Activities Quizzes



Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills		
2.1	Analyze and implement some of the most advanced routing and congestion control algorithms	Lectures Lab demonstrations Case studies Individual presentations Brainstorming Written Exam Homework assignments Lab assignments Class Activities Quizzes	
2.2	Evaluate the performances of computer networks (through mathematical modeling and simulation)	Small group discussion Whole group discussion Brainstorming Presentation Written Exam Homework assignments Lab assignments Class Activities Quizzes	
3.3	Understand basics and principles of new generation of computer networks (VPN, wireless networks, mobile networks...).	Small group discussion Whole group discussion Brainstorming Presentation Written Exam Homework assignments Lab assignments Class Activities Quizzes	
3.0	Values		
3.1	Practice network simulators	Small group discussion Whole group discussion	
3.2	work in a group to practice managing wireless networks	Small group discussion Whole group discussion Brainstorming Presentation Written Exam Homework assignments Lab assignments	

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
		Class Activities Quizzes	
3.3	work in a group to recognize network performance	Small group discussion Whole group discussion Brainstorming Presentation Written Exam Homework assignments Lab assignments Class Activities Quizzes	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	10
2	Second written mid-term exam	12	10
3	Presentation, class activities, and group discussion	Every week	10
4	Homework assignments	After Every chapter	10
5	Final lab exam	15	20
6	Final written exam	16	40
	Total		100

*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 :

Teacher office hours
Teacher email

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Computer Networks 5th Ed. Andrew S. Tanenbaum, Pearson Prentice Hall, 2010
Essential References Materials	Introduction to Computer Networks and Cybersecurity Hardcover by Chwan-Hwa (John) Wu , J. David Irwin ISBN-13: 978-1466572133 ISBN-10: 1466572132 Edition: 0th.
Electronic Materials	http://nptel.ac.in/courses.php?branch=Comp <ul style="list-style-type: none"> http://cs.mcgill.ca/~jpineau/comp424/schedule.html
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms and Laboratories, as those that are available at the college of science at AzZulfi
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Questionnaires (course evaluation)	students	
Student-faculty management meetings.	students	

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	Department Official Meeting No (.....) Date 24 / 12 / 1435 H
Reference No.	
Date	

