Course Specifications

Institution:	Majmaah University.
Academic Department :	College of Science at Az Zulfi.
Programme :	Department of Computer Science and Information
Course :	Advanced Computer Networks (CSI 431)
Course Coordinator :	Dr. Muhamed El- Etoum
Programme Coordinator :	Assoc.Prof. Yosry Azzam
Course Specification Approved Date :	23/ 12 / 1435 H

A. Course Identification and General Information

1 - Course title : **Advanced Computer Networks**	Course Code: **(CSI 431)**.
2. Credit hours : **3 credit hours (2 lecture + 2 lab)**	
3 - Program(s) in which the course is offered: **Computer Science and Information Program**	
4 – Course Language : **English**	
5 - Name of faculty member responsible for the course: **Dr. Muhamed El- Etoum**	
6 - Level/year at which this course is offered : **Elective**	
7 - Pre-requisites for this course (if any) :**CSI 322**	
• **Computer Networks**	
8 - Co-requisites for this course (if any) : none	
•	
9 - Location if not on main campus : **(College of Science at Az Zulfi)**	

10 - Mode of Instruction (mark all that apply)

A - Traditional classroom	√	What percentage?	**80 %**
B - Blended (traditional and online)	√	What percentage?	**10 %**
D - e-learning		What percentage?	**……. %**
E - Correspondence		What percentage?	**……. %**
F - Other	√	What percentage?	**10 %**

Comments : One-tenth of the course is presented mainly inside video lectures of other instructors worldwide. They illustrate the same topics that I introduced in my lectures with a different presentation.

B Objectives

What is the main purpose for this course?

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.

Briefly describe any plans for developing and improving the course that are being implemented :

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.

C. Course Description

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
Layered communication architecture: layers, services, protocols, layer entities, service access points, protocol functions…	1	2
Advanced Routing algorithms (1)	1	2
Advanced Network Congestion Control algorithms (1)	1	2
Quality of service (1)	1	2
Quality of service (2)	1	2
Real Time Transport Protocol	1	2
Internetworking (1)	1	2
Internetworking (2)	1	2
Performance Issues	1	2
Overview on VPN networks	1	2
Overview on Wireless Networks and Mobile Networks: LAN, PAN, Sensor Networks, Adhoc Networks	1	2
Mobile IP	1	2
Mobile TCP	1	2
IP Security	1	2

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	30	-	30	-	-	60
Credit	30	-	15	-	-	45

3. Additional private study/learning hours expected for students per week.

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Before the lectures start students are required to study some topics on their own.

The topics to cover:

- What is network security?
- How does it protect you?
- How does network security work?
- What are the business benefits of network security?

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

		NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**			
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
2.0	**Cognitive 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)		
3.0	**Interpersonal Skills & Responsibility**			
3.1		Understand basics and principles of new generation of computer networks (VPN, wireless networks, mobile networks…).	Small group discussion Whole group discussion	

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
3.2	Practice network simulators	Brainstorming Presentation Written Exam Homework assignments Class Activities Quizzes	
4.0	**Communication, Information Technology, Numerical**		
4.1	work in a group to practice managing wireless networks	Small group discussion Whole group discussion Brainstorming Presentation Written Exam Homework assignments Lab assignments Class Activities Quizzes	
4.2	work in a group to recognize network performance		
5.0	**Psychomotor**		
5.1	....	....	....

5. Schedule of Assessment Tasks for Students During the Semester:

	Assessment task	Week Due	Proportion of Total Assessment
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%

D. Student Academic Counseling and Support

Office hours: Sun: 1-3, Mon. 10-1, Wed. 10-12

Office call: Sun. 10-12 and Wed 10-12

Email: m.otoom@mu.edu.sa

E. Learning Resources

1. List Required Textbooks :
- Computer Networks 5th Ed. Andrew S. Tanenbaum, Pearson Prentice Hall, 2010.

2. List 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.

3. List Recommended Textbooks and Reference Material :
- Wireless Communications & Networks, 2nd edition, William Stallings, Prentice-Hall Pearson

4. List Electronic Materials :
- http://nptel.ac.in/courses.php?branch=Comp
- http://cs.mcgill.ca/~jpineau/comp424/schedule.html

5. Other learning material :

F. Facilities Required

1. Accommodation
- Classrooms and Laboratories, as those that are available at the college of science at AzZulfi.

2. Computing resources
- Smart Board

3. Other resources
- None

G   Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching:
- .... Questionnaires (course evaluation) achieved by the students and it is electronically organized by the university.
- Student-faculty management meetings.

2 Other Strategies for Evaluation of Teaching by the Program/Department Instructor :
- Discussion within the staff members teaching the course.
- Departmental internal review of the course.

3 Processes for Improvement of Teaching :
- Periodical departmental revision of methods of teaching.

- Monitoring of teaching activates by senior faculty members.

- Training course

4. Processes for Verifying Standards of Student Achievement
- ....

- ....

- ....

5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement :
- Course evaluation

- Exam evaluation

- Improvement plan

- Program Out learning with course out learning

- Out learning from the pre-requisite course

Course Specification Approved
Department Official Meeting No (.....) Date 24 / 12 / 1435 *H*

Course's Coordinator

Name : Dr.Muhamed El- Etoum
Signature : ....
Date : 23/ 12 / 1435 *H*

Department Head

Name : Asoc.Prof.Yosry Azaam
Signature : ....
Date : …./ … / …… *H*