



## Course Specifications

<b>Course Title:</b>	Data Transmission and Computer Networks
<b>Course Code:</b>	IT 321
<b>Program:</b>	Information Technology & Computer Science
<b>Department:</b>	Information Technology
<b>College:</b>	College of Computer and Information Sciences
<b>Institution:</b>	Majmaah University



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## A. Course Identification

<b>1. Credit hours:</b> 3 (3,0,1)
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> Level 8
<b>4. Pre-requisites for this course (if any):</b> CS240-Operating System
<b>5. Co-requisites for this course (if any):</b> NIL

## 6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	44	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

## 7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	33
2	Laboratory/Studio	
3	Tutorial	11
4	Others (specify)	
	<b>Total</b>	44

## B. Course Objectives and Learning Outcomes

### 1. Course Description

In this course students will develop a deeper understanding of modern compiler techniques applied to general purpose programming languages. It will give students a working knowledge of the foundations, tools, and engineering approaches used in developing formal language translators.

### 2. Course Main Objective

This course aims to provide a theoretical as well as experimental background of Computer Network with a focus on the following:

Introduction to computer networks, Network architecture, OSI reference model, Transmission media, Transmission Impairments, Data encoding; Data Link: Error Detection, Medium Access control Protocols and standards, MAC Addressing, Link layer Switches, LAN standards & Devices: Ethernet and IEEE standards for LANs,



Wireless networks; Network Layer: Virtual circuit and Datagram Networks, Router Structure, The Internet Protocol (IP), Routing Algorithms, Broadcasting and Multicasting; Transport Layer: TCP and UDP services, designs, and performance, Principles of Reliable Data Transfer; Application layer: The Web and HTTP, FTP, Electronic Mail, and DNS.

### 3. Course Learning Outcomes

CLOs		Aligned PLOs
<b>1</b>	<b>Knowledge and Understanding</b>	
1.1		
1.2		
1.3		
1...		
<b>2</b>	<b>Skills :</b>	
2.1	CLO1: Understand and analyze the structure of an abstract layered protocol model (OSI, TCP/IP) and Transmission Media	S1,
2.2	CLO2: Understand and implement data link (DL) layer protocols	S1
2.3	CLO4: Understand and implement the principles of Delivery, Forwarding, and Routing	S3
2...		
<b>3</b>	<b>Values:</b>	
3.1	CLO3: Understand the principles of Network Layer Services	V1
3.2		
3.3		
3...		

### C. Course Content

No	List of Topics	Contact Hours
1	Introduction to computer networks, Network architecture, OSI reference model	3
2	Transmission media, Transmission Impairments	3
3	Data encoding; Data Link: Error Detection	3
4	Medium Access control Protocols and standards ,MAC Addressing	3
5	Link layer Switches, LAN standards & Devices, Ethernet and IEEE standards for LANs	3
6	Network Layer: Virtual circuit and Datagram Networks	3
7	Router Structure, The Internet Protocol (IP), Routing Algorithms Broadcasting and Multicasting	3
8	Transport Layer: TCP and UDP services	3
9	Designs, and performance of TCP, Principles of Reliable Data Transfer	3
10	Application layer Protocol: The Web and HTTP	3
11	FTP, Electronic Mail, and DNS Protocol	3
<b>Total</b>		<b>33</b>



## D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and Understanding</b>		
1.1	Students will learn, understand and explain the main techniques and algorithms used in compilers.	Lectures, Discussions	Exams, Assignments, Participation
1.2			
...			
<b>2.0</b>	<b>Skills</b>		
2.1	CLO1: Understand and analyze the structure of an abstract layered protocol model (OSI, TCP/IP) and Transmission Media	Classroom Teaching	Class Test, Mid Exam, Final Exam
2.2	CLO2: Understand and implement data link (DL) layer protocols	Classroom Teaching	Class Test, Mid Exam, Final Exam
2.3	CLO4: Understand and implement the principles of Delivery, Forwarding, and Routing	Oral /Written Communication, Seminar	Group Assignments, Mini Project
2.4	CLO5: Understand principles of Transport Layer Services & design principles of Transport Protocols (UDP & TCP) and application layer services	Classroom Teaching Mini Project, Lab Exercises	Class Test, Mid Exam, Final Exam Lab based Assignments, Mini Project
<b>3.0</b>	<b>Values</b>		
3.1	CLO3: Understand the principles of Network Layer Services	Mini Project, Graduation Project, Lab Exercises	Oral or Written Communication, Seminar
3.2			
...			

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	<b>Midterm Examination:</b>	<b>Week 6</b>	<b>20%</b>
2	<b>Final Examination</b>	<b>Week 11</b>	<b>40%</b>
3	<b>Quiz</b>	<b>All Weeks</b>	<b>15%</b>
4	<b>Exercises / Assignments / Homework:</b>	<b>All Weeks</b>	<b>15%</b>
5	<b>Lab based Assignments</b>	<b>All Weeks</b>	<b>5%</b>
7	<b>Attendance / Participation</b>	<b>All Weeks</b>	<b>5%</b>
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 :**

Every faculty will be assigned 10 students in the corresponding department for academic advising. Students can meet the faculty during advising hours or whenever the faculty is in the office.

## F. Learning Resources and Facilities

### 1. Learning Resources

<b>Required Textbooks</b>	<b>Data Communications, Networking, 5th Edition, Behrouz, Forouzan, McGraw-Hill 2012</b>
<b>Essential References Materials</b>	Tanenbaum, Computer Networks, 5th Edition, Prentice Hall, 2010. James F. Kurose, and Keith W Ross, Computer Networking: A Top-Down Approach, Addison-Wesley, 2012. Larry Patterson and Bruce Davis, Computer Networks: A systems Approach, Morgan Kaufmann, 2011.
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>• <a href="http://www.sdl.edu.sa">http://www.sdl.edu.sa</a></li> <li>• <a href="http://lms.mu.edu.sa">http://lms.mu.edu.sa</a></li> </ul>
<b>Other Learning Materials</b>	CISCO Packet tracer

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	Class Room. Lab.
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	PC or Laptop with Windows/Linux, Smart Board, Projector
<b>Other Resources</b> (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Internet Connection

## G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Final Exam Answer Scripts Verification	Peer faculty members	Review
Course Feedback	Students	Survey



Evaluation Areas/Issues	Evaluators	Evaluation Methods

**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	Computer Science Department
Reference No.	
Date	