Course Name: Data Communication
Course Code: IT221

I. Basic Course Information

Major or minor element of program: General
Department offering the course: Information Technology Department

Academic level: 200 Level
Semester in which course is offered: First (fall) Semester
Course pre-requisite(s): Mathematics-3 (MA 214)

Credit Hours: 3
Contact Hours Through:

Lecture	Tutorial*	Practical*	Total
2.5	1.5	0.0	4.0

* 1.5 hours for **either** Tutorial or Practical

Approval date of course specification: September 2014

II. Overall Aims of Course

The student should be able to know data transmission concepts, types and sources of data, transmission media. Also, the student should be able to understand various encoding and multiplexing techniques.

III. Program ILOs covered by course

Program Intended Learning Outcomes (By Code)			
Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
K1,K6,K10,K14	I2,I3	P3,,P7,P9	G5,G7

IV. Intended Learning Outcomes of Course (ILOs)

a. Knowledge and Understanding

On completing the course, students should be able to:

K.1 Explain the current underlying technologies of computer networks.
K.2 Illustrate essential concepts, principles, theories, current and future development for computer networks.
K.3 Interpret data related to network performance and quality both qualitatively and quantitatively.
K.4 Demonstrate an in-depth understanding of the fundamental concepts related to the design of computer networks.

b. Intellectual/Cognitive Skills

On completing the course, students should be able to:

I.1 Distinguish between the concepts and principles behind various data transmission techniques.
I.2 Distinguish between the concepts and principles, theories, and practices behind various signal encoding techniques.
I.3 Distinguish between the concepts behind various multiplexing technologies.

c. Practical/Professional Skills

On completing the course, students should be able to:

P.1 Measure and understand the implications of various quality and performance attributes related to the networking systems.
P.2 Employ available software related to network simulation and analysis to study and understand network structure and performance.
P.3 Assess the implications and risks involved in operating networking systems.

d. General and Transferable Skills

On completing the course, students should be able to:

G.1 Show the ability to identify, understand, and present the measures used to analyze computer networks.
G.2 Show the ability to efficiently use simulation software packages related to computer networks, in particular software and hardware related to Cisco technologies.

V. Course Matrix Contents

	Main Topics / Chapters	Duration (Weeks)	Course ILOs Covered by Topic (By ILO Code)			
			K & U	I.S.	P.S.	G.S.
1-	Data communication and network overview	2	K1,K2	[ ]	[ ]	G1
2-	Protocol architecture	2	K1,K2	[ ]	[ ]	[ ]
3-	Data Transmission Techniques	2	K1,K2	I1	P1,P3	G1
4-	Guided and wireless transmission mediums	1	K1,K2,K3	I1	P1,P3	[ ]
5-	Routing and switching	1	K1,K2,K4	[ ]	P2,P3	G2
6-	Signal encoding techniques	2	K1,K2,K3	I2	P1,P2	G1
7-	Digital data communication techniques	1	K1,K2,K3,K4	I3	P2,P3	[ ]
8-	Data link control	1	K1,K2,K3,K4	[ ]	P1,P2,P3	G1
9-	Multiplexing techniques	1	K1,K2	[ ]	3	[ ]
	Net Teaching Weeks	**13**				

VI. Course Weekly Detailed Topics / hours / ILOs

Week No.	Sub-Topics	Total Hours	Contact Hours	
			Theoretical Hours	Practical Hours*
1	Data communication and network overview	2.5	2.5	
2	Data communication and network overview	4	2.5	1.5
3	Protocol architecture	4	2.5	1.5
4	Protocol architecture	4	2.5	1.5
5	Data Transmission Techniques	4	2.5	1.5
6	Data Transmission Techniques	4	2.5	1.5
7	**Midterm Exam**			
8	Guided and wireless transmission mediums	4	2.5	1.5
9	Routing and switching	4	2.5	1.5
10	Signal encoding techniques	4	2.5	1.5
11	Signal encoding techniques	4	2.5	1.5
12	Digital data communication techniques	4	2.5	1.5
13	Data link control	4	2.5	1.5
14	Multiplexing techniques	4	2.5	1.5
15	**Final Exam**			
Total Teaching Hours		**51**	**33**	**18**

* **No Practical/Tutorial during the first week of the semester**

VII. Teaching and Learning Methods

Teaching/Learning Method	Selected Method	Course ILOs Covered by Method (By ILO Code)			
		K & U	Intellectual Skills	Professional Skills	General Skills
Lectures & Seminars	X	K1,K2,K3,K4	I1,I2,I3	P1	G1,G2
Tutorials	X	K1,K2,K3,K4	I1,I2,I3	P1	G1
Computer lab Sessions	X	K1,K2,K3	I1,I2,I3	P1,P2,P3	G1,G2
Practical lab Work	X	K1,K2,K3,K4	I1,I2,I3	P1,P2,P3	G1,G2
Reading Materials					
Web-site Searches					
Research & Reporting					
Problem Solving / Problem-based Learning					
Projects					
Independent Work	X	K1,K2,K3,K4	I1,I2,I3	P1,P2,P3	
Group Work					
Case Studies					
Presentations					
Simulation Analysis					
Others (Specify):					

VIII. Assessment Methods, Schedule and Grade Distribution

Assessment Method	Selected Method	Course ILOs Covered by Method (By ILO Code)				Assessment Weight / Percentage	Week No.
		K & U	I.S.	P.S.	G.S.		
Midterm Exam	X	K1,K2,K3,K4	I1,I2,I3	P1,P3	G1,G2	25%	7
Final Exam	X	K1,K2,K3,K4	I1,I2,I3	P1,P3	G1	60%	15
Quizzes	X	K1,K2,K3,K4	I1,I2,I3	P1,P2,P3	G1,G2	15%	Every 2 Weeks
Course Work							
Report Writing							
Case Study Analysis							
Oral Presentations							
Practical							
Group Project							
Individual Project							
Others (Specify):							

IX. List of References

Essential Text Books	• Data and computer communications by William Stallings
Course notes	• None
Recommended books	• None
Periodicals, Web sites, etc …	• None

X. Facilities required for teaching and learning

- None

Course coordinator: Dr. Amira Kotb

Head of Department: Prof. Reda Abd el-Wahab

Date: September 2014