Course specifications	
Programme(s) on which the course is given	B.Sc. of Pure
Mathematics and	
Computer	Science
, Physics and	
Mathematics	
Major or minor element of programs	Major
Department offering the program	Mathematics
Department offering the course	Mathematics
Academic year / Level	Second level (2)
Date of specification revision	September 2012
Date of specification approval	September 2012
A- Basic Information	
Title: Computer Code: M437	7
Networks	
Credit Hours: 3 Total: 3 hr.	
Lecture: 3 Tutorial: - Practical: -	Other: -

B- Professional Information

- **1 Overall aims of course**
 - The course is intended as an introductory networking course. No previous experience with computer networks is required. Students are expected to be capable of programming in C or C++, and to have knowledge of elementary linear algebra. Since the course involves a systems perspective, students that have had exposure to some complex software systems (in particular operating systems) may have a better appreciation of the systemsoriented lessons.
- 2 Intended learning outcomes of course (ILOs)
- a- Knowledge and understanding: The student should be able to:

- a1. Understand, analysis, design, and build a computer network.
- a2. Understand the concepts and trade-offs of computer networks.
- a3. State networks that have the potential to grow, and to support diverse applications such as teleconferencing, video-on-demand, distributed computing, and digital libraries.

b- Intellectual skills

The student should be able to:

b1- Analyze different network topology.

b2- Classify networks into groups according

to their application, size and connectivity.

b3- Differentiate between the different methods

introduced in the course for suitable use in

dealing with problems in network

administration.

c- Professional and practical skills

The student should be able to:

c1- Implement computer networks with different topologies.

c2- Administer computer networks for different environments.

c3- Design and implement computer networks with different criteria.

c4- Employ network communication technologies.

d- General and transferable skills

The student should be able to:

d1- Identify computer network

technologies.

d2- Explain the extend and modifications of methods for more complicated problems in network administration.

d3- Experiment team work in designing, presenting and evaluating a computer network.

3- Contents

Торіс	No. of	Lecture	Tutorial/
	hours		Practical
Physical and link layer			
communication: media, signals,			
and bits; time division and			
frequency division multiplexing;			
encoding; modulation; delay,	9	3	0
bandwidth, throughput, and noise;			
error correction techniques;			
CSMA/CD; CSMA/CA; Ethernet			
addressing and wiring; hubs.			
Packet communication: Local Area		3	0
Network and Wide Area Network	9		
technologies; token passing rings;			
FDDI; wireless networks; network			
interconnection with repeaters,			
bridges, and switches; DSU/CSU;			
xDSL and cable modems; store-			
and-forward; next-hop forwarding.			
Internetworking: router-based			
architecture; IP addressing;			
address binding with ARP;			
datagram encapsulation and			
fragmentation; link-state and			
distance-vector routing;			
Dijkstra's algorithm; network	Q	3	0
properties: ownership and	,	5	
service paradigm; UDP and			
TCP; TCP segment format;			
adaptive retransmission;			
protocol ports; ICMP and error			
handling.			
Network applications: client/server	9	3	0

concept; port de-multiplexing; socket API; server concurrency; DNS; TELNET; Web technologies including HTML, HTTP, CGI, Java; RPC and middleware; network management			
Network Management techniques, and protocols Network Security techniques and tools.	6	2	0

4- Teaching and learning methods

4.1- Lectures

4.2- Working on hand in assignments

4.3- Attending practical classes

5- Student assessment methods

5.1 Mid term written exam to assess understanding competencies

5.2 Mid term project to assess network installation skills

5.3 Oral Exam to assess attendance and interesting.

5.4 Semester hand in assignments to assess understanding professionalism.

5.5 Final term written Exam to assess comprehension. Assessment schedule

Assessment 1	Mid term + project	Week 7
Assessment 2	semester activities	Week 5 and 8
Assessment 3	Final term oral exam	Week 13
Assessment 4	final term written exam	Week 14
Weighting of asse	essments	
Mid-Term Exa	mination	
20%		
Semester Worl	x (homework assignment	s + oral tests)

20%

Other types of assessment

00%

Final-term written Examination

60%

Total

100%

Any formative only assessments

6- List of references

6.1- Course notes

Collected and prepared notes that cover the main topics in the course content

6.2- Essential books (text books)

Elementary text books under the title: *Computer Networks and Internets*

6.3- Recommended books: Computer Networking: A Top-Down Approach Featuring the Internet

6.4- Periodicals, Web sites, ... etc

Non.

7- Facilities required for teaching and learning

Lecture: PC's - packages for ready made scientific programs. - Data Show

Names of professors/lecturers contributing to the design and delivery of the course

Dr. Passent El-Kafrawy

Course coordinator: Dr. Ali Elmeligy

Head of Department: Prof. Mohamed A. RAmadan Date: / /