



Basic Information:

Title:	Data Communication & Computer Networks	Code	IT-360
Program:	BBIT	Credit Hours:	Three (03)
Sessions:	30 Class + Mid Term + Final Term	Pre-Requisite:	Intro to Information Technology

Course Description:

This introductory course on Networks aims to provide general knowledge of computer networking in a semi technical manner. Development of Computer network is pervasive which include home, office and small business. It has become very essential for the business manager to have basics of computer networking to keep their organization on progress track. Computer Network is playing the most important role in the growth of organization.

IT-360 is the course offered to the students of BBIT at Institute of Business & Information Technology of University of the Punjab. Its focus is on the basic standards, Communication Media, Protocols, Internetworking, Internet, Network management and Network Security.

Learning Outcomes:

After the completion of this course, it is expected that students who will involve themselves in the knowledge base working of the course will be capable to

1. *Have a unified view of data communications and computer networks.*
2. *Understand the layered architecture approach with reference to OSI Model.*
3. *Be aware of the characteristics of different transmission media.*
4. *To distinguish between different network devices.*
5. *Have the basic concepts of circuit and packet switched networks.*
6. *Recognize Assign and Performing IP addressing.*

This course will not teach you:

1. *The practicalities of wiring networks or administrating networked computers.*
2. *How to program networked applications*

Teaching Learning Methodology:

The formal teaching component of this course consists of: active student participation in and contribution to all forms of teaching and learning i.e. lectures, discussions, research assignments and projects. Lectures will be twice a week of 90 min each.

Weekly Term Plan

Week	Topic
1.	<i>Network & Network Applications</i>
2.	<i>Network Topologies</i>
3.	<i>Communication Medium</i>
4.	<i>Network Models</i>
5.	<i>Network Models</i>
6.	<i>LAN Signaling & Access</i>
7.	<i>Brief Introduction to LAN Standards</i>
8.	<i>Mid Term Examination</i>
9.	<i>Interconnecting Devices</i>
10.	<i>Interoperability (TCP/IP)</i>
11.	<i>Interoperability (TCP/IP)</i>
12.	<i>Network Addressing</i>
13.	<i>Brief Intro to Some Useful Protocols</i>
14.	<i>Brief Intro to Some Useful Protocols</i>
15.	<i>Network Security and Management</i>
16.	<i>Network Security and Management</i>
17.	<i>Final Term Examination</i>



Topics in Detail

Network & Network Applications

Network Uses
Network Benefits
Client Servers
Network Disadvantages

Some Useful Terms

Serial vs. Parallel Communication
Circuit Switching vs. Packet Switching
Frequency Modulation vs. Amplitude Modulation
Simplex, Half Duplex and Full Duplex Comm.
Synchronous vs. Asynchronous Data Transfer

Topologies

Bus Topology
Star Topology
Ring Topology
Mesh Topology
Hybridized Topologies

Medium

Guided Media
UTP Cable
STP Cable
Fiber Optic Cable
Unguided Media
Microwave Communication
Radio waves Communication
Infrared, Bluetooth

Network Models

OSI Standards
7-Layers and Description
TCP/IP Suit

LAN Signaling & Access

Signaling
Baseband & Broadband
Access
CSMA/CD
CSMA/CA
Token Passing, Ring, Bus

Brief Introduction to LAN Standards

IEEE 802.3 Standard
IEEE 802.4 Standard
IEEE 802.5 Standard
IEEE 802.6 Standard

Inter Connecting Devices

Repeaters
Bridges
Routers
Gateways
Virtual LANs

Interoperability

Protocol Suits
TCP/IP
Windows NT
Novell Netware

Network Addressing

Internet Address
Classful Address
Classless Address

Brief Intro to Some Useful Protocols

SMTP
FTP
HTTP
ARP
RARP
ICMP
IPv6

Network Security and Management

Private Key Cryptography
Public Key Cryptography
Digital Signatures
Key Management
IP Level Security IPSec
Transport Layer Security TLS
Application Layer Security: PGP
Firewalls and Virtual Private Networks

Text & Recommended Readings

- Data Communications and Networking*
 Behrouz A Forouzan
 3rd Edition ISBN: 9780071232418
- Computer Networks*
 Andrew S Tanenbaum
 4th Edition, ISBN 978-0130661029
- Local Area Networks*
 Peter Hodson
 ISBN: 9780826458667

Tools

- Microsoft Word for Documentation*
 Headings *Arial 11pt Bold*
 Normal Text *Times New Roman 10pt*
 Header Footer *Times New Roman 8pt*
 Paragraph *Single Line Spacing*
 First Line Indent 1.0 cm
 Page Margins *2 cm from each side*
- Microsoft Visio 2007*



Grading Policy:

Final Grade for this course will be the cumulated result of the following term work both Lectures and Lab Sessions with relevant participation according to the quoted percentage.

Sessional	25%	Mid Term	35%	Final Term	40%
Assignments	10 %	Mid Term Exam	25%	Final Exam	30%
Quizzes	10%	Lab Work/ Lab Mid Exam	10%	Case Study/ Project/ Term Paper	10%
Presentations	05%				

Remember subdivision of Mid Term and Final Term Examination should be done only in case of very essential and major Grading Instruments.

Dishonest Practices & Plagiarism

A student found responsible for dishonest practice/cheating (copying the work of others, use of unauthorized material in Grading Instruments etc.) in relation to any piece of Grading Instrument will face penalties like deduction of marks, grade 'F' in the course, or in extreme cases, suspension and rustication from IBIT.

For details consult Plagiarism Policy of the PU at <http://pu.edu.pk/dpcc/downloads/Plagiarism-Policy.pdf>

Grading System:

Letter Grade	Grade Point	Num Equivalence
A	4.00	85 – 100 %
A-	3.70	80 – 84 %
B+	3.30	75 – 79%
B	3.00	70 – 74 %
B-	2.70	65 – 69 %
C+	2.30	61 – 64 %
C	2.00	58 – 60 %
C-	1.70	55 – 57 %
D	1.00	50 – 54 %
F	0.00	Below 50 %
I	Incomplete	*
W	Withdraw	*

Norms to Course:

- ✓ *Submission Date and Time for the term instruments is always **Un-Extendable**.*
- ✓ *7 Absentees in class will be result in forced withdrawal. (PU Policy)*
- ✓ *Re-sit in Mid and Final Term will cause you a loss of 2 and 3 grade marks respectively. (PU Policy)*
- ✓ *This is your responsibility to keep track of your position in class evaluation units.*
- ✓ *After the submission date, NO excuse will be entertained.*
- ✓ ***Keep a copy of all submitted Grading Instruments.***
- ✓ *Assignment is acceptable only in its Entirety.*
- ✓ *No make up for any assignment and quiz.*
- ✓ *Copied & Shared work will score Zero.*
- ✓ *Assignments are Individual.*

Good Luck