

UkaTarsadiaUniversity



[M.Sc. (C.A.)]

Computer Networks (040020111)

IstSemester

EFFECTIVE FROM JUNE-2014

UKA TARSADIA UNIVERSITY
M.Sc. (C.A.) (1st Semester) Syllabus, 2014-2015

Course Code: 040020111 Course Title: Computer Networks

Course Credits: 4 Total Hours: 48 [Lectures: 04, Tutorial: 00, Practical: 00]

Prerequisites: Basic knowledge of computer organization & Operating system

Prerequisites By Topics: Components of computer architecture and functions of operating system.

Objectives: To provide thorough understanding of networking concepts and knowledge of OSI layer's functionality

- 1 **Introduction to Basic Concepts** [07 Hours]
 - Data Communication
 - Networks
 - The Internet
 - Protocol and Standards
 - The OSI Model – Layers in OSI Model, Functions of layers
 - TCP/IP Protocol Suite
- 2 **Physical & Data Link Layer** [12 Hours]
 - Transmission Media: Guided and Unguided Media
 - Error Detection: VRC, LRC, CRC, Checksum
 - Error Correction: Hamming Code
 - Framing Techniques: Character Count, Bit Stuffing, Byte Stuffing
 - Protocols: Simplex, Stop and Wait, Selective Repeat, Go Back N
 - MAC sub layer : CSMA,CSMA/CD,CSMA,CA
- 3 **Ethernet** [05 Hours]
 - IEEE Standards
 - Standard Ethernet
 - Fast Ethernet
 - Gigabit Ethernet
- 4 **Network Layer** [07 Hours]
 - Internetworking – Need of Network Layer, Internet as datagram n/w,
 - Internet as Connectionless n/w
 - Delivery – Direct, Indirect
 - Forwarding : Techniques, Process, Routing Table
 - Routing Protocols: Distance Vector Routing, Link State Routing, Path Vector Routing
- 5 **Transport Layer** [07 Hours]
 - Process to Process Delivery
 - UDP – User Datagram Protocol
 - TCP – Transmission Control Protocol
- 6 **Presentation and Application Layer** [10 Hours]
 - Cryptography: Introduction, Definitions, Categories
 - Symmetric Key Cryptography
 - Asymmetric Key Cryptography
 - Application Layer : DNS,HTTP,TELNET, FTP, E- Mail

Course Outcomes:

Upon completion of the course students:

- C01: Shall have understanding about basics of data communication, network architecture, different protocols and standards(IEEE).
- C02: Shall have knowledge about data transmission techniques and transmission media.
- C03: Shall have understanding error detection and error correction methods.
- C04: Shall get depth understanding functionalities of Network Layer & Protocols.
- C05: Shall have understanding of functionalities Transport Layer & Protocols.
- C06: Shall have thorough understanding of functionalities of Application and Presentation Layer& Protocols.

Course Objectives and Course Outcomes Mapping:

To provide thorough understanding of networking concepts: **C01,C02**

Knowledge of OSI layer's functionality: **C03,C04,C05,C06**

Course Units and Course Outcomes Mapping:

Unit No.	Unit	Course Outcome					
		C01	C02	C03	C04	C05	C06
1	Introduction to Basic Concepts	✓	✓	✓	✓	✓	✓
2	Physical & Data Link Layer	✓	✓	✓			
3	Ethernet	✓					
4	Network Layer	✓			✓		
5	Transport Layer	✓				✓	
6	Presentation and Application Layer	✓					✓

Hands-on Experience Activity: <<applicable only for relevant theory courses >>

- ❖ For seminar,
 - ☑ Teacher shall form the groups of students during the 4th week.
 - ☑ Seminar titles and respective student groups shall be placed on website after approval of CourseCoordinator on website in the 5th week of the semester.
 - ☑ Students shall work in team and following points shall be followed:
 - Each team shall have different seminar topics.
 - A team shall consist of at the most 3 and not less than 2 members.
 - Ratio of student team and seminar topic must be 1:1 and it should be non-repetitive.
 - After the completion of unit 5, student give seminar of given topic.

Modes of Transaction (Delivery):

- ❖ Lecture method is generally used but along with it, as and when required, discussion method would be fruitful. It shall be supplemented with various appropriate audio-visual aids.
- ❖ Seminars shall be conducted to enhance their communication and presentation skills & shall be based on units 5 & 6.

Activities/Practicum:

The following activities shall be carried out by the students.

- ❖ Under the guidance of teacher students may form a small network once demonstrated by teacher.
- ❖ Student must develop a project where s/he can implements various protocols used for the communication

The following activities shall be carried out by the teacher.

- ❖ Demonstration of various networking devices to the students. May be a teacher can take students to visit the computer labs.
- ❖ Teacher must demonstrate to the students that how a small network can be established. Crimping of wires, installing NIC drivers can be done.

Text Book:

1. Behrouz A Forouzan, Data Communications & Networking, McGraw-Hill

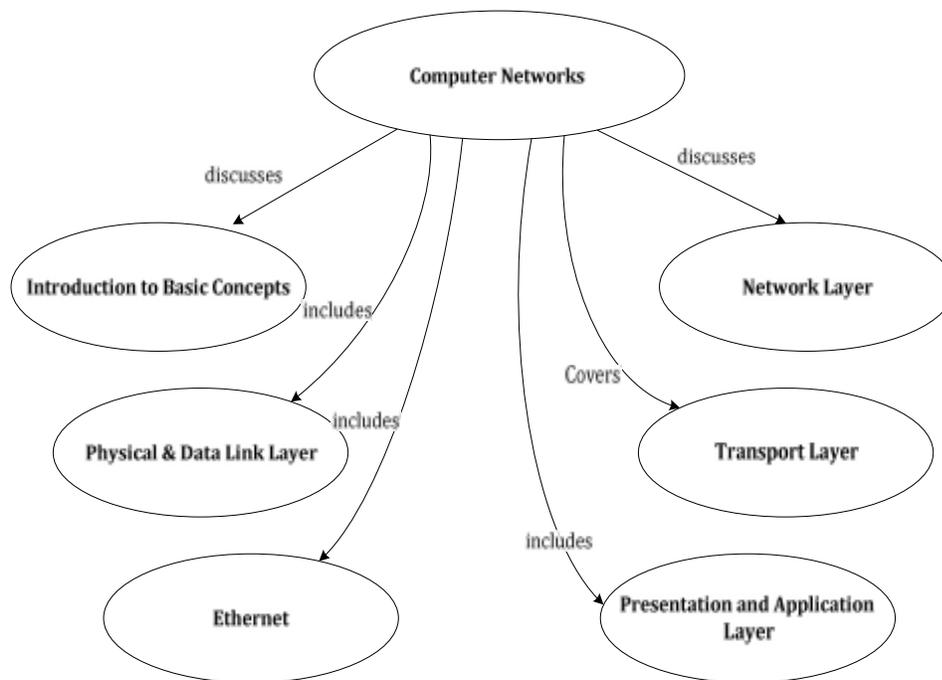
Reference Books:

1. Andrew S Tanenbaum, Computer Networks, Prentice Hall

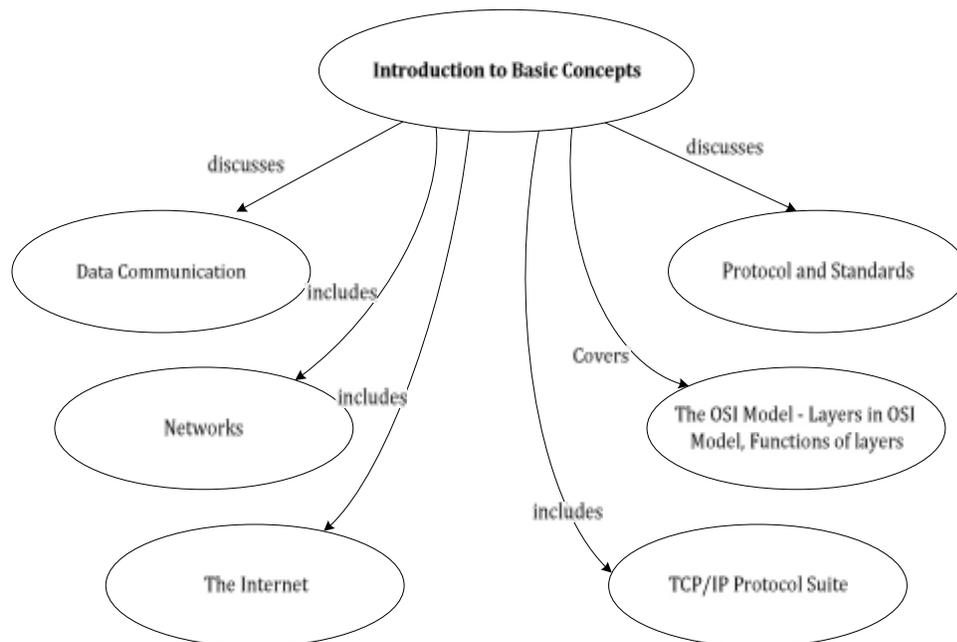
Concept Map:

It is a hierarchical / tree based representation of all topics covered under the course. This gives direct / indirect relationship /association among topics as well as subtopics.

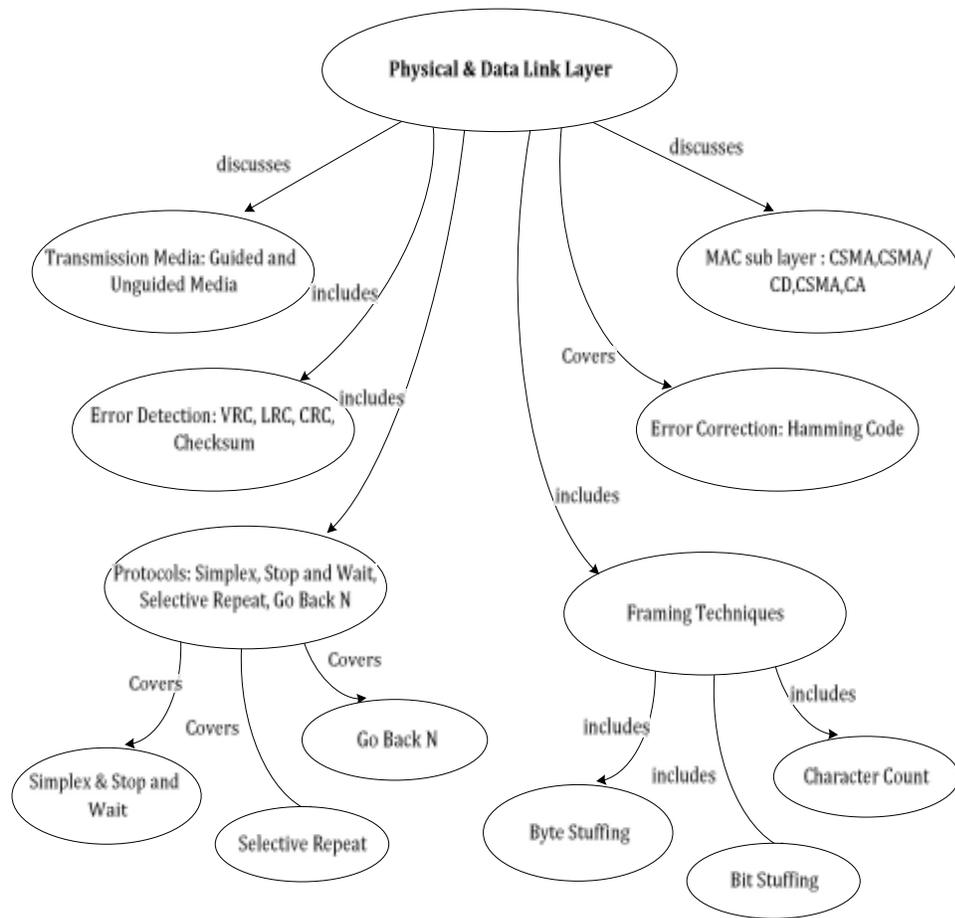
Computer Networks



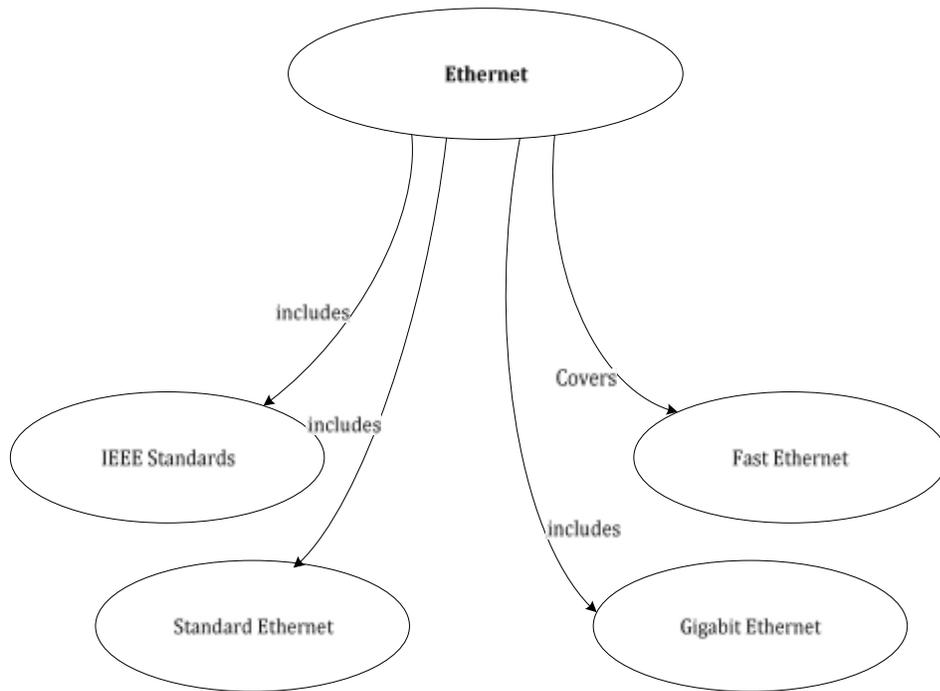
Unit-1: Introduction to Basic Concepts



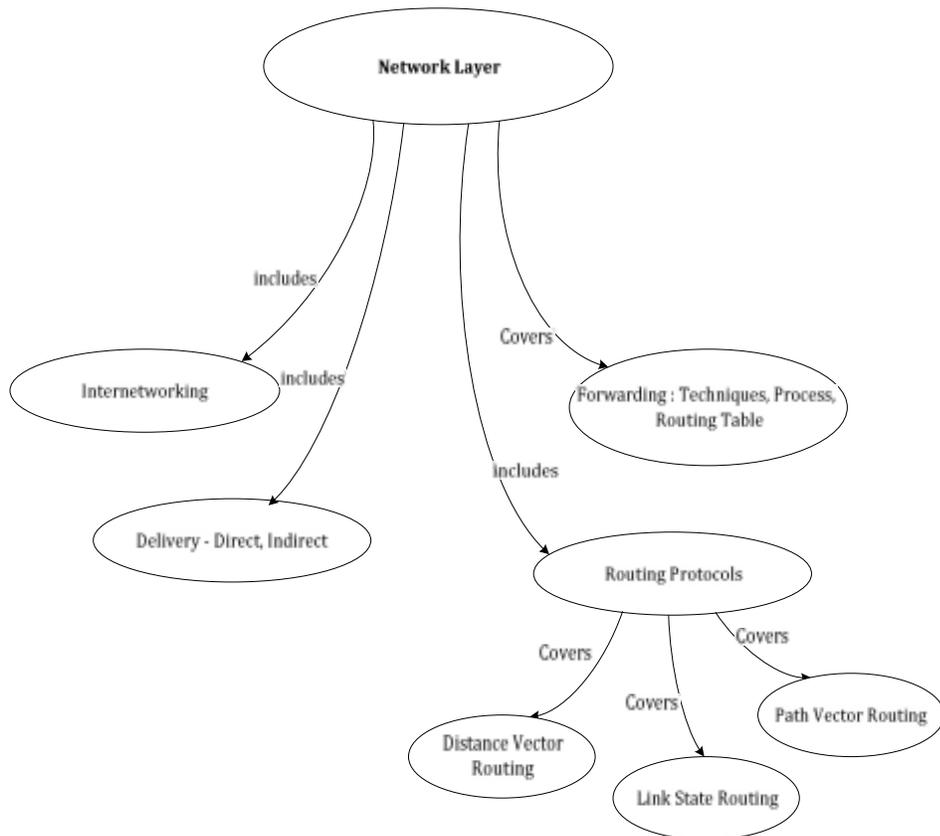
Unit-2: Physical & Data Link Layer



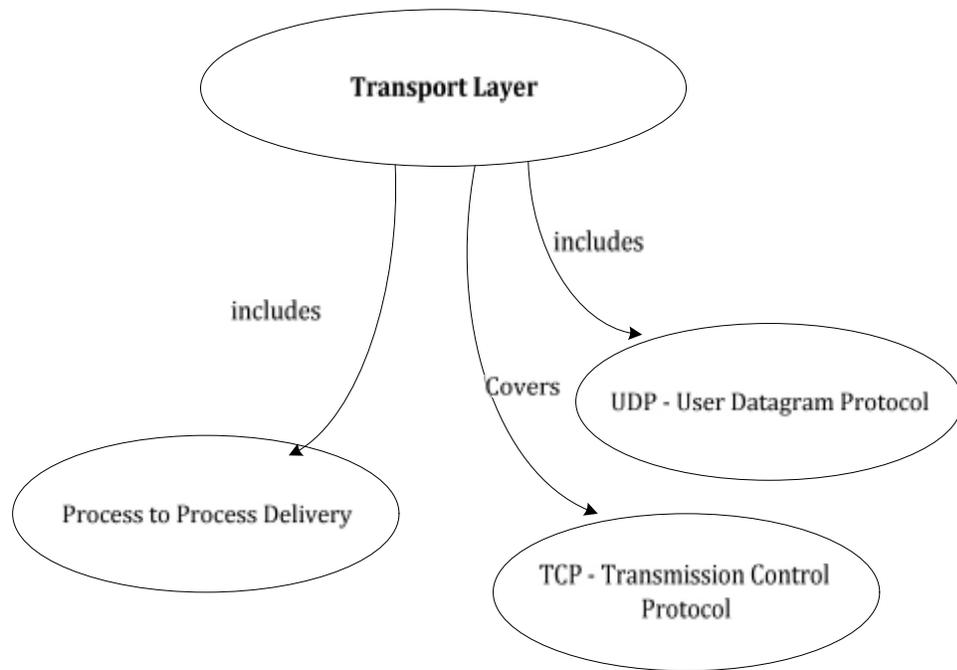
Unit-3: Ethernet



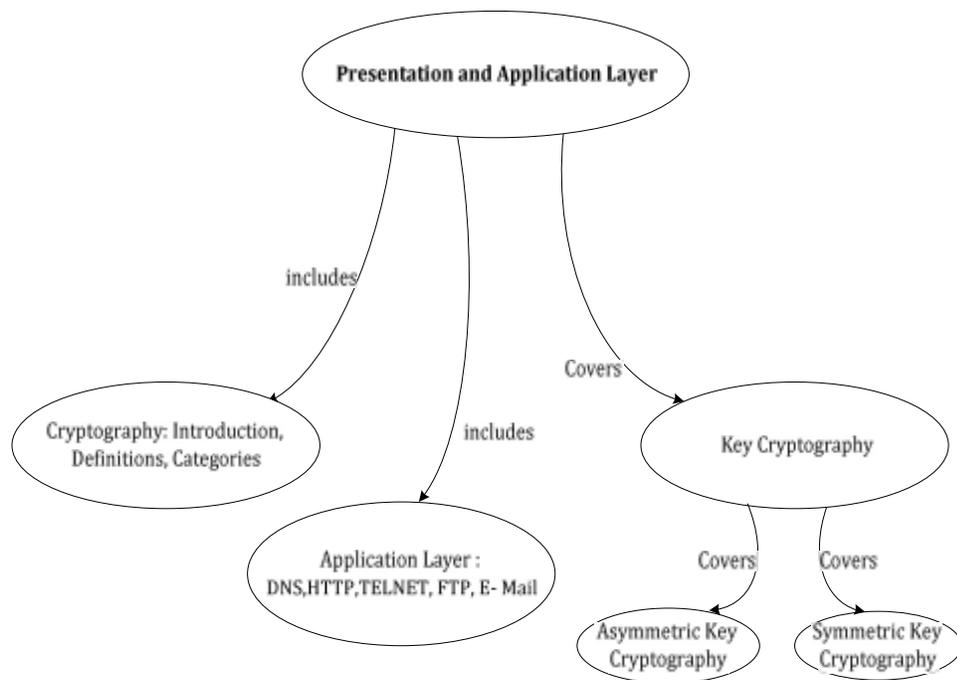
Unit-4: Network Layer



Unit-5: Transport Layer



Unit-6: Presentation and Application Layer



Assessment:

The weightage of CIE and University examination shall be as per the University regulations.
Composition of CIE shall be

Assessment Code	Assessment Type	Duration of each	Occurrence	Each of marks	Weightage in CIE of 40 marks	Remarks
A1	Quiz	45 mins	2	20	4 x 2= 8	Quiz 1 : After completion of Unit 1& 2 Quiz 2 : After completion

						of Unit 4
A2	Unit Test	1.5 hrs.	2	30	6 x 2 = 12	Test 1 : After completion of Unit 3 Test 2 : After completion of Unit 5
A3	Assignment	5 days	1	20	5 X 1 = 5	At least three questions from each unit shall be given, after the teaching of that respective unit end.
A4	Internal Exam	3 hrs.	1	60	15 x 1 = 15	Before completion of the term

- ❖ No make-up work shall be accepted for missed or failed tests.
In case of UFM, 30% penalty is given in that assessment parameter

Course Assessment with Course Outcomes Mapping

Assessment	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
A1	✓	✓	✓	✓	✓	✓
A2	✓					
A3	✓			✓	✓	
A4	✓	✓	✓	✓	✓	✓

Question Bank:

Question Bank must be prepared which consists of several types of questions namely Multiple Choice Questions, Fill in the blanks, Short type questions, Long type questions and Comprehensive exercises. Comprehensive exercises will be applicable for units 2,4.

Academic Honesty:

Coursework is assumed to be accomplished individually (otherwise stated). Any portion of submission taken directly from anywhere (like statements in assignment/report etc.) without modification must be accompanied with the properly formatted reference giving credit to the author and to the source.

UFM:

- ❖ If two or more submitted papers are too similar for coincidence, a penalty shall be imposed that shall usually be the same for the student who did the original as for the one copying from it.
- ❖ Any ascertained fact of breaking institute policy shall be associated with one or all of the following: (i) zero marks for the work; (ii) report to the Course coordinator; (iii) report to the Director.

Discussion Group:

Students are welcome to post on the Course Discussion Board available on SRIMCA View Course Webpage. It is responsibility of the concern Course teacher to maintain Discussion Board.

Attendance:

- ❖ Attendance means being present for the entire class session. Those arriving significant late or leaving significantly early without prior permission shall be counted as ABSENT for the entire class session.
- ❖ Concern teacher must clearly state his/her attendance policies at the first class meeting.