Shyam Lal College (University of Delhi)
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Lesson Plan (Discipline Specific Elective - (DSE), January to May 2024)

Name of Teacher	**Mr. Parveen Kumar**		**Department**	**Computer Science**
Course	**B.Sc. (Physical Science)**		**Semester**	**SIX**
Paper	**Computer Networks Paper Code: BSCS06A**		**Academic Year**	**2024**

Learning Objectives

This course provides an overview of the concepts of data communication and computer networks. Network topologies and their characteristics, different type of networks, transmission media along with their limitations and use, different protocols used in application layer are covered.

Learning Outcomes

On successful completion of this course, the student will be able to:

1. **Understand the basics of data communication.**
2. **differentiate between various types of computer networks and their topologies.**
3. **understand the difference between the OSI and TCP/IP protocol suit.**
4. **explain merits and demerits of different types of communication media.**
5. **distinguish between different types of network devices and their functions.**
6. **use IP addressing and understand the need of various application layer protocols.**

Lesson Plan

Week	Unit	Topics	Reference Book	Chapter
Week 1–2	**Unit1 - Introduction**	Introduction to data communications and networking, Use of Computer Networks, classification of networks ,OSI model , function of the layers, TCP/IP	3	1.1 to 1.4
Week 3–4	**Unit2 - Network Topologies**	Bus, star,ring, mesh, tree,hybridtopologieswith their features, advantages and disadvantages of each type. TransmissionModes:simplex, half duplex and full duplex	2	1.1 to 1.2
Week 5-6	**Unit3 - Transmission Media**	Guided Media (Wired) (Twisted pair, Coaxial Cable, Fiber Optics).Unguided Media (Radio Waves, Infrared, Micro-wave, and Satellite).	3	2.2 to 2.4
Week 7-8	**Unit4 – Data Communication and Switching Techniques**	Framing, Flow control, Error control	3	3.1 to 3.4
		Circuit switching, Packet switching, Message switching	2	8.1 to8.3
		Routing	3	5.2 (up to 5.2.2)
Week 9-11	**Unit5 - Switching Devices**	Repeaters, switches, bridges, gateways.	1	17
		Hubs ,Routers, Multiplexing: (FDM, WDM, TDM)	2 2	17.1, 6.1
Week 12-15	**Unit6 -Internet**	Internet Service Providers (ISP), Application layer protocols: (DNS, URL, WWW, FTP, SMTP, HTTP, TELNET). Web pages , Introduction to HTML.	1	4
		Internet addressing system: IP address with their classification and notation.	1	21

References
1. Comer,D. E.(2015). Computer NetworksandInternet(6thedition). Pearson Publication. 2. Forouzan, B. A.(2017).Data Communications andNetworking(5thedition). McGraw Hill 3. Tanenbaum,A.S.&Wetherall, D.J.(2011) Computer Networks (5th edition), Pearson Publication

Assignment and Class Test Schedule for Semester	Assignment to be allocated in week 5-6 and week 9-11. Class test to be held as per schedule during week 12-13

Practical Examination

4 hours, 50 marks Breakup of 50 marks:
25 marks for continuous internal assessment (project work, assignment, lab record etc.)
25 marks for final practical exam (At least two exercises to be given)

HTML Practical

1. Write a HTML program to design a form which should allow to enter your personal data.
(Hint: make use of text field, password field, e-mail, lists, radio buttons, checkboxes, submit button).

2. Write html code to generate following output.
- Coffee
- Tea
  - o Black Tea
  - o Green Tea
  - Milk

3. Design an html form to take the information of a customer visiting a departmental store such as name, contact phone no, preferred days of purchasing, favourite item (to be selected from a list of items), suggestions etc. One should provide button to Submit as well as Reset the form contents.

4. Design an html form to take the information of an article to be uploaded such as file path, author name, type (technical, literary, general), subject topic (to be selected from a list) etc. One should provide button to Submit
as well as Reset the form contents.

5. Design an HTML document using Table related tags align the images

6. Write a HTML code to generate following output.

7. Develop static pages (using only HTML) of an online Book store.The website should consist of following pages.

- Home page
- Registration and user Login
- User profile page
- Books catalog
- Shopping cart
- Payment by credit card Order Conformation

NETWORK ALGORITHMS PRACTICAL LIST

1. Simulate Cyclic Redundancy Check(CRC) error detection algorithm for noisy channel.
2. Simulate and implement stop and wait protocol for noisy channel.
3. Simulate and implement go back n sliding window protocol.
4. Simulate and implement selective repeat sliding window protocol.
5. Shortest Path algorithm.