

CSC-402 Internet Technology
Tribhuvan University
Institute of Science and Technology
Soch College of Information Technology
Bachelor of Science in Computer Science and Information Technology

Course Title: Internet Technology

Course no: CSC-402 ----- Full Marks: 60+20+20

Credit hours: 3 ----- Pass Marks: 24+8+8

Nature of course: Theory (3 Hrs.) + Lab (3 Hrs.)

Course Synopsis: Study on internet protocols, client/server applications and web services.

Designing and applications of internet and intranet system

Goal: This course deals on the practical application of internetworking technologies to private intranets for information management and public internets for electronic commerce students will learn theoretical details, strategies for designing sites, techniques for creating their technical infrastructures, methods for developing content, and techniques for site deployment and management.

Course Contents:

1. Introduction ----- 5 Hrs.

- 1.1. History and Development of Internets and Intranets
- 1.2. IANA, RIR/NIR/LIR and ISPs for internet number management
- 1.3. Internet Domain and Domain Name System
- 1.4. Internet Access Overview
- 1.5. Internet Backbone Networks: Optical Backbone, Marine Cables, Teleports, Satellite and Terrestrial Links

2. Internet Protocol Overview ----- 6 Hrs.

- 2.1. TCP/IP and the IP Layer overview
- 2.2. IPv4 and IPv6 Address Types and Formats
- 2.3. IPv4 and IPv6 Header Structure
- 2.4. Internet RFCs

3. Protocols and Client/Server Applications ----- 6 Hrs.

- 3.1. Standard Protocols: SMTP, E-mail Message (RFC22), PGP, POP, IMAP, HTTP, FTP
- 3.2. N-Tiered Client/Server Architecture
- 3.3. Universal Internet Browsing
- 3.4. Multiprotocol Support

4. HTTP and the Web Services ----- 8 Hrs.

- 4.1. HTTP, Web Servers and Web Access
- 4.2. Universal naming with URLs

- 4.3. WWW Technology: HTML, DHTML, WML, XML
- 4.4. Tools: WYS/WYG Authoring Tools
- 4.5. Helper applications: CGI; PERL, JAVA, JAVA SRIPTS, PHP, ASP, .NET Applications
- 4.6. Introduction to AJAX (Programming)
- 4.7. Browser as a rendering engine: text, HTML, gif and jpeg

5. Designing Internet Systems and Servers ----- 8 Hrs.

- 5.1. Designing of Internet System Network Architecture
- 5.2. Choice of platforms
- 5.3. Server Concepts: WEB, Proxy, RADIUS, MAIL
- 5.4. Cookies
- 5.5. Load Balancing: Proxy Arrays
- 5.6. Server Setup and Configuration Guidelines
- 5.7. Security and System Administration Issues, Firewalls and Content Filtering

6. Internet and Intranet Systems Development ----- 6 Hrs.

- 6.1. Introductions
- 6.2. Benefits and drawbacks of intranets
- 6.3. Protocols, Structure and Scope of Networks
- 6.4. Intranets Resource Assessments: Network Infrastructure, Clients and Server Resources
- 6.5. Intranet Implementation Guidelines
- 6.6. Content Design, Development, Publishing and Management
- 6.7. Intranet Design with Open source Tools: DRUPAL, JUMLA
- 6.8. Tunneling Protocols: VPN

7. Internet and Intranet Applications ----- 6 Hrs.

- 7.1. General Applications: Email, WWW, Gopher, Online Systems
- 7.2. Multimedia and Digital Video/Audio Broadcasting: Video/Audio Conferencing, Internet Relay Chat (IRC)
- 7.3. Broadband Communications, Policy, xDSL and Cable Internet
- 7.4. VoIP, GoIP and IP Interconnection
- 7.5. Datacenters and Data warehousing, packet clearing house
- 7.6. Unified Messaging Systems
- 7.7. Fundamental of e-Commerce
- 7.8. Concept of Grid and Cloud Computing

Laboratory Work:

Laboratory should include features like packet capturing and analysis, design of internet/intranet system, proxy administration, firewall configuration and management, VPN, implementation of IRC, Content development with JUMLA/DRUPAL mentioned in the syllabus.

Reference books:

- 1 Computer Networks; Andrew S. Tanenbaum, Prentice Hall India limited, New Delhi, 2010.
- 2 Internet and Intranet Engineering; Daniel Minoli, McGraw-Hill India Limited, New Delhi, 2009.
- 3 Internetworking with TCP/IP; Comer, D.E and Stevens