

Education

9. PHP 6 and MySQL 5 for Dynamic Web Sites: Visual Quick Pro Guide, Larry Ullman, Pearson Education

**SEMESTER II**

Subject Code	Subject Name	Teaching Scheme (Contact Hours per week)			Credits Assigned				
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total	
MCA201	Data Structures	04	--	--	04	--	--	04	
<b>Examination Scheme</b>									
<b>Theory</b>				<b>Term Work</b>	<b>Pract.</b>	<b>Oral</b>	<b>Total</b>		
<b>Internal Assessment</b>			<b>End Sem. Exam. [ Once in a semester ]</b>						
<b>Test1</b>	<b>Test 2</b>	<b>Avg.</b>							
20	20	20	80		--	--	--	100	

Unit	Contents	Hrs
1	<p><b>Introductions</b>                      specification: Pseudo code conventions, Recursive Algorithms, Recursion Tree Method. Performance Analysis: Space Complexity, Time Complexity, Amortized complexity, Asymptotic Notations (Big O, Omega, Theta). Practical complexities, Performance measurement .                      Sorting Techniques: Bubble, Insertion, Selection, Shell, Radix, Quick.                      Searching Technique: Sequential Search &amp; Binary Search.</p>	<p style="text-align: right;">Algorithm 7 hrs</p>
2	<p>Algorithms to implement Link list (create structure, insert, delete, sort, search), Doubly Link List(create structure , insert, delete, sort, search), Circular link list(create structure , insert, delete, sort, search). Multi link list: (Insertion &amp; Deletion) Stack (PUSH , POP Delete), Queue(Add , Remove): Simple queue, Double ended queue, circular queue, Priority Queue.</p>	<p style="text-align: right;">6 hrs</p>
3	<p><b>Hash Function:</b>                      Different Hashing Techniques, Address calculation Techniques, Common hashing functions, Collision resolution techniques: Linear probe, quadratic prob, Key Offset. Rehashing. Double hashing. Link list addressing.</p>	<p style="text-align: right;">6 hrs</p>
4	<p><b>Introduction to Trees :</b>                      General trees, Binary Tree, Binary tree traversal (Pre Order, In order, Post Order) DFS &amp; BFS traversal of binary tree, Conversion from Tree to binary tree.                      Expression Tree: Prefix, Infix , Post fix notations of expression tree, Algorithms to Convert from prefix to infix &amp; post fix etc. Binary Search Tree algorithm to implement BST, AVL Trees: concept and problems. Algorithms to rotate AVL Tree. Binary Threaded Tree, Huffman Tree.</p>	<p style="text-align: right;">8 hrs</p>
5	<p><b>Heap:</b> Heap Structure, Min heap , Max heap, Basic algorithms: Reheap up &amp;</p>	<p style="text-align: right;">4 hrs</p>

Reheap down, Build Heap, Insertion and Deletion in Heap Tree.

- |   |  |       |
|---|--|-------|
| 6 | <b>Multi ways Trees:</b><br>B-Tree( Insert node, delete node, search node, split node), Traversal of B Tree.<br>Introduction to B* Tree.<br>Comparison between B & B* Tree   | 4 hrs |
| 7 | <b>Graphs:</b> Terminology & Operations<br>Graph Traversals( DFS and BFS)<br>Graph Storage Structure(Adjacency Matrix, Adjacency list)<br>Cost Adjacency Matrix<br>Minimum spanning Tree( using Prims & Krushkal Algorithms) | 6 hrs |
| 8 | Divide and Conquer, Back Tracking Method.<br>Dynamic programming: All pair shortest Path, Single source Shortest Path<br>( Dijkstra, Warshell etc.)  | 4 hrs |

**References:**

1. Data Structure A Pseudocode Approach with C “Richard F Gilberg  
Behrouz A Forouzan
2. Shaum’s Outlines Data Structure Seymour Lipschutz TMH
3. Data Structures & Program Design in C “ Robert Kruse C L Tondo  
Bruce Leung Pearson
4. Data Structure using C “ AM Tanenbaum , Y Langsam & MJ Augenstein  
Prentice Hall”.
5. An Introduction to Structure with application “ Jean Paul Trembly and  
Paul Sorenson”
6. Data Structure and Program Design in C “ RL Kruse, BP Leung & CL  
Tondo Prentice Hall
7. Data Structure & Algorithm Analysis in C “ Weiss, Mark Allen Addison  
Wesley

Subject Code	Subject Name	Teaching Scheme (Contact Hours per week)			Credits Assigned				
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total	
MCA202	Operating System	04	--	--	04	--	--	04	
<b>Examination Scheme</b>									
<b>Theory</b>				<b>Term Work</b>	<b>Pract.</b>	<b>Oral</b>	<b>Total</b>		
<b>Internal Assessment</b>			<b>End Sem. Exam. [ Once in a semester ]</b>						
<b>Test1</b>	<b>Test 2</b>	<b>Avg.</b>							
20	20	20	80		--	--	--	100	

Unit	Contents	Hrs
1	<b>Introduction to System Software</b> <ul style="list-style-type: none"> <li>➤ Overview of all system softwares :- <ul style="list-style-type: none"> <li>- Compiler</li> <li>- Assembler</li> <li>- Linker</li> <li>- Loader</li> <li>- Operating system</li> <li>- I/O manager</li> </ul> </li> </ul>	3 hrs
2	<b>Fundamentals of Operating System:-</b> <ul style="list-style-type: none"> <li>➤ OS services and Components</li> <li>➤ Multitasking , Multiprogramming, Multiprocessing</li> <li>➤ Time Sharing</li> <li>➤ Buffering</li> <li>➤ Spooling</li> <li>➤ Distributed OS</li> </ul>	3 hrs
3	<b>Process and Thread Management</b> <ul style="list-style-type: none"> <li>➤ Concept of process and threads</li> <li>➤ Process states</li> <li>➤ Process management</li> <li>➤ Context switching</li> <li>➤ Interaction between processes and OS</li> <li>➤ Multithreading</li> <li>➤ Example OS : Linux</li> </ul>	5 hrs
4	<b>Concurrency Control</b> <ul style="list-style-type: none"> <li>➤ Concurrency and Race Conditions</li> <li>➤ Mutual exclusion requirements</li> <li>➤ Software and hardware solutions</li> <li>➤ Semaphores</li> <li>➤ Monitors</li> </ul>	7 hrs

- Classical IPC problems and solutions
- Deadlock
  - Characterization
  - Detection
  - Recovery
  - Avoidance and Prevention

## 5 Memory Management

7 hrs

- Memory partitioning
- Swapping
- Paging
- Segmentation
- Virtual memory
  - Overlays
  - Demand paging
  - Performance of Demand paging
  - Virtual memory concepts
- Page replacement algorithms
- Allocation algorithms
- Example OS : Linux

## 6 I/O Systems

4 hrs

- Secondary-Storage Structure
  - Disk structure
  - Disk scheduling
  - Disk management
  - Swap-space management
  - Disk reliability
  - Stable storage implementation
- Introduction to clock
  - Clock hardware
  - Clock software

## 7 File systems

5 hrs

- File concept
- File support
- Access methods
- Allocation methods
- Directory systems
- File protection
- Free space management
- Example OS : Linux

## 8 Protection & Security

3 hrs

- Protection

- Goals of protection
- Domain of protection
- Access matrix
- Implementation of access matrix
- Revocation of access rights
- Security
  - The security problem
  - Authentication
  - One-Time passwords
  - Threats
- Example OS: Linux

## 9 Case Study

3 hrs

- Android OS

### Reference Books

1. Operating System Concepts (7th Ed) by Silberschatz and Galvin, Wiley, 2000.
2. Operating Systems (5th Ed) – Internals and Design Principles by William Stallings, Prentice Hall, 2000.
3. Modern Operating Systems by Andrew S Tanenbaum, Prentice Hall India, 1992.
4. Operating Systems (3rd edition) by Gary Nutt, Nabendu Chaki, Sarmishtha Neogy, Pearson
5. Operating Systems Design & Implementation Andrew S. Tanenbam, Albert S. Woodhull Pearson
6. Operating Systems Achyut S. Godbole Tata Mc Graw Hill
7. Operating Systems D.M.Dhardhere Tata Mc Graw Hill

Subject Code	Subject Name	Teaching Scheme (Contact Hours per week)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
MCA203	Computer Networks	04	--	--	04	--	--	04
<b>Examination Scheme</b>								
<b>Theory</b>					<b>Term Work</b>	<b>Pract.</b>	<b>Oral</b>	<b>Total</b>
<b>Internal Assessment</b>			<b>End Sem. Exam. [ Once in a semester ]</b>					
<b>Test1</b>	<b>Test 2</b>	<b>Avg.</b>						
20	20	20	80		--	--	--	100

### Unit

### Contents

Hrs

- |   |   |       |
|---|---|-------|
| 1 | Introduction to digital communication, signal propagation, signal types, signal parameters, channel effects on transmission –attenuation, effects of limited bandwidth, delay distortion, noise, data rate limits-Nyquist’s theorem and Shannon’s | 4 hrs |
|---|---|-------|

theorem

- |   |   |       |
|---|---|-------|
| 2 | Basics of computer Network, topology & types of topologies, types of networks(LAN, MAN, WAN), types of communications(Asynchronous and synchronous) , modes of communications(simplex, half duplex, full duplex), protocols and standards   | 3 hrs |
| 3 | Networking models, Design issues of the layer, ISO-OSI Reference Model, Internet Model (TCP/IP), Comparison of ISO-OSI & TCP/IP Model<br><br>Connectivity Devices : Passive & Active Hubs, Repeaters, , Switches (2-Layer Switch, 3-Layer Switch(Router)), Bridges (Transparent Bridges, Spanning Tree, Bridges, Source Routing Bridges) , Gateways   | 4 hrs |
| 4 | Concept of Intranet & Extranet, Internet Information Server(IIS), Principles of Application Layer Protocols, The Web and HTTP, FTP, Electronic Mail in the Internet , DNS: The Internet's Directory Service.  | 7 hrs |
| 5 | Transport-Layer Services, port addressing, Multiplexing and Demultiplexing, Principles of Reliable Data Transfer, Congestion Control, TCP's Congestion Control. Quality of Service : Introduction, Application, Queue Analysis: M/M/1 as a packet processing Model, QoS Mechanisms Queue management Algorithms, Feedback, Resource, reservation; Queued data and Packet switched traffic modeling. Application and QoS.   | 8 hrs |
| 6 | Network Service Model, IP addressing and subnetting, Routing Principles, Hierarchical Routing, the Internet Protocol, Router's internal features, Routing Algorithms.,classfull and classless addressing<br>Routing in the Internet: Intra and interdomain routing; Unicast Routing Protocols : RIP, OSPF, BGP; Multicast Routing Protocols : MOSPF, DVMRP. Drawbacks of traditional routing methods, Idea of TE, TE and Different Traffic classes. IP over ATM, Multi protocol Label switching (MPLS), Storage Area Network (SAN). | 8 hrs |
| 7 | Data Link Layer, Error Detection and Correction Techniques, Multiple Access Protocols, LAN Addresses and ARP, PPP: The Point-to-Point Protocol , Ethernet standards – IEEE 802.3, 802.4, 802.5, 802.11,   | 8 hrs |
| 8 | Physical Layer, types of media(wired and wireless media, study of wired and wireless media )  | 4 hrs |

**References:**

1. Kurose, J.F. and Ross K.W., "Computer Networking: A Top-Down Approach Featuring the Internet", Third Edition, 2005, Addison-Wesley.
2. An Engineering Approach to Computer Networking, S. Keshav, Addison-Wesley.
3. Forouzan B A., "Data Communication and Networking", Third Edition, 2004, McGraw Hill. Andrew Tenenbaum, Computer Networks, PHI

4. TCP/IP Protocol Suite, (B. A. Forouzan), Tata McGraw Hill edition, Third Edition.
5. Computer Networks: Principles, Technologies and Protocols for Network design, (N. Olifer, V. Olifer), Wiley India Edition (1 st Edition).
6. TCP/IP Volume 1, 2, 3, (W. Richard Stevens), Addison Wesley.
7. TCP/IP Volume I and II, (D. E. Comer), Pearson Education.
8. Unix Network Programming (W. R. Stevens), Vol. 1, Pearson Education.
9. High Performance Communication Networks, (J. Walrand, P. Varaiya), Morgan Kaufmann

Subject Code	Subject Name	Teaching Scheme (Contact Hours per week)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
MCA204	Probability and Statistics	04	--	--	04	--	--	04
<b>Examination Scheme</b>								
<b>Theory</b>				<b>Term Work</b>	<b>Pract.</b>	<b>Oral</b>	<b>Total</b>	
<b>Internal Assessment</b>			<b>End Sem. Exam.</b>					
<b>Test1</b>	<b>Test 2</b>	<b>Avg.</b>	<b>[ Once in a semester ]</b>					
20	20	20	80	--	--	--	100	

**Unit**

**Contents**

**Hrs**

**STATISTICS:**

- |          |   |              |
|----------|---|--------------|
| <b>1</b> | <b>Frequency Distribution and Measures of Central Tendency</b><br>Continuous Frequency Distribution<br>Histogram<br>Frequency Polygon<br>Mean, Median, Mode                 | <b>3 Hrs</b> |
| <b>2</b> | <b>Measures of Dispersion</b><br>Range<br>Quartile Deviation<br>Mean Deviation<br>Standard Deviation<br>Coefficient of Variation  | <b>4 Hrs</b> |
| <b>3</b> | <b>Skewness and Kurtosis</b><br>Karl Pearson's coefficient of Skewness<br>Bowley's coefficient of Skewness<br>Kurtosis  | <b>3 Hrs</b> |
| <b>4</b> | <b>Correlation and Regression</b><br>Regression lines<br>Coefficients of regression<br>Karl Pearson's coefficient of correlation<br>Spearman's rank correlation coefficient | <b>5 hrs</b> |
| <b>5</b> | <b>Testing of Hypothesis</b>  | <b>8 hrs</b> |

Means and proportions – Hypothesis concerning one and Two means. Type I and Type II errors. One tail, two-tail tests.  
**Tests of significance** – Student's t-test, F- test, Chi-Square test.  
**Analysis of Variance** – One way and two-way analysis

**PROBABILITY:**

- |   |              |
|---|--------------|
| <b>6 Probability</b>  | <b>6 Hrs</b> |
| Random experiment, sample space, events, axiomatic Probability, Algebra of events, Conditional Probability, Multiplication theorem of Probability, Independent events, System reliability, Baye's Theorem |              |
| <b>7 Random variables</b>   | <b>4 Hrs</b> |
| Discrete random variable<br>Continuous random variable<br>Two-dimensional random variable<br>Joint probability distribution<br>Stochastic independence  |              |
| <b>8 Mathematical Expectation</b>   | <b>3 Hrs</b> |
| Properties of expectation, properties of variance, Covariance   |              |
| <b>9 Probability Distributions of Discrete Random Variable</b>  | <b>5 hrs</b> |
| Bernoulli, Binomial, Poisson, Geometric distribution  |              |
| <b>10 Probability Distributions of Continuous Random Variable</b>   | <b>5 hrs</b> |
| Normal, Uniform, Exponential, Gamma, Beta distribution  |              |

**References :**

1. Introduction to Probability & Statistics J.Susan Milton, Jesse C. Arnold Tata McGraw Hill
2. Probability and its computer applications : Kishore Trivedi, PHI
3. Schaum's Outlines Probability, Random Variables & Random Process Tata McGraw Hill
4. Fundamental of Mathematical Statistics – S.C.Gupta, V.K.Kapoor



Subject Code	Subject Name	Teaching Scheme (Contact Hours per week)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
MCA205	Financial Accounting	04	--	--	04	--	--	04
<b>Examination Scheme</b>								
<b>Theory</b>					<b>Term Work</b>	<b>Pract.</b>	<b>Oral</b>	<b>Total</b>
<b>Internal Assessment</b>			<b>End Sem. Exam. [ Once in a semester ]</b>					
<b>Test1</b>	<b>Test 2</b>	<b>Avg.</b>						
20	20	20	80		--	--	--	100

Unit	Contents	Hrs
<b>1</b>	Financial Accounting: Nature and scope, Limitations of Financial Accounting. (ii) Basic Concepts and Conventions. Accounting Standards: Meaning, Procedure for issue of Accounting Standards in India, Significance, Generally Accepted Accounting Principles (GAAP). (iii) Accounting Process: Journal, Ledger and Cash Book	<b>12 hrs ( Theory + Numerical)</b>
<b>2</b>	i) Final Accounts of a Sole-Trader and Partnership Firms	<b>12 hrs ( Theory + Numerical)</b>
<b>3</b>	i) Cash Flow Statements: Meaning, Usefulness, Preparation of a cash flow statement in accordance with Accounting Standard 3(Revised) issued by the Institute of Chartered Accountants of India. (only indirect method), Limitations of cash flow statement. (only theory) ii) Cash Budget (Theory + Numerical)	<b>9 hrs (only theory)</b>
<b>4</b>	Financial Statements Analysis: Meaning and objectives, Techniques of Analysis, Ratio Analysis: Advantages, significance and limitations - Liquidity Ratios: Current Ratio, Acid Test Ratio. Solvency Ratios: Debt-equity Ratio, Capital gearing Ratio, Interest Coverage Ratio, proprietary ratio. Profitability Ratios related to sales: Gross profit Ratio, Net Profit Ratio, Operating profit ratio, Profitability Ratios related to investments: Return on total assets (ROTA), Return on investment (ROI), Return on equity (ROE), Return on equity share holders fund, EPS, DPS and Price – earning ratio. Activity Ratios: Stock turnover Ratio and Debtors turnover Ratio.	<b>9 hrs (Theory + Numerical)</b>

### References

1. Book Keeping & Accountancy by L.N.Chopde and D.H. Choudhari
2. Financial Management by Kishorilal S. N. Maheshwari, Financial Accounting, 4th edition, Vikas Publication, New Delhi.
3. Dr. IM Pandey, Essentials of Financial Management, 3rd edition, vikas
4. Dr. S.N. Maheshwari, A text book of -Accounting for management, 2nd edition, Vikas
5. P.C. Tulsian, Financial Accounting, Tata McGraw Hill, New Delhi.
6. "Financial Management" Text and Problems : M.Y.Khan, P.K.Jain

Subject Code	Subject Name	Teaching Scheme (Contact Hours per week)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
L201	Lab I – Data Structures and Statistics Lab	--	06	--	--	03	--	03
	Data Structures Lab		04			02		
	Statistics Lab		02			01		
<b>Examination Scheme</b>								
<b>End Sem. Exam. [ Once in a semester]</b>								
<b>Laboratory Name</b>					<b>Term Work</b>	<b>Pract.</b>	<b>Oral</b>	<b>Total</b>
L201	<b>Programming and Project Development Lab</b>				<b>25</b>	<b>50</b>	<b>25</b>	<b>100</b>
	Data Structures Lab				15	25	15	55
	Statistics Lab				10	15	10	35
	Journal/Documentation					10 (5+5)		10

Session	Title	Hrs
	<b>Data Structures Lab:</b>	
<b>1</b>	<b>Assignment in sorting Techniques</b> Bubble, Insertion, Selection, Shell, Quick, Radix	<b>3 hrs</b>
	<b>Searching Techniques</b> Sequential search    Binary Search	
<b>2</b>	Implementation of Stack(using Array & Link list).	<b>3 hrs</b>
<b>3</b>	Implement all the different types of queues(eg: Queue, Doubly Ended Queue, Circular Queue etc.)	<b>3 hrs</b>
<b>4</b>	A menu driven program that implements singly linked list for the following operations. Create, Display, count, merge, union, intersection Reverse, Sort, Append,	<b>3 hrs</b>
<b>5</b>	a menu driven program that implements doubly linked list for the following	<b>3 hrs</b>

Operations.

Create , Display , Count , Insert , Delete , Search , Copy  
Reverse , Sort , Append,

- 6** A menu driven program that implements Singly circular linked list for the following operations.  
Create , Display , Count , Insert , Delete , Search , Copy, Reverse , Sort **3 hrs**
- 7** A menu driven program
- a. Create a Binary search tree
  - b. Traverse the tree in Inorder, Preorder and Post order
  - c. Search the tree for a given node and delete the node
- 8** A menu driven program that implements Heap tree ( Maximum and Minimum Heap tree )for the following operations. ( Using Array ) Insert , Delete **4 hrs**
- 9** A program to implement double hashing technique to map given key to the address space. Also write code for collision resolution (linear probing) **4 hrs**
- 10** Implementation of Shortest path Algorithm for a given directed graph & undirected graph. **4 hrs**
- 11** Implementation of insert and delete nodes in a graph using adjacency matrix **4 hrs**
- 12** Implementation of Graph Traversal and minimum spanning Tree. **3 hrs**

**Statistics Lab:**

- 1** Introduction to the software (Environment, Entering data and formatting , handling data files, performing calculations, handling utilities, formulae and functions) **2 Hrs**
- 2** Visualizing ( Handling different types of data variables, Creating tables, frequency distribution tables and presenting the data (Charts, Diagrams, graphs, polygons and plots) **2 Hrs**
- 3** Data Descriptors ( Measure of Central Tendencies, Dispersions), correlation, regression) **3 Hrs**
- 4** Probability Distributions **2 Hrs**
- 5** Sampling Distributions and Estimation **2 Hrs**

6	Linear Correlation Analysis Linear Regression Analysis	3 Hrs
7	Hypothesis Testing	3 Hrs
8	ANOVA	3 Hrs

**Students will perform the practicals using advanced excel or C or XL miner or SPSS**

Subject Code	Subject Name	Teaching Scheme (Contact Hours per week)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Pract.	Tut.	Total
L202	<b>Lab II – Operating System Lab and Networking Lab</b>	--	06	--	--	03	--	03
	Operating System Lab		04			02		
	Networking Lab		02			01		
<b>Examination Scheme</b>								
<b>End Sem. Exam. [ Once in a semester]</b>								
<b>Laboratory Name</b>					<b>Term Work</b>	<b>Pract.</b>	<b>Oral</b>	<b>Total</b>
L202	<b>Lab II – Operating System Lab and Networking Lab</b>				<b>25</b>	<b>50</b>	<b>25</b>	<b>100</b>
	Operating System Lab				15	25	15	55
	Networking Lab				10	15	10	35
	Journal/Documentation					10 (5+5)		10

Session	Contents	Hrs
<b>Operating System Lab</b>		
1	<b>Linux System (PROGRAMMING LAB)</b> Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell.	9 hr
2	Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, more, less, creating and viewing files, using cat, file comparisons, View files, disk related commands, checking disk free spaces. Essential linux commands Understanding shells, Processes in linux-process fundamentals, connecting processes with pipes, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority, scheduling of processes at command, batch	9 hr

commands, kill, ps, who, sleep, Printing commands, grape, fgrep, find, sort, Cal, banner, touch, file, file related commands-ws, sat, cut, grep, dd, etc. Mathematical commands- bc, expr, factor, units. vi, joe, vim editor

- |   |  |      |
|---|--|------|
| 3 | Shell programming :- Shell programming, Basic of shell programming, Various types of shell, shell programming in bash, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, shell keywords, Creating Shell programs for automate system tasks and report printing, use of grep in shell, awk programming | 9 hr |
| 4 | Study of gcc   | 4 hr |
| 5 | Linux installation demo  | 3 hr |
| 6 | Samba server configuration (Linux +Windows access)   | 6 hr |

#### **Reference Books (for LAB)**

1. Unix – Sumitaba Das
2. Unix Shell Programming – Yashwant Kanetkar, BPB Publications
3. Linux Programming A Begineer’s Guide – Richard Petersen

**Networking Lab** - Practical’s to be done Packet Tracer (or other simulating software)

- |   |  |      |
|---|--|------|
| 1 | Study of Packet Tracer software interface                        | 1 hr |
| 2 | Basic Configuration of router                                    | 1 hr |
| 3 | Assigning ipv4 & ipv6 addresses to the interfaces of the routers | 1 hr |
| 4 | Configure VLANs on the router, Spanning tree                     | 3 hr |
| 5 | Configuration of PPP   | 3 hr |
| 6 | Configure RIPv2, Configure EIGRP                                 | 3 hr |
| 7 | Configure OSPF   | 3 hr |
| 8 | Access List Configuration, Configuration of NAT                  | 3 hr |
| 9 | Configuration of DCHP, Configuration of switch                   | 3 hr |