



**Faculty of Engineering**  
**Three Year Polytechnic Diploma Course in Computer Engineering**  
**(3<sup>rd</sup> Semester)**  
**(Batch 2015 onwards)**

**SCHEME OF PAPERS**

<b>Sl. No</b>	<b>Course No.</b>	<b>Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1.	DECE-201	Digital Electronics	3	1	0	3.5
2.	DCPE-201	Computer Programming Using 'C'	3	1	0	3.5
3.	DCPE-202	Operating System	3	1	0	3.5
4.	DCPE-203	Computer Architecture	3	1	0	3.5
5.	DCPE-204	System Analysis and Design	3	0	0	3.0
6.	DECE-251	Digital Electronics Lab	0	0	2	1.0
7.	DCPE-251	Computer Programming Using 'C' Lab	0	0	2	1.0
8.	DCPE-252	Operating System Lab	0	0	2	1.0
9.	DCPE-253	Computer Workshop Lab	0	0	2	1.0
10.	*	Environment Studies	2	0	0	-
<b>Total</b>			<b>17</b>	<b>4</b>	<b>8</b>	<b>21</b>

\* Subject is compulsory and qualifying only; having no credit, final examination will be internal.

**Faculty of Engineering**  
**Three Year Polytechnic Diploma Course in Computer Engineering**  
**(4<sup>th</sup> Semester)**  
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**SCHEME OF PAPERS**

<b>Sl. No</b>	<b>Course No.</b>	<b>Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
1.	DCPE-205	Data Structure using ' C '	3	1	0	3.5
2.	DCPE-206	Object Oriented Programming Using C++	3	1	0	3.5
3.	DCPE-207	Relational Database Management System (RDBMS)	3	1	0	3.5
4.	DCPE-208	Internet and Web Technologies	3	1	0	3.5
5.	DCPE-255	Data Structure using ' C ' Lab	0	0	2	1.0
6.	DCPE-256	Object Oriented Programming Using C++ Lab	0	0	2	1.0
7.	DCPE-257	Relational Database Management System (RDBMS) Lab	0	0	2	1.0
8.	DCPE-258	Internet and Web Technologies Lab	0	0	2	1.0
9.	*DHSS-201	Generic Skills and Entrepreneurships	3	0	0	3.0
10.	**	Punjabi	2	0	0	-
<b>Total</b>			<b>17</b>	<b>4</b>	<b>8</b>	<b>21</b>

\*Common with other diploma programmes

\*\* Subject is compulsory and qualifying only; having no credit. Common to all the branches

**SECTION-A**

**Introduction:** Distinction between analog and digital signal, Applications and advantages of digital signals.

**Number System:** Binary, octal and hexadecimal number system: conversion from decimal and hexadecimal to binary and vice-versa, Binary addition, subtraction, multiplication and division including binary points. 1's and 2's complement method of addition/subtraction, sign magnitude method of representation, floating point representation

**Codes and Parity:** Concept of code, weighted and non-weighted codes, examples of 8421, BCD, excess-3 and Gray code, Concept of parity, single and double parity and error detection, Alpha numeric codes: ASCII and EBCDIC.

**Logic Gates and Families:** Concept of negative and positive logic, Definition, symbols and truth tables of NOT, AND, OR, NAND, NOR, EXOR Gates, NAND and NOR as universal gates.

**Logic Simplification:** Postulates of Boolean algebra, De Morgan's Theorems. Various identities. Formulation of truth table and Boolean equation for simple problem. Implementation of Boolean (logic) equation with gates, Karnaugh map (upto 4 variables) and simple application in developing combinational logic circuits

**SECTION-B**

**Arithmetic circuits:** Half adder and Full adder circuit, design and implementation, Half and Full subtractor circuit, design and implementation, 4 bit adder/subtractor, Adder and Subtractor IC (7484)

**Decoders, Multiplexers and De Multiplexers:** Four bit decoder circuits for 7 segment display and decoder/driver ICs, Multiplexers and De-Multiplexers, Basic functions and block diagram of MUX and DEMUX. Different types and ICs.

**Latches and flip flops:** Concept and types of latch with their working and applications, Operation using waveforms and truth tables of RS, T, D, Master/Slave JK flip flops, Difference between a latch and a flip flop, Flip flop ICs

**Counters:** Introduction to Asynchronous and Synchronous counters, Binary counters, Divide by N ripple counters, Decade counter, Pre settable and programmable counters, Up/down counter, Ring counter with timing diagram

**Shift Register:** Introduction and basic concepts including shift left and shift right, Serial in parallel out, serial in serial out, parallel in serial out, parallel in parallel out, Universal shift register, Buffer register, Tristate Buffer register

**RECOMMENDED BOOKS**

1. Digital Electronics and Applications by Malvino Leach, Tata McGraw Hill Education Pvt Ltd, New Delhi
2. Digital Logic Designs by Morris Mano, Prentice Hall of India, New Delhi
3. Digital Electronics by Soumitra Kumar Mandal, Tata McGraw Hill Education Pvt Ltd.
4. Digital Electronics by V K Sangar , Raj Publishers, Jalandhar
5. Digital Electronics by Tokheim, Tata McGraw Hill Education Pvt Ltd.
6. Digital Fundamentals by Thomas Floyds, Universal Book Stall

## DCPE-201 COMPUTER PROGRAMMING USING 'C'

L T P CR  
3 1 0 3.5

### SECTION-A

**Program Structure:** I/o statements, assign statements, Constants, variables and data types, Operators and Expressions, Standards and Formatted, Use of Header & Library files

**Control Structures:** Introduction, Decision making with IF – statement, IF – Else and Nested IF, While and do-while, for loop, Break and switch statements

**Functions:** Introduction to functions, Global and Local Variables, Function Declaration, Standard functions, Parameters and Parameter Passing, Call – by value/reference, Recursion

**Arrays:** Introduction to Arrays, Array Declaration and Initialization, Single and Multidimensional Array, Arrays of characters

### SECTION-B

**Pointers:** Introduction to Pointers, Address operator and pointers, Declaring and Initializing pointers, Assignment through pointers, Pointers and Arrays

**Structures and Unions:** Declaration of structures, Accessing structure members, Structure Initialization, Arrays of structures, Union

**Strings:** Introduction, Declaring and Initializing string variables, Reading and writing strings, String handling functions, Array of strings

**Files:** Introduction, File reading/writing in different modes, File manipulation using standard function types

### RECOMMENDED BOOKS

1. Programming in ANSI C by E Balaguruswami, , Tata McGraw Hill Education Pvt Ltd , New Delhi
2. Application Programming in C by RS Salaria, Khanna Book Publishing Co(P) Ltd. New Delhi
3. Programming in C by Gottfried, Schaum Series, , Tata McGraw Hill Education Pvt Ltd , New Delhi
4. Exploring C by Yashwant Kanetkar – BPB Publications, New Delhi
5. Programming in C by Stefin G. Coachin
6. Programming in C by R Subburaj, Vikas Publishing House Pvt. Ltd., Jangpura, New Delhi
7. Elements of C by M.H. Lewin, Khanna Publishers, New Delhi
8. Programming in C by Stephen G Kochan
9. Programming in C by BP Mahapatra, Khanna Publishers, New Delhi

# DCPE-202 OPERATING SYSTEMS

L T P CR

3 1 0 3.5

## Section-A

**Overview of Operating Systems:** Definition of Operating Systems, Types of Operating Systems, Importance of Operating Systems, Memory organization, Linking, loading and executing control program.

**Functions of Operating System:** Process Management Functions (Brief Concept); Job Scheduler, Process Scheduler, Process synchronization.

**Memory Management Function:** Brief Concept and Introduction of Single Process System, Fixed Partition Memory, System Loading, Segmentation, Swapping, Simple Paging System, Virtual Memory.

**I/O Management Functions:** Brief Concept of Dedicated Devices, Shared Devices, I/O Devices, Storage Devices, Buffering, Spooling.

## Section-B

**File Management:** Types of File System; Simple file system, Basic file system, Logical file system, Physical file system.

**Dead Lock:** Condition for Dead lock, Dead Lock Preventions, Dead Lock Avoidance.

**Linux Operating System:** History of Linux and Unix, Linux Overview, Structure of Linux, Linux releases, open Linux, system requirements.

**Linux Commands and Filters Shell:** concepts of command options, input, output redirecting and network file, process and communication commands like: mkdir, cd, ls, who, whoami, cat, more, tail, head, mv, chmod, grep, wc, sort, kill, write, wall, mail, news

## RECOMMENDED BOOKS

1. Operating Systems by Achyut S Godbole and Atul Kahate: Tata McGraw Hill Education Pvt Ltd , New Delhi
2. Operating System by Hemant Kapila, Eagle Prakashan, Jalandhar.
3. Linux – The Complete Reference by Ruichard Peterson, Tata McGraw Hill, New Delhi
4. Operating Systems by Stallings Tata McGraw Hill.
5. Operating Systems- A Concept Based Approach by Dham Dhare, Tata McGraw Hill Education Pvt Ltd , New Delhi
6. System Programming by Dham Dhare, Tata McGraw Hill Education Pvt Ltd , New Delhi
7. Operating System Concepts by Ekta Walia, Khanna Publishers, New Delhi.
8. Unleashed Linux by Tech Media Publishers, New Delhi
9. Linux – Install and Configuration Black Book by Die Annlebalnc and Issac Yates, IDG Books India Private Ltd., New Delhi.
10. Operating System by Abhishek Sagar- Ishan Publication

# DCPE-203 COMPUTER ARCHITECTURE

L T P CR  
3 1 0 3.5

## SECTION-A

**Data Representation:** Data Types-Number System, 1's Complement, 2's Complement, BCD Code, Gray Code

**Central Processing Unit:** Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Introduction to RISC, CISC architecture

**Arithmetic Operations:** Introduction, Addition, Subtraction, Multiplication and Division algorithm

## SECTION-B

**Input-Output Organisation:** Input-output interface, I/O bus and interface for module, I/O vs memory bus. Isolated Vs memory mapped, IP modes of data transfer, first in first out buffer, direct memory access DMA controller, DMA transfer

**Memory Organisation:** Memory hierarchy; main memory, memory address, map, RAM and ROM chips, memory connection to CPU, auxiliary memory, associative memory, read and write operation, cache memory, associative mapping, virtual memory, memory management hardware

## RECOMMENDED BOOKS

1. Computer Architecture by Rafiquzzaman, M; Prentice Hall of India, New Delhi.
2. Computer Architecture by Carter, SOS: Tata McGraw Hill Education Pvt Ltd , New Delhi
3. Fairhead – 80386/80486 BPB Publication, New Delhi Hardware and Software of Personal Computers by Bose, SK; Willey Eastern Ltd., New Delhi
4. Structured Computer Organisation by Tanenbaum, Andrew S.; Prentice Hall of India, New Delhi.
5. Upgrading and Preparing PCs by Scott Muller, Techmedia Publications
6. Computer Organization and Architecture by Linda Labur, Narosa Publishing House Pvt. Ltd., Darya Ganj, New Delhi.
7. Computer system Architecture by Morris Mano

## DCPE-204 SYSTEM ANALYSIS AND DESIGN

L	T	P	CR
3	0	0	3.0

### SECTION-A

**Introduction:** Concept of system. Types of systems, Open and Closed, Static and Dynamic with examples

**Overview of System Analysis and Design:** Systems Development life cycle, brief Introduction to feasibility, design implementation and testing and maintenance

**Preliminary Investigations:** Project selection, scope definition and preliminary investigation

**Feasibility Study:** Technical and economic and operational feasibility, cost and benefit analysis

### SECTION-B

**Requirement Specifications and Analysis:** Fact finding techniques, data flow diagrams, data dictionaries, decision trees and tables.

**Detailed Design:** Module specification, file design, data base design

**Testing and Quality Assurance:** Maintenance, unit and integration testing techniques, design objectives, quality factors such as reliability etc.

### RECOMMENDED BOOKS

- 1) Structured System Analysis and Design by ISRD Group, Tata McGraw Hill Education Pvt Ltd, New Delhi
- 2) System Analysis and Design by Awad, Galgotia Publications, New Delhi
- 3) System Analysis and Design Vol. I & II by Lee, Galgotia Publications
- 4) System Analysis and Design with Case Tools by Len Fertuck WCB Publications 1992
- 5) Introducing System Analysis by Skidmore, BPB Publication, New Delhi
- 6) Introducing System Design by Skidmore, BPB Publication, New Delhi
- 7) System Analysis and Design by Jefery L Whitten, Tata McGraw Hill Education Pvt Ltd, New Delhi
- 8) System Analysis and Design by Perry Edward
- 9) Analysis and design of Information System by V Rajaraman, Prentice Hall of India, New Delhi
- 10) Practical System Design by Daniels, Galgotia Publications, New Delhi



## **DECE-251 DIGITAL ELECTRONICS LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>CR</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

1. Verification and interpretation of truth tables for AND, OR, NOT NAND, NOR and Exclusive OR (EXOR) and Exclusive NOR(EXNOR) gates
2. Realisation of logic functions with the help of NAND or NOR gates - Design of a NOR gate latch and verification of its operation
3. To design a half adder using XOR and NAND gates and verification of its operation  
Construction of a full adder circuit using XOR and NAND gates and verify its operation
4. 4 bit adder, 2's complement subtractor circuit using an 4 bit adder IC and an XOR IC and verify the operation of the circuit.
5. To design a NOR Gate Latch and verification of its operation
6. Verification of truth table for positive edge triggered, negative edge triggered, level triggered IC flip-flops (At least one IC each of D latch , D flip-flop, JK flip-flops).
7. Verification of truth table for encoder and decoder ICs, Mux and DeMux

## **DCPE-251 COMPUTER PROGRAMMING USING 'C' LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>CR</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

1. Programming exercises on executing and editing a C program.
2. Programming exercises on defining variables and assigning values to variables.
3. Programming exercises on arithmetic and relational operators.
4. Programming exercises on arithmetic expressions and their evaluation
5. Programming exercises on formatting input/output using printf and scanf
6. Programming exercises using if statement.
7. Programming exercises using if – Else.
8. Programming exercises on switch statement.
9. Programming exercises on do – while statements.
10. Programming exercises on for – statement.
11. Programs on one-dimensional array.
12. Programs on two-dimensional array.
13. (i) Programs for putting two strings together.  
(ii) Programs for comparing two strings.
14. Simple programs using structures.
15. Simple programs using pointers.
16. Simple programs for reading from a file and writing into a file.

## DCPE-252 OPERATING SYSTEM LAB

**L T P CR**  
**0 0 2 1.0**

1. Directory commands
2. File commands
3. Process management
4. Using file permission commands
5. Mail commands
6. Editing file system rights in a **Linux** environment.
  - i. Interfacing with the network (Ethernet)
  - ii. Preparing of network cables including hubs, connectors etc.
  - iii. Establishment of LAN network for homogeneous systems
  - iv. Establishment of LAN network for heterogeneous systems
  - v. Use of protocols and gateways in establishing LAN
  - vi. Writing small programs such as file security, file transfer, remote testing
  - vii. Trouble shooting of networks
  - viii. Writing login scripts

## **DCPE-253 COMPUTER WORKSHOP LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>CR</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

### **SECTION-A**

1. Familiarization with various components and parts of personal computers, mother board details, hard disk drive, floppy disk drive. CD Rom drive, DVD, keyboard, display devices, various chips (memory chips and CPU); serial and parallel ports, inkjet, USB Ports, Fire wire, Bluetooth, Dot matrix and Laser printers, Modems, connectors and cables.
2. Assembly and Disassembling of PCs: Power supply, linear power supply and switch mode power supply, trouble shooting of SMPS.
3. Setting up of basic infrastructure for computers (including power layout, air conditioning, earthing etc.
4. Installation of various operating systems, LINUX/ windows latest versions. Familiarization of their features with practical demonstrations.
5. Installation and configuration of device drivers, Disk management, Installation of latest version of application software like MS-Office/open office, Adobe Photoshop, Corel Draw, Macromedia Flash etc,
6. Installation and configuration of latest version of database software like Oracle, MySQL/SQL Server etc.
7. Introduction to Virus/Spyware/Worm/Trojan Horse , their detection, prevention and cure,
8. Installation, un-installation and use of Antivirus software

## ENVIRONMENT STUDIES

L T P  
2 0 0

### SECTION-A

**Ecology:** Basics of ecology, eco system and sustainable development, Conservation of land reforms, preservation of species, prevention of advancement of deserts and lowering of water table

**Sources of pollution:** natural and man-made, their effects on living and non-living organisms

**Pollution of water:** causes, effects of domestic wastes and industrial effluent on living and non-living organisms

### SECTION-B

**Pollution of air:** causes and effects of man, animal, vegetation and non-living organisms, Sources of noise pollution and its effects, Current issues in environmental pollution and its control, Global warming, Green house gases, non-conventional sources of energy, **introduction to clean technology:**

**Introduction to Green buildings:** site selection, material efficiency, energy efficiency, water efficiency, building form.

**Non-conventional sources:** Role of non-conventional sources of energy in environmental Protection

## DCPE-205 DATA STRUCTURES USING 'C'

L	T	P	CR
3	1	0	3.5

### SECTION-A

**Arrays:** Concept of Arrays, Single dimensional array, Two dimensional array storage strategy of multidimensional arrays, Operations on arrays with Algorithms (searching, traversing, inserting, deleting)

**Linked Lists:** Introduction to linked list and double linked list, Representation of linked lists in Memory, Traversing a linked list, Searching linked list, Insertion and deletion into linked list, Application of linked lists

### SECTION-B

**Stacks, Queues and Recursion:** Introduction to stacks, Representation of stacks, Implementation of stacks, Uses of stacks, Introduction to queues, Implementation of queues (with algorithm), Circular Queues, De-queues, Recursion

**Trees:** Concept of Trees, Concept of representation of Binary tree, Binary search trees Traversing, Binary Trees (Pre order, Post order and In order), Searching, inserting and deleting binary search trees

**Sorting and Searching:** Introduction, Search algorithm (Linear and Binary), Concept of sorting, Sorting algorithms (Bubble Sort, Insertion Sort, Quick Sort, Selection Sort, Merge Sort, Heap Sort) and their comparisons.

### RECOMMENDED BOOKS

1. Data Structure using C by Manoj Kumar Jambla, Eagle Publishing House, Jalandhar
2. Data Structures and Algorithm Using C by RS Salaria, Khanna Book Publishing Co. (P) Ltd. New Delhi
3. Data Structure using C by ISRD Group, Tata McGraw Hills Education Pvt Ltd , New Delhi
4. Data Structures by Sanjiv Sofat, Khanna Publishers, New Delhi

5. Expert Data Structures with C by R.B. Patel – Khanna Publishers, New Delhi.
6. Data structures – Schaum’s Outline Series – by Lipschutz, McGraw Hill Education Pvt Ltd , New Delhi
7. Data structures – O.G. Kakde and U.A. Deshpande
8. Data Structures by Kruse
9. Data Structure using Pascal by Tenenbaum, Prentice Hall of India
10. Data Structure using C by Robert Kruse, Prentice Hall of India
11. Data Structure through C by Yashwant Kanekar, BPB Publications
12. Data Structure through C in depth by SK Srivastava, Deepali Srivastava, BPB Publications
13. Introduction to Data Structure and Algorithm with C++ by Glenn W. Rowe, Prentice Hall of India

## **DCPE-206 OBJECT ORIENTED PROGRAMMING USING C++**

<b>L</b>	<b>T</b>	<b>P</b>	<b>CR</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>3.5</b>

### **SECTION-A**

**Introduction and Features:** Fundamentals of object oriented programming – procedure oriented programming Vs. object oriented programming (OOP). Object oriented programming concepts – Classes, reusability, encapsulation, inheritance, polymorphism, dynamic binding, message passing, data hiding

**Language Constructs:** Review of constructs of C used in C++: variables, types and type declarations, user defined data types, increment and decrement operators, relational and logical operators; if then else clause, conditional expressions, input and output statement, loops, switch case, Arrays, functions, pointers

**Classes and Objects:** Creation, accessing class members, Private Vs Public, Constructor and Destructor Objects

**Member Functions:** Method definition, Inline functions implementation, Constant member functions, Friend Functions and Friend Classes, Static functions

### **SECTION-B**

**Overloading Member Functions:** Need of operator overloading, operator overloading, constructor overloading

**Inheritance:** Definition of inheritance, protected data, private data, public data, inheriting constructors and destructors, constructor for virtual base classes, constructors and destructors of derived classes, and virtual functions, order of invocation, types of inheritance, single inheritance, hierarchical inheritance, multiple inheritance, hybrid inheritance, multilevel inheritance

**Polymorphism and Virtual Functions:** Importance of virtual function, function call binding, virtual functions, implementing late binding, need for virtual functions, abstract base classes and

pure virtual functions, virtual destructors.

**File and Streams:** Components of a file, different operation of the file, communication in files, creation of file streams, stream classes, header files, updating of file, opening and closing a file, file pointers and their manipulations, functions manipulation of file pointers, detecting end-of-file

## RECOMMENDED BOOKS

1. Mastering C++ by KR Venugopal and Rajkumar, T Ravishankar; Tata McGraw Hill Education Pvt Ltd , New Delhi
2. Object Oriented Programming in C++ by E. Balaguruswamy, Tata McGraw Hill Education Pvt Ltd , New Delhi
3. C++ by Robert Lafore, Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi
4. Object Oriented Programming and C++ by R Rajaram; New Age International (P) Ltd., Publishers, New Delhi
5. Schaum's Outline of Programming with C++ by John R. Hubbard

## DCPE-207 RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)

L T P CR  
3 1 0 3.5

### SECTION-A

**Introduction:** Database Systems, Database and its purpose, Characteristics of the database approach, Advantages and disadvantages of database systems. Classification of DBMS Users

**Database System Concepts and Architecture:** Data models, schemas, instances, data base state. DBMS Architecture; The External level, The conceptual level, The internal level, Mappings, Data Independence, Logical data Independence, Physical data Independence. Database Languages and Interfaces; DBMS Language, DBMS Interfaces, Classifications of Data Base Management System

**Data Modeling using E.R. Model (Entity Relationship Model):** Entities and Attributes, Entity types and Entity sets, Key attribute and domain of attributes, Relationship among entities

**Relational Model:** Relational Model Concepts: Domain, Attributes, Tuples and Relations. Relational constraints and relational database schemes, Domain constraints, Key constraints and constraints on Null, Relational databases and relational database schemes, Entity integrity, referential integrity and foreign key

### SECTION B

**Normalization:** Non-loss decomposition and functional dependencies, First, Second and Third normal forms, Boyce/Codd normal form



**Database Access and Security:** Database security, process controls, database protection, 2-phase command protocols, 2-phase working protocols, grant and revoke

**MYSQL/SQL (Structured Query Language):** SQL \* Plus. DDL (Data Definition Languages): Creating Tables, Creating a table with data from another table, Inserting values into a table, updating columns of a Table, Deleting Rows, Dropping a Table. DML (Data Manipulation Language): Database Security and Privileges, Grant and Revoke Command, Maintaining Database Objects, Commit and Rollback, various types of select commands, various types of join.

### **RECOMMENDED BOOKS**

- 1) Fundamentals of Database Management Systems by Dr Renu Vig and Ekta Walia, - an ISTE, Publication, New Delhi
- 2) Database Management Systems by arun K Majumdar and P Bhattacharya, Tata McGraw Hill Education Pvt Ltd, New Delhi
- 3) Introduction to DBMS by by ISRD Group, Tata McGraw Hill Education Pvt Ltd, New Delhi
- 4) Database Management Systems by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., New Delhi
- 5) An introduction to database systems by Date C.J. Adison Wesley

## **DCPE-208 INTERNET AND WEB TECHNOLOGIES**

**L T P CR**  
**3 1 0 3.5**

### **SECTION-A**

**Internet Basics:** Specification and technical details for establishing Internet, Types and functions of modems, IP addressing, internet domain, domain name server, TCP/IP protocols, Internet service providers, Intranets, E-mail, Telnet, FTP, IRC, NNTP, Video conferencing, e-commerce

**Internet Connectivity:** Telephone line, cable, leased line, ISDN, VSAT, RF link

**World Wide Web (WWW):** World Wide Web and its evolution, web page, web server, HTTP protocol, Examples of web servers. Navigation Tools: Mozilla Firefox, Google Chrome, Internet Explorer, Uniform Resource Locator (URL). Hypertext, hyperlinks and hypermedia, URL, its registration, browsers, search engines, proxy servers

### **SECTION-B**

**Internet Security:** Basics of authentication and authorization. Introduction to firewall, various techniques of encryption and decryption, SSL (Secure Socket Loyer)

**Developing Portals Using HTML:** Introduction to HTML-5 and CSS-3 Basic structure of HTML, designing a web page, inserting links images, horizontal rules, comments, Formatting text, title, headings, colours, fonts, sizes, simple tables and forms. HTML tags, hyperlinks, Adding graphics and images, image maps, image files. Using tables, forms, style sheets and

frames, Dream weaver: Basic features of Dreamweaver

### **RECOMMENDED BOOKS**

1. Internet and Web Technologies by Rajkamal, Tata McGraw Hill Education Pvt Ltd , New Delhi
2. Using the Internet IV edition by Kasser, Prentice Hall of India Pvt. Ltd., New Delhi
3. Using the World Wide Web, (IInd edition) by Wall, Prentice Hall of India Pvt. Ltd., New Delhi
4. Internet for Everyone by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., New Delhi
6. HTML – 4 for World Wide Web by Castro Addison Wesley (Singapore) Pvt. Ltd., New Delhi
7. Principles of Web Designing Joel Sklar, Web Warrior Series Available with Vikas Publishing House Pvt. Ltd., New Delhi
8. HTML 4.0 Unleashed by Rick Dranell; Tech Media Publications
9. Teach Yourself HTML 4.0 with XML, DHTML and Java Script by Stephanie, Cottrell, Bryant; IDG Books India Pvt. Ltd., New Delhi
10. Using Active Server Pages by Johnson et.al. Prentice Hall of India, New Delhi
11. Web Development with Visual Basic with CD ROM by Chapman; Prentice Hall of India, New Delhi
12. Java Script in 24 hrs Tech Media Publications
13. Java Servlets by O'Reilly SPB Publishers

### **DCPE-255 DATA STRUCTURES USING 'C' LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>CR</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

#### **Write programmes in C to implement**

1. Inserting and deleting elements in an array
2. Insertion and deletion of elements in linked list
3. Stack implementation using arrays
4. Stack implementation using pointers
5. Queue implementation using arrays
6. Queue implementation using pointers
7. Linear search in a given list
8. Binary search in a given list
9. Implementation of binary search tree
10. Implementation of bubble sort algorithm
11. Implementation of insertion sort algorithm
12. Conversion from infix and post-fix notation
13. Implementation of factorial of a number using recursion

14. Implementation of fibonacci series using recursions

## **DCPE-256 OBJECT ORIENTED PROGRAMMING USING C++ LAB**

<b>L</b>	<b>T</b>	<b>P</b>	<b>CR</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1.0</b>

- 1 Programming exercises on control flow statements in C++
- 2 Programming exercises on arrays, strings, function and pointers in C++
- 3 Writing programs to construct classes and deriving objects
- 4 Writing programs for constructors, destructors, using public and private access specifier
- 5 Programming exercises on operator overloading, type conversions and inheritance
- 6 Programming exercises on functional overloading
- 7 Writing programs on stream computation and file operations
- 8 Implementation of a mini project in C++
- 9 Introduction to latest ANSI C++ Compiler and elaboration of shortcomings of Turbo C++ Compiler

**DCPE-257 RELATIONAL DATABASE MANAGEMENT SYSTEM  
(RDBMS) LAB**

**L T P CR  
0 0 2 1.0**

1. Exercises on creation and modification of structure of tables.
2. Exercises on inserting and deleting values from tables.
3. Exercises on querying the table (using select command).
4. Exercises on using various types of joins.
5. Exercises on using functions provided by database package.
6. Exercises on commands like Grant, Revoke, Commit and Rollback etc.
7. Design of database for any application using oracle.

## **DCPE-258 INTERNET AND WEB TECHNOLOGIES LAB**

**L T P CR**  
**0 0 2 1.0**

1. Configuring computer system to access internet
2. Managing social networking profile and e-mail account
3. Using WWW for accessing relevant information

4. To demonstrate the use of TELNET, FTP, IRC
5. Creating Web pages using HTML
6. Creating web pages using Dream Weaver
7. Demonstration of audio-video conferencing
8. Demonstration of e-commerce transaction
9. Validation of user queries and responses in the Forms using Java Script or VB script
10. Create a Homepage with frames, animation, background sound and hyperlinks
11. Develop hitometer for each client i.e. number of visitors. Visit to a site.
12. Designing simple server side program which accept some request from the client and respond
13. Establishing sessions between servers and clients
14. Design fill-out form with text, check box, radio buttons etc and embed Java script to validate users input.
15. Develop simple server side program in Server Script which accept some request from the client and respond.
16. Develop interface with database (MYSQL etc) for online retrieval and storage of data through PHP

**DHSS-201 GENERIC SKILLS AND ENTREPRENEURSHIP  
DEVELOPMENT**

**L T P CR  
3 0 0 3.0**

## SECTION-A

**Introduction to Generic Skills:** Importance of Generic Skill Development (GSD), Global and Local Scenario of GSD, Life Long Learning (LLL) and associated importance of GSD.

**Managing Self:** Knowing Self for Self Development: Self-concept, personality, traits, multiple intelligence such as language intelligence, numerical intelligence, psychological intelligence etc. Managing Self: Physical, Personal grooming, Health, Hygiene, Time Management, Managing Self Intellectual development: Information Search: Sources of information, Reading: Purpose of reading, different styles of reading, techniques of systematic reading, Note Taking: Importance of note taking, techniques of note taking, Writing: Writing a rough draft, review and final draft. Managing Self Psychological: Stress, Emotions, Anxiety-concepts and significance, Techniques to manage the above

**Managing in Team:** Team - definition, hierarchy, team dynamics, Team related skills-sympathy, empathy, co-operation, concern, lead and negotiate, work well with people from culturally diverse background, Communication in group - conversation and listening skills

## SECTION-B

**Task Management:** Task Initiation, Task Planning, Task execution, Task close out, Exercises/case studies on task planning towards development of skills for task management

**Problem Solving:** Prerequisites of problem solving- meaningful learning, ability to apply knowledge in problem solving, Different approaches for problem solving, Steps followed in problem solving, Exercises/case studies on problem solving.

**Entrepreneurship:** Introduction: Concept/Meaning and its need, Competencies/qualities of an entrepreneur, Entrepreneurial Support System e.g., District Industry Centres (DICs), Commercial Banks, State Financial Corporations, Small Industries Service Institute (SISIs), Small Industries Development Bank of India (SIDBI), National Bank of Agriculture and Rural Development (NABARD), National Small Industries Corporation (NSIC) and other relevant institutions/organizations at State/National level.

## **RECOMMENDED BOOKS**

1. Generic skill Development Manual, MSBTE, Mumbai.
2. Lifelong learning in Global Knowledge Economy, Challenge for Developing countries – World Bank Publication
3. Towards knowledge society, UNESCO Paris Publication
4. Your Personal Pinnacle of Success by DD Sharma, Sultan Chand and Sons, New Delhi
5. Human Learning Ormrod

**Faculty of Engineering**  
**Three Year Diploma Course in Computer Engineering**  
**(5<sup>th</sup> Semester)**  
**(Batch 2015 onwards)**

**SCHEME OF PAPERS**

<b>Course No.</b>	<b>Title</b>	<b>Credits</b>
DCPE-351	One Semester Training In Industry	20

Breakup of Marks:-

**INDUSTIAL VISIT BY FACULTY COORDINATOR (150 MARKS)**

(Within Six month of commencement of Training)

Presentation: 60 Marks

Viva-voce: 60 Marks

Report (Hard Copy):30 Marks

Total 150 Marks

Evaluation by Faculty Coordinator in consultation with Industrial Coordinator during industrial visit

**EVALUATION BY A TEAM OF FACULTY MEMBERS IN THE INSTITUTE  
(250 MARKS)**

(Within one week of completion of the training)

Presentation: 100 Marks

Viva-voce: 100 Marks

Final Report (Hard Copy): 50 Marks

Total 250 Marks

The final presentation and viva-voce will be conducted jointly by the faculty coordinator, nominee of the Head to be appointed by the Head of the Department.

The letter grade will be awarded to the students according to marks obtained by him/her out of total 400 marks.



**Faculty of Engineering**  
**Three Year Diploma Course in Computer Engineering**  
**(6<sup>th</sup> Semester)**  
**(Batch 2015 onwards)**

**SCHEME OF PAPERS**

<b>Course No.</b>	<b>Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
DCPE -301	Java Programming	3	1	0	3.5
DCPE -302	Operating Systems	3	1	0	3.5
DCPE -303	Computer Networks	3	0	0	3.0
DCPE -304	Visual Programming (using VB.NET)	3	1	0	3.5
**	Elective	3	1	0	3.5
DCPE -352	Java Programming Lab	0	0	2	1.0
DCPE -353	Computer Networks Lab	0	0	2	1.0
DCPE -354	Visual Programming (using VB.NET) Lab	0	0	2	1.0
<b>TOTAL</b>		<b>15</b>	<b>4</b>	<b>6</b>	<b>20</b>

**\*\*Elective**

<b>Course No.</b>	<b>Title</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
DCPE -305	Microprocessor	3	1	0	3.5
DCPE -306	Computer Peripheral and Interfacing	3	1	0	3.5
DCPE -307	Network Security	3	1	0	3.5

## **DCPE-351 INDUSTRIAL TRAINING SEMESTER**

<b>L</b>	<b>T</b>	<b>P</b>	<b>Credits</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>

Industrial training semester spans over a period of One Semester.

The students shall undergo industrial training in Industry / R&D or service organizations under the joint supervision of a faculty member and an executive from the organization. The emphasis of the work undertaken is on problem identification and its techno-economic solution for the benefit of the host industry.

The industrial training must normally include identification of problem, data collection, analysis and generating solutions with cost and benefits and recommendations for their implementation.

The evaluation of the Industrial training semester should be carried out on a continuous basis and must include the evaluation by faculty coordinator during his visit(s) to the concerned industries, evaluation by faculty coordinator towards the completion of the semester and the final evaluation in the Institute by a committee of faculty members.

## DCPE-301 JAVA PROGRAMMING

L T P CR  
3 1 0 3.5

### Section-A

**Introduction to Java:** A brief history, how Java works?, Java Virtual Machine (JVM), Java In Time (JIT) compiler, Java features, using Java with other tools, native code, Java application types, comparison with C and C++, Working with data types, control flow statements, arrays, casting, command line arguments

**Java Classes and Memory Management:** Introduction to Classes, inheritance, encapsulation and polymorphism, constructors and finalizers, garbage collection, access specifier.

**Interfaces and Packages:** Using Java interface, using Java packages

### Section-B

**Exception Handling and Stream Files:** Over view of exception handling, method to use exception handling, method available to exceptions (The throw statement, the throws class, finally class), creating your own exception classes

**Threads and Multi-threading:** Overview, thread basics – creating and running a thread, The thread control methods, The threads life cycle and synchronization.

**Introduction to Applet, Application and JDK:** Java applets Vs Java applications, building application with JDK, building applets with JDK, HTML for Java applets, managing input-output stream.

**Java Data Base Connectivity (JDBC)**

### RECOMMENDED BOOKS

1. Mastering Java by John Zukowski; BPB Publication, New Delhi
2. The Complete Reference by Patrick Naughton, Tata McGraw Hill Education Pvt Ltd , New Delhi
3. Java Programming by Balagurusamy, Tata McGraw Hill Education Pvt Ltd , New Delhi
4. Java Programming by Anu Roy- Ishan Publication
5. Set of Books on Java by Sun Microsystems
6. Java 2 Programming Bible by Aaron Walsh, Justin Couch, Daniel Steinberg, IDG Books India Pvt. Ltd., Netaji Subhash Marg, Darya Ganj, New Delhi
7. Java 2 Swing, Servlets, JDBC and Java Beans Programming Black Book by steven Holzner, IDG Books India Pvt. Ltd., New Delhi
8. Java Pogramming- “How to Program Java” by Dietal and Dietel
9. An Introduction to Java Programming by Y Daniel Liang; Prentice Hall of India
10. The Complete Reference Java by Herbel Schildt; McGraw Hill, New Delhi.
11. Core Java by Cay S Horseman and Lray Carnell.
12. Introduction to Cryptography with applets by David Bishop, Narosa Publishing House Pvt Ltd, Darya Ganj, New Delhi 110002

# DCPE-302 OPERATING SYSTEMS

L T P CR  
3 1 0 3.5

## Section-A

**Overview of Operating Systems:** Definition of Operating Systems, Types of Operating Systems, Importance of Operating Systems, Memory organization, Linking, loading and executing control program.

**Functions of Operating System:** Process Management Functions (Brief Concept); Job Scheduler, Process Scheduler, Process synchronization.

**Memory Management Function:** Brief Concept and Introduction of Single Process System, Fixed Partition Memory, System Loading, Segmentation, Swapping, Simple Paging System, Virtual Memory.

**I/O Management Functions:** Brief Concept of Dedicated Devices, Shared Devices, I/O Devices, Storage Devices, Buffering, Spooling.

## Section-B

**File Management:** Types of File System; Simple file system, Basic file system, Logical file system, Physical file system.

**Dead Lock:** Condition for Dead lock, Dead Lock Preventions, Dead Lock Avoidance.

**Linux Operating System:** History of Linux and Unix, Linux Overview, Structure of Linux, Linux releases, open Linux, system requirements.

**Linux Commands and Filters Shell:** concepts of command options, input, output redirecting and network file, process and communication commands like: mkdir, cd, ls, who, whoami, cat, more, tail, head, mv, chmod, grep, wc, sort, kill, write, wall, mail, news

## RECOMMENDED BOOKS

11. Operating Systems by Achyut S Godbole and Atul Kahate: Tata McGraw Hill Education Pvt Ltd , New Delhi
12. Operating System by Hemant Kapila, Eagle Prakashan, Jalandhar.
13. Linux – The Complete Reference by Ruichard Peterson, Tata McGraw Hill, New Delhi
14. Operating Systems by Stallings Tata McGraw Hill.
15. Operating Systems- A Concept Based Approach by Dham Dhare, Tata McGraw Hill Education Pvt Ltd , New Delhi
16. System Programming by Dham Dhare, Tata McGraw Hill Education Pvt Ltd , New Delhi
17. Operating System Concepts by Ekta Walia, Khanna Publishers, New Delhi.
18. Unleashed Linux by Tech Media Publishers, New Delhi
19. Linux – Install and Configuration Black Book by Die Annlebalnc and Issac Yates, IDG Books India Private Ltd., New Delhi.
20. Operating System by Abhishek Sagar- Ishan Publication

# DCPE-303 COMPUTER NETWORKS

L T P CR  
3 0 0 3.0

## Section-A

**Networks Basics:** Definition, Networking models- Peer-to-peer Network, Server Client Network, LAN, MAN and WAN, Network Services, Topologies, OSI Reference Model, TCP/IP reference Model, Switching Techniques

**Introduction to TCP/IP:** Concept of physical and logical addressing, Different classes of IP addressing, special IP address, Sub netting and super netting, Loop back concept, IPV4 and IPV6 packet Format, Configuring IPV4 and IPV6

**Network Connectivity:** Transmission media, Network connectivity Devices, NICs, Hubs, Repeaters, Multiplexers, Modems, Routers and Protocols, Firewall, ATM, VOIP and Net-to-Phone Telephony, Laws and Protocols.

## Section-B

**Installation:** Environmental requirements of computer system and peripherals. Sight preparation and design of computer rooms. Testing specifications and installation of computer systems and peripherals.

**Sharing of devices on Networks:** Installation and management of network sharing tools i.e squidproxy, managing IP addresses, 2-Tier, 3-Tier Network Architecture

**Network Administration / Security:** Client/Server Technology, Server Management, RAID management and mirroring, Hauffman codes, Cryptography

**Network Trouble Shooting Techniques:** Trouble Shooting process, Trouble Shooting Tools: PING,IPCONFIG, IFCONFIG, NETSTAT, TRACEROOT, Wiresharp/ Dsniffer/ Pcop

**Wireless Networking:** Basics of Wireless: Wireless MAN, Networking, Wireless LAN, Wi-Fi, WiMax(Broad-band Wireless) and Blue-Tooth technology

## RECOMMENDED BOOKS

1. Computer Networks by Tanenbaum, Prentice Hall of India, New Delhi
2. Data Communications and Networking by Forouzan, (Edition 2<sup>nd</sup> and 4<sup>th</sup> ), Tata McGraw Hill Education Pvt Ltd , New Delhi
3. Understanding Local Area Network by Neil Jenkins
4. Area Networks by Stan Schatt, Prentice Hall of India, New Delhi
5. Network+ Lab manual,- BPB Publications -by Tami Evanson
6. Computer Network by Priti Srivastav- Ishan Publication
7. Computer Network and Communications By V.K. Jain and Narija Bajaj, Cyber Tech Publications, New Delhi.
8. Linux – The complete Reference by Richard Peterson, Tata McGraw Hill Education Pvt Ltd, New Delhi.
9. Linux – Install and Configuration Black Book by Dee Annleblanc and Issac Yates, IDG Books India Private Limited, Delhi.
10. Unleashed Linux by TechMedia Publishers, New Delhi

## DCPE-304 VISUAL PROGRAMMING (USING VB.NET)

L T P CR

3 1 0 3.5

### Section-A

**Introduction to Microsoft. Net Framework:** Introduction to client server architecture, Introduction to .NET framework, feature of .Net framework, architecture and component of .Net, elements of .Net. Common Language Runtime (CLR), Common Type System (CTS), Common Language Specifications (CLS), Microsoft Intermediate Language (MSIL), Just In Time Compiler.

**VB.NET Integrated Development Environment:** VB.NET Development Environment, Creating Applications, Building Projects Using simple components, Running VB .NET applications.

**VB.NET Basics:** Visual Basic .NET Programming Language-Variables & Data Type, Strings, Arithmetic Operators, Building the project, Common Control Controls, Functions Call and Arguments, Select Case, Loops, Nesting of Loops, Decision Structures, Error handling using Try.. Catch Block

### Section-B

**Windows Applications:** Developing Windows Applications: Introduction to Windows Applications, Using Windows Forms, Visual Inheritance, Windows Forms, Text Boxes, Buttons, Labels, Check Boxes, and Radio Buttons, List Boxes, Combo Boxes, Picture Boxes, Scrollbars, Splitters, Timer, Menus, Built-in Dialogs, Image List, Tree Views, List Views, Toolbars, Status Bar and Progress bars.

**Database Connectivity:** Database Programming with ADO.NET: ADO.NET Object Model, Database: Connections, Data adapters and datasets, Data Reader, Connection to database with server explorer, Multiple Table Connection, Data binding with controls like Text Boxes, List Boxes, Data grid etc. Navigating data source, Data Grid View, Data form wizard, Data validation, Connection Objects, Command Objects, Data Adapters, Dataset Class.

**Crystal Reports:** Crystal reports, Connection to Database, Table, Queries, Building Report, Modifying Report, Formatting Fields and Object.

### RECOMMENDED BOOKS

1. Visual Basic.NET by C Muthu, Tata McGraw Hill Education Pvt Ltd , New Delhi
2. Visual Basic.NET Step by Step by Michael Halvorson
3. Visual Programming by Vipin Arora, Eagle Prakashan, Jalandhar.
4. Applications of .NET Technologies, by ISRD Group, Tata McGraw Hill Education Pvt Ltd , New Delhi.
5. Programming Microsoft visual Basic .NET-Francesco Balena
6. The complete Reference-Visual Basic. NET- Jeffrey R. Shapiro
7. Visual Programming using VB.NET by Priti Srivastav- Ishan Publication
8. Murach's VB .NET database programming with ADO.NET-Anne Prince and Doug Lowe

# DCPE-305 MICROPROCESSOR

L T P CR  
3 1 0 3.5

## Section-A

**Microprocessor Architecture:** Microprocessor Architecture and its Operations, Memory, Concept of Input/Output and memory mapped (I/O), interfacing Devices. 8085 based Microcomputer systems: 8085 MPU, Pin details of 8085 and related signal. Instructions and timings: Instruction classification, instruction format, How to write and execute a simple program, Instruction timings and operation status.

**Introduction to 8085 basic Instructions:** Data transfer (Copy) Instruction, Arithmetic Operations, Logic operations, Branch Operations, Writing Assembly Language Programs, Debugging a program. Programming techniques with additional Instructions: Programming Techniques Looping, Counting and indexing, Additional Data transfer and 16-bit Arithmetic Instruction, arithmetic Operations related to memory, Logic operations: Rotate, compare, Debugging. Counter and Timing Delays: Counters and time delays, hexadecimal counter, 0-9 (Modulo-10) counter. Stack and subroutines: Stack, subroutine, conditional call and return instructions, advanced subroutine concepts.

## Section B

**Code conversions:** BCD to binary conversions, binary to BCD conversions, BCD to 7-segment LED code conversions, Binary to ASCII and ASCII to binary code conversions. BCD addition, BCD subtraction, Introduction to advanced instructions and applications, multiplications and subtraction with carry.

**Interrupts:** Concept of interrupt, Maskable and non-maskable, Edge triggered and level triggered interrupts, Software interrupt, Restart interrupts and its use, various hardware interrupts of 8085.

**Data Transfer techniques:** Concept of programmed I/O operations, sync data transfer, async data transfer (hand shaking), Interrupt driven data transfer, DMA, Serial output data, Serial input data.

### Recommended Books :

1. 8085 Microprocessor by Ramesh Gaonkar,
2. Microprocessor by B.Ram
3. Daniel Tabak, Advanced Microprocessors, McGraw- Hill, Inc., Second Edition 1995.
4. Douglas V. Hall, Microprocessors and Interfacing: Programming and Hardware, Tata McGraw Hill Edition, 1986.
5. Charles M. Gilmore, Microprocessors: principles and Applications, McGraw Hill

# DCPE-306 COMPUTER PERIPHERAL AND INTERFACING

L T P CR

3 1 0 3.5

## Section-A

**Video Display:** The basic principle of working of video monitors (CRT, LCD,LED), video display adapters, video modes, Video display EGA/VGA/SVGA/PCI adapters and their architecture, Overview of raster scan, vector graphic, their main difference and relative advantages.

**Hardware Organization of PCs:** Types of motherboard and their details, types of processors (INTEL, AMD) and their compatibility with motherboards, serial and parallel ports, PS/2, USB Ports, connectors and cables.

**Storage Devices:** Types of Hard Disk Drives- EIDE, SATA, SCSI, SAS External Hard Disk. Constructional features and working of hard disk drive, optical (CD, DVD, Blue Ray) disk drive and Flash Drive, Logical structure of Hard Disk and its organization, boot record.

**Input Devices:** Detailed working principle and troubleshooting of various input devices such as keyboard, mouse, scanner, Basic principle of touch screen, light pen, digitizers, Drivers for various input devices and their role.

## Section-B

**Output Devices:** Overview of printer and its classification, impact and non-impact printer, principle and working of desk Jet, dot matrix, line Printer and laser printers (Monochrome and Colour), plotter (Piezoelectric and Thermal), and modems. Software drivers for various output devices and their role.

**Power Supplies:** Basic principle of working of SMPS used in computers, On-Line/Off-Line/Line-Interactive/uninterrupted power supplies (UPS) and their importance and maintenance.

**The Basic Input/Output System:** What is BIOS? Function of BIOS, software interrupts, testing and initialization, configuring the system

**Other Technologies:** Mobile, digital camera, web camera, smart card, ATMs, CDMA etc. , Blue Tooth, infrared, Wi-Fi, WiMax.

## RECOMMENDED BOOKS

15. Hardware Trouble Shooting and Maintenance by B. Govinda Rajalu, IBM PC and Clones, Tata McGraw Hill 1991
16. Computer Peripheral & Interfacing by Gourav Gupta, Eagle Prakashan, Jalandhar.
17. Hardware and Software of Personal Computers by SK Bose; Wiley Eastern Limited, New Delhi.
18. Computer Peripherals And Interfacing by Priti Srivastav- Ishan Publication
19. Fundamentals of Computers by Sukhvir Singh; Khanna Publishers, New Delhi



# DCPE-307 NETWORK SECURITY

L T P CR  
3 1 0 3.5

## Section-A

**Introduction:** Need for securing a network; attacks from within and external, introduction to cyber crime, cyber law-Indian Perspective (IT Act 2000), cyber ethics, ethical hacking. What is hacking, attacker.

**Securing Data over Internet:** Introduction to basic encryption and decryption, concept of symmetric and asymmetric key, cryptography, overview of DES, RSA and PGP. Introduction to Hashing: MD5, SSL, SSH, HTTPS, Digital Signatures.

**Virus, Worms and Trojans:** Definitions, preventive measures – access control, checksum verification, process neutering, virus scanners, heuristic scanners, application level virus scanners, deploying virus protection.

**Computer Network Attacks:** Active Attacks, Passive Attacks, Stealing Passwords, Social Engineering, Bugs and Backdoors, Authentication Failures, Protocol Failures, Information Leakage, Denial-of-Service Attacks, Botnets, Phishing Attacks.

**Firewalls:** Definition and types of firewalls, defining access control policies, address translation, firewall logging, firewall deployment.

**Intrusion Detection System (IDS):** Introduction, IDS limitations – teardrop attacks, counter measures; Host based IDS set up.

**Virtual Private Network (VPN):** Basics, setting of VPN, VPN diagram, configuration of required objects, exchanging keys, modifying security policy.

**Disaster and Recovery:** Disaster categories; network disasters – cabling, topology, single point of failure, save configuration files; server disasters – UPS, RAID, Clustering, Backups, server recovery.

**OS Vulnerabilities:** Study of Linux and Windows OS Vulnerability, Importance of Original Software (Due to patches for Loopholes Security Vulnerabilities)

## RECOMMENDED BOOKS

1. Cryptography and Network Security by Forouzon, Tata Mc Graw Hill Education Pvt Ltd, New Delhi.
2. Cryptography and Network Security by Atul Kahate, Tata Mc Graw Hill Education Pvt Ltd, New Delhi
3. Mastering Network Security by Christ Breton; BPB Publication, New Delhi
4. Web-sites by Chris Breton, BPB Publication, New Delhi
5. Network Firewalls by Kiranjeet Syan; New Rider Publication
6. Internet Security, New Rider Publication
7. Network Security by Sood & Mahajan; Eagle Prakashan Jalandher

**DCPE-352 JAVA PROGRAMMING LAB**

	<b>L</b>	<b>T</b>	<b>P</b>
<b>CR</b>			
	<b>0</b>	<b>0</b>	<b>2</b>
<b>1.0</b>			

1. WAP to implement constructors and overloading.
2. WAP to implement recursion, functions and arrays.
3. WAP to implement Inheritance, interfaces and packages.
4. WAP which will explain the concept of try, catch and throw.
5. WAP to demonstrate threads and animations.
6. WAP to explain I/O streams and files and socket programming.
7. WAP to implements Applets and use of it on internet.
8. WAP to describe AWT Class, Frames, Panels and Drawing.
9. WAP to demonstrate JDBC and build an application.
10. WAP to implements use of JSP.

**DCPE-353 COMPUTER NETWORKS LAB****L T P****CR****0 0 2****1.0**

1. Recognize the physical topology and cabling (coaxial, OFC, UTP, STP) of a network.
2. Recognition and use of various types of connectors RJ-45, RJ-11, BNC and SCST
3. Making of cross cable and straight cable
4. Install and configure a network interface card in a workstation.
5. Identify the IP address of a workstation and the class of the address and configure the IP Address on a workstation.
6. Managing user accounts in windows and LINUX
7. Study and Demonstration of sub netting of IP address
8. Use of Netstat and its options.
9. Connectivity troubleshooting using PING, IPCONFIG, IFCONFIG
10. Installation of Network Operating System(NOS)
11. Visit to nearby industry for latest networking techniques

**Required Software:** Windows Server/Linux Server**Required Tools and Supplies:** Crimping tool, crone Tool, Cable tester, RJ 45 connectors, RJ-11, BNC, SCST, Coaxial Cable, UTP, STP, OFC cable, Screw Driver Kit, Switch/Hub, Manageable Switch

## **DCPE-354 VISUAL PROGRAMMING (USING VB.NET) LAB**

**L T P**  
**CR**  
**0 0 2**  
**1.0**

1. Exercise on opening projects.
2. Exercise on all the menus of opening window of VB .NET
3. Exercise on all basic Controls.
4. Exercise on designing form.
5. Exercise on Database Connectivity.
6. Exercise on Creating Crystal reports.

