

FULL TIME DIPLOMA COURSE IN
INFORMATION TECHNOLOGY
(3RD – 6TH SEMESTER)

CURRICULAR STRUCTURE
AND
SYLLABI

TRIPURA UNIVERSITY

Curriculum Structure for Diploma in Information Technology

Semester – III

Sl.No	Theoretical Paper					Sessional / practical paper			
	1 st half (50mark)	2 nd half (50 mark)	Mark	CPW	Credit	Name of Sessional / practical	Mark	CPW	Credit
i	Operating System DIT-301		100	4	4	Programming in C lab DCS-304S	100	4	2
ii	Electronics Device & circuit DETC-307	Digital Logic Design DETC-307	100	4	4	Digital Logic Design lab DETC-305S	100	4	2
iii	Computer Organization DCS-302		100	3	3	Electronics Devices & Circuit Lab DETC-304 S	100	4	2
iv	Data Structure & Algorithm DCS-303		100	3	3	Data Structure Lab DCS-305S	100	4	2
v						PC Utility Lab DCS-307S	100	4	2
vi						Operating System Lab DIT-301S	100	4	2
			400	14	14		600	24	12

CPW = Contact lecture Per Week

Total marks : 1000 per semester , Number of Contact periods : 38 per week , Total Credit : 26 per semester

Theoretical & Practical / Sessional subjects : 70% marks for end semester exam & 30% marks for internal assessment.

Curriculum Structure for Diploma in Information Technology

Semester – IV

Sl.No	Theoretical Paper					Sessional / practical paper			
	1 st half (50mark)	2 nd half (50 mark)	Mark	CPW	Credit	Name of Sessional / Lab	Mark	CPW	Credit
i	Communication Engineering-I DIT-401		100	4	4	Communication Engineering-I Lab DIT-402S	100	4	2
ii	Data communication & Computer Network DCS-401		100	3	3	Network lab DCS-404S	100	4	2
iii	Object Oriented Programming Methodologies DCS-402		100	3	3	Object oriented Programming Lab DCS-405S	100	4	3
iv	Database Management System DCS-403		100	3	3	DBMS Lab DCS-406S	100	4	2
v						Computer Graphics Lab DIT-403S	100	4	2
Vi						Communication Skill-II Lab DHU-400S	100	4	2
			400	13	13		600	24	13

Total marks : 1000 per semester , Number of Contact periods : 38 per week , Total Credit : 26 per semester

Student should under go Industrial training for at least 3-4 week duration, corresponding grade for 2 credit (as received from industry) will be reflected on 5th semester grade card.

Theoretical & Practical / Sessional subjects : 70% marks for end semester exam & 30% marks for internal assessment.

Curriculum Structure for Diploma in Information Technology

Semester – V

Sl.No	Theoretical Paper					Sessional / practical paper			
	1 st half (50mark)	2 nd half (50 mark)	Mark	CPW	Credit	Name of Sessional / Lab	Mark	CPW	Credit
i	Industrial Management DHU-501	Entrepreneurship Development DHU-501	100	4	4	Web Technology Lab DCS-504S	100	4	2
ii	Discrete Mathematics DIT-501	Automata Theory DIT-501	100	4	4	JAVA Programming lab DCS-505S	100	5	2
iii	Software Engineering DIT-502		100	3	3	Multimedia Lab DIT-502S	100	4	2
iv	Communication Engineering- II DIT-503		100	3	3	Visual Basic Lab DIT-503S	100	5	2
v						Project – I DIT-504S	100	6	2
vi.						Industrial Training DIT-500S	100	-	2
			400	14	14		600	24	12

Total marks : 1000 per semester , Number of Contact periods : 38 per week , Total Credit : 26 per semester

Theoretical & Practical / Sessional subjects : 70% marks for end semester exam & 30% marks for internal assessment.

Curriculum Structure for Diploma in Information Technology

Semester – VI

Sl.No	Theoretical Paper					Sessional / practical paper			
	1 st half (50mark)	2 nd half (50 mark)	Mark	CPW	Credit	Name of Sessional / practical	Mark	CPW	Credit
i	Professional Ethics & Values DHU-601	Optimization Technique DHU-601	100	4	4	Software Project Management Lab DIT-604S	100	4	2
ii	Software Project Management DIT-601		100	3	3	Project –II DIT-605S	200	10	4
iii	E-commerce DIT-602		100	3	3	Advanced Java Lab DCS-605S	100	4	2
iv	Elective DIT-603 .(opt any one of the following) DIT-603/A ERP DIT-603/B Network Security DIT-603/C Mobile Computing DIT-604/D Bio-Informatics		100	3	3	E-commerce Lab DIT-606S	100	5	3
v						Generic Skill DHU600S	50	2	1
vi						Final Viva DIT-607S	50	-	1
	Total			13	13			25	13

Total marks : 1000 per semester , Number of Contact periods : 38 per week , Total Credit : 26 per semester
Theoretical & Practical / Sessional subjects : 70% marks for end semester exam & 30% marks for internal assessment.

COURSE STRUCTURE FOR INFORMATION TECHNOLOGY 3rd SEMESTER

THEORETICAL PAPERS

O P E R A T I N G S Y S T E M S (DIT- 301)

Total Marks: 100, Cpw: 3, credit: 3
DETAIL COURSE CONTENT

G R O U P – A (1st half)

Introduction :An Introduction to Operating System & its Services, Various Types of Operating Systems, Operating System Structure, Concepts of: Process – Files – System Calls – Interrupt – Shell

Process Management

An Introduction to process; Process State & Transition, Process Control Block, Process Context, Context Switch,

Process Scheduling (Pre-emptive & Non-Pre-emptive Algorithms), FCFS (First Come First Served) Algo; Shortest Job First; Priority Scheduling; Round Robin Scheduling.

Performance Criteria of Scheduling Algorithm :CPU Utilization; Throughput; Turnaround Time; Waiting Time; Response Time.

Overview of: Inter-process Communication – Race Condition – Critical Section – Semaphore

Group-B

(2nd half)

Memory Management

Partitioned Memory Management (Static & Dynamic), Concept of Fragmentation & Compaction, Paging & Demand Paging ,Page Replacement Algorithms (FIFO, Optimal, LRU Algorithms)

Deadlock :Introduction to Deadlock ,Necessary Condition for Deadlock ,Method for Handling Deadlock, Brief Overview of Deadlock Prevention; Deadlock Avoidance (Banker's Algorithm); Deadlock Detection & Recovery.

File Management

File Concepts – Types of Files – File Attributes – File Operations

Access Methods: Sequential access – Random access ,Hierarchical Directory System

REFERENCE BOOKS

Operating System Design & Implementation / Andres's Tanenbaum / Prentice Hall of India, N. Delhi

Operating Systems / Stuart E Mandnick & John J Donovan / McGraw-Hill

ELECTRONICS DEVICE & CIRCUIT

(DETC-307)

Total Marks :35+15

DETAIL COURSE CONTENT

GROUP – A

18 PERIODS

Module 1 TRANSISTOR BIASING

5

- 1.1 Concept of Q-point – AC and DC load line – Stabilization and stability factor
- 1.2 TYPES OF BIASING: (a) Base Bias, (b) Collector Feedback Bias, (c) Emitter Feedback Bias, (d) Potential Divider Bias.

Module 2 SMALL SIGNAL TRANSISTOR AMPLIFIER

5

- 2.1 Hybrid model and h-parameters of CB, CE & CC mode transistor amplifier – Calculation of voltage gain, current gain, power gain, input and output impedance for RC coupled amplifier .
- 2.2 Functional Characteristics and the operation of MOSFET and CMOS

Module 3 RECTIFIER & Power Supply

8

- 3.1 Half-wave and full-wave rectifier, average voltage, rms voltage, efficiency and ripple factor, percentage voltage regulation
- 3.2 Function of filter circuits: Capacitor input filter, inductive filter, Π type filter
- 3.3 Series and shunt regulator using transistor
- 3.4 Concept of switch mode power supply
- 3.5 Block schematic description of uninterrupted power supply.

GROUP – B

12 PERIODS

Module 4 OPERATIONAL AMPLIFIER

5

- 4.1 Introduction to operational amplifier – Inverting and non inverting mode and their gain – Common mode rejection ratio etc.
- 4.2 Applications of OPAMP

Module 5 TIMER CIRCUITS

7

- 5.1 Principle of operation of electronic/ digital timer
- 5.2 Functional description of internal blocks of timer IC555

REFERENCE BOOKS

1. Electronic Principles / Malvino / Tata McGraw-Hill
2. Electronic Devices and Circuits / Boylestad & Nashalsky / Prentice Hall of India, N. Delhi
3. Electronic Devices and Circuits / S. Salivanan / Tata McGraw-Hill
4. Electronic Devices and Circuits / Mottershed / Prentice Hall of India, N. Delhi
5. Electronic Devices and Circuits / Millman & Halkias / Tata McGraw-Hill
6. Electronic Fundamentals and Applications / Chattopadhyay & Rakhshit / New Age International
7. Basic Electronic & Linear Circuits / Bhargava / Tata McGraw-Hill
8. Electronic Principle / Sahadeb / Dhanpat Rai & Sons

DIGITAL ELECTRONICS & LOGIC DESIGN

DETC-307 , Total Marks :35+15

DETAIL COURSE CONTENT

GROUP – A

11 PERIODS

NUMBER SYSTEMS & CODE

3

Simple arithmetic using positive and negative binary numbers: Addition, Subtraction, Different Weighted & Non-weighted codes — Error correcting codes etc.

Boolean Algebra & Logic Gates

5

Definition of Boolean Algebra — Boolean Theorems — Standard forms of expression & their conversion from one to another — LOGIC GATES: AND, OR, NOT, NAND, NOR, XOR, XNOR (truth table, logic expression, symbol) — Simple logic circuits using these gates

GROUP – B

13 PERIODS

SIMPLIFICATION OF LOGIC EXPRESSIONS

3

Simplification of Boolean expression using — (i) Boolean Algebra; & (ii) Karnaugh Maps

Module 4 COMBINATIONAL LOGIC CIRCUITS

10

Arithmetic Circuits: Adder, Subtractor, Comparator, Multiplexer , Demultiplexer, Encoder & Decoder

GROUP – B

9 PERIODS

MODULE 5 SEQUENTIAL CIRCUITS

7

Introduction to sequential circuits —latch , flip flops, COUNTER, & Shift registers.

Module 6 Application of Digital Ckt.,D/A and A/D converter

2

REFERENCE BOOKS

- Digital Logic & Computer Design / M. Morris Mano / Prentice Hall of India, N. Delhi
- Digital Principles & Applications / Malvino & Leach / Tata McGraw-Hill
- Modern Digital Electronics / R.P. Jain / Tata McGraw-Hill
- Digital Logic Applications & Design / M. Yarbrough / Vikash Publishing House

COMPUTER ORGANISATION (DCS- 302)

Total Marks : 100 , CPW : 3, Credit : 3

DETAIL COURSE CONTENT

GROUP – A (1ST HALF)

BASIC STRUCTURE OF COMPUTER

Stored program concept — Von Neumann architecture (definition only) , Functional units, Bus structures,

NUMBER & ARITHMATIC

Fixed & Floating point numbers — Biased representation —NUMBER REPRESENTATION: Sign magnitude, 1's complement, 2's complement forms, various Arithmetic operation (with signed magnitude & floating point numbers)

MACHINE INSTRUCTION & PROGRAMS

Instruction format — Different types of instructions — ADDRESSING MODES: Implied, Immediate, Direct, Register, Register Indirect, Indirect, Indexed, Paged etc.,

PROCESSOR ORGANIZATION

Different CPU registers: Programmer accessible & non-accessible, Operational concept of computer (fetching & storing word & execution of a instruction), Multiple Bus organization,

GROUP – B (2ND HALF)

MEMORY ORGANIZATION

Concept of words — Memory size — Classification OF MEMORIES: Input processor memory, Main memory, Secondary memory, Cache memories, Virtual memories, architecture of ROM, Types of ROM, RAM (SRAM, DRAM) , Memory decoding, Floppy & Hard Disk (Sectors, Tracks, & Cylinders, Accessing mechanisms, Storage capacity), Magnetic tapes, CD-ROM — Memory hierarchy considering size, speed, cost.,

I/O DEVICES

Input Devices : Keyboard, Mouse, Trackball, Touch pad, Scanner,

Output Devices : Video Display, Flat panel Display, Printers

REFERENCE BOOKS

Computer Organization / Hamacher, Vranesic, Zaky / T.M.H
Computer Organization and Architecture / William Stallings / Prentice Hall of India, Delhi
Computer Fundamentals – Architecture and Organization / B Ram / Tata McGraw-Hill
Microprocessor / Ajit Pal / Tata McGraw-Hill
Computer System Architecture / V. K. Jain / S.K. Kataria & Sons

DATA STRUCTURE & ALGORITHM(DCS-303)

Total Marks :100, CPW : 3, Credit : 3

DETAIL COURSE CONTENT

GROUP – A (1ST HALF)

PROBLEM SOLVING & SOME CONCEPTS

Algorithms and flow charts, Time & Space complexity (DEFINATION ONLY)

PRIMITIVE & NON-PRIMITIVE LINEAR DATA STRUCTURE

PRIMITIVE DATA STRUCTURES: Integer (signed, unsigned, long, short) — Real (float, double, long double) — Character and Boolean data types — their declaration & space usage in computer memory.

NON-PRIMITIVE DATA STRUCTURES:

ARRAY: Definition — Declaration initialisation and usage of one and two-dimensional arrays —Numeric and character type arrays — Arrays as parameters

STRING: Definition — Declaration — String operations: String comparison, length of a string, concatenation of two strings, copy of a string, extract a portion of a string, reversing of a string.

STACK: Definition — Declaration — Operation — Stack implementation using array — Expression evaluation by stack (infix, prefix and postfix)

QUEUE: Definition — Declaration — Operation — Priority queue (definition and example)

LINKED LISTS: Concepts and representation of linked lists in memory — Array implementation of lists and its limitation — Concept of singly, doubly and circular linked lists & their applications (e.g., polynomial arithmetic)

RECURSION

Basic concepts and examples of recursion e.g. factorial problem, Fibonacci sequence.

GROUP - B (2ND HALF)

Non-Primitive Non-Linear Data Structures

TREE: Definition and application of tree — Binary tree: Definition and it's Implementation, — Tree traversal (pre-order, post-order and in-order) —Balancing of a tree — AVL tree its definition, construction and rotation

Sorting & Searching

SORTING: Algorithms and their analysis (time and space) — Bubble sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Heap sort and Radix Sort

SEARCHING: Linear search — Binary search –Concept of Hashing.

REFERENCE BOOKS

Data Structures using C & C++ / Y. Langsam, M. J. Augenstein and A. M. Tenenbaum / PHI

Data Structures USING C / ISRD GROUP / Tata McGraw-Hill

Data Structures , Samanta : TMH

3rd SEMESTER

SESSIONAL PAPERS

PROGRAMMING IN C LAB (DCS-304s)

DETAIL COURSE CONTENT

BASIC OF C PROGRAMMING

4

Introduction of C language , Merit & Demerits of C , Working steps of C Compiler

To execute a sample C program to study the basic structure of C program.

To be familiar with keywords and identifiers through some program.

To apply constant, variables and different types of data types.

OPERATORS & EXPRESSIONS

6

To write program using Arithmetic, Relational, Logical and Assignment operators.

To write program to implement increment & decrement operators and to find the greatest between two numbers using conditional operator.

To evaluate an expression to study operator precedence and associativity and to write a program using casting a value.

DECISION MAKING

8

To use formatted scanf() and printf() functions for different types of data.

To find the roots of a quadratic equation. Find the greatest of three numbers using IF –ELSE and IF - ELSE IF statements.

To test whether the given character is vowel or not, using nested if –else statement and Switch-case statement.

To find sum of first n natural number using 'GOTO' statement

To find the sum of all Fibonacci numbers in between 1 to n using 'for' loop.

To find G.C.D and L.C.M of two numbers using 'WHILE' loop.

To find the sum of the digits of an integer using DO –WHILE loop structure.

To solve other problems for the implementation of different loop structure.

ARRAYS

10

To write a program to accept 10 numbers, store them in a single dimensional array and to make the average of the numbers.

To make an array of n elements and sort them and to write a program to check whether an input number is palindrome or not.

To write a program to accept a string and to count the no of vowels present in this string.

To write programs on matrix operation (addition, subtraction & multiplication).

To write some programs to utilize different string handling functions and to create an array to store the names of 10 students arranging them alphabetically.

USER DEFINED FUNCTIONS

10

To write a program to find the sum of the digits of a given number using function.

To write program using functions: —

(a) with no argument and no return value;

(b) with argument and no return value;

(c) with argument and return value.

To find out the factorial of a given number using recursive function.

To write a program that uses a function to sort an array of integers.

To write programs to illustrate auto variable, external variable, static variable and register variable.

POINTERS**10**

To write a program to access variables using pointer.

To write a program to assign the address of an integer array to a pointer variable 'p' and add all the array elements through 'p'.

To write programs to explain parameter passing 'by reference' and 'by value'.

STRUCTURE**6**

To write a program to define and assign values to structure members

To write program to explain structure with arrays.

To define and assign values to 'Union' members.

FILE HANDLING**6**

To write to and read from a sequential access file (use character type data).

To create an integer data file, to read this file and to write all odd numbers to a new file.

To write program to use different functions used in file handling.

To make a random access to a file.

ELECTRONICS DEVICE & CIRCUIT LAB(DETC-304S)

DETAIL COURSE CONTENT

1. To study the VI characteristics of a reverse biased Zener diode.
2. To study the input and output characteristics and to find the h-parameters of a BJT for:
C – E configuration; (b) C – C configuration; (c) C – B configuration.
3. To study the FET characteristics.
4. To study the rectifier with and without capacitor filter for:
(a) half-wave rectifier ;(b) full-wave rectifier; (c) bridge rectifier.
5. Determination of frequency response characteristics of RC coupled amplifier circuit & calculation of bandwidth, midband gain, input impedance and out put impedance for:
(a) single stage amplifier; (b) double stage amplifier.
6. To study the following applications of op-amp using IC741:
(a) adder; (b) subtractor; (c) differentiator (d) integrator; and, (e) voltage follower.
7. To study the characteristics of IC555 timer connected as: **(a)**astable multi-vibrator;
(b) monostable multi-vibrator.

DIGITAL LOGIC DESIGN LAB(DETC-305S)

DETAIL COURSE CONTENT

(At least any ten experiments from the following)

1. To verify the truth tables for AND, OR, NOT, XOR, XNOR, NAND AND NOR gates.
2. To design Half adder and Full adder using all NAND gates or with all NOR gates.
3. To realize a truth table or a logic expression using the minimum number of logic gates.
4. To study 4-bit full adder IC chip (7483); Cascading of 7483.
5. To design 1's, 2's, 9's and 10's complement circuit using full adder.
6. To design BCD adder.
7. To design a simple multiplexer using discrete logic gates.
8. To use commercial multiplexer using IC chips for the design of combinational circuits.
9. To design simple decoder using discrete logic gates.
10. To use commercial multiplexer IC chips for the design of multi-output combinational circuit.
11. To design Gray-to-Binary and Binary-to-Gray code converter using discrete logic gates, multiplexers & decoders.
12. To design RS and D latch using all NAND gates or NOR gates.
13. To debounce mechanical switch using latch.
14. To design Master Slave JK flip-flop.
15. To design ripple counter.
16. To design synchronous counter.
17. To study some commercially available counter chips.
18. To design shift registers using flips-flops and to study its behaviour.
19. To study commercially available shift register IC chips.
20. To design astable and monostable multivibrator using 555 timer chip.
21. To study commercially available ADC and DAC chips.
22. To design ramp generator using DAC and counter.

DATA STRUCTURE LAB (DCS-305S)

DETAIL COURSE CONTENT

17. To write a program to create a binary tree and traverse it in pre-order and post-order form.
 18. To write a program to create a binary search tree and — (a) insert a new node in the BST, (b) search a node in the BST, (c) delete a node from the BST.
 19. To write a program to create a file, read the file, update the file, insert into the file, and, delete from the file. (The file contains, say for example, student first name, middle name, surname, address, phone no., roll no., branch etc.)
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PC UTILITY LAB (DCS307S)

DETAIL COURSE CONTENT

Module 1 CREATION OF SPREADSHEET 15

To be able to create Mark sheets / Pay sheets / Monthly or Yearly expenditure sheets / any other worksheet using a spreadsheet package.

Module 2 USE OF A DATABASE PACKAGE
30

To study a system related to the Institution / Country / Industry, and then, to create and manipulate data and generate report using a database package.

Module 3 PREPARATION OF A PRESENTATION **15**

To prepare a presentation about oneself / Institution / Country / any other topic.

OPERATING SYSTEMS LAB

(DIT-301S)

DETAIL COURSE CONTENT

GROUP – A **WINDOWS – NT/2000** **25 PERIODS**

Module 1 OVERVIEW OF WINDOWS – NT / 2000 **5**

- i) NT / 2000 Features, NT / 2000 Capabilities - Multitasking, Multithreading, Multiprocessor Support.

**COURSE STRUCTURE FOR INFORMATION TECHNOLOGY
4th SEMESTER**

THEORETICAL PAPERS

COMMUNICATION ENGINEERING - I

(DIT-401)

Total Marks : 70+30

DETAIL COURSE CONTENT

GROUP - A

28 PERIODS

INTRODUCTION TO COMMUNICATION

8

Importance of communication — Elements of communication system — Signal, Spectrum and Bandwidth — Basic idea of Fourier series and Fourier Transform — Discrete and continuous spectra of periodic and aperiodic signal and corresponding discussion of Fourier series and Fourier transform — Transfer Function — Filter.

AMPLITUDE MODULATION SYSTEM

10

Need of Modulation — Amplitude Modulation — Expression for Amplitude Modulation and Signal Power relation in AM wave — Modulator and Balanced Modulator — SSB Signal: Methods of generation of SSB Signal (Filter method), Vestigial side band signal, Concept of multiplexing, AM demodulators (Linear diode detector, Square law detector, Envelope detector) — Principle of radio transmission using block diagram (Super Heterodyne Receiver).

FREQUENCY & PHASE MODULATION SYSTEM

10

Frequency Modulation — Phase Modulation — Expression for frequency and phase modulated signal — Frequency spectrum and effective bandwidth of FM signal (Carson's Rule) — Comparison between AM, FM, PM — Methods of FM generation (Direct, Indirect, Armstrong Method) — Different methods of FM demodulation (schematic discussion on Foster Seeley discriminator, Ratio detector) — Voltage Controlled Oscillator and Phase Lock Loop.

GROUP - B

32 PERIODS

PULSE MODULATION SYSTEM

10

Pulse modulation system — Noisy communication channel — Sampling theorem and classify sampling — PAM, PWM, PPM.

DIGITAL COMMUNICATION

15

Digital communication — Advantages of digital communication — Channel capacity formula — Basic concept of Matched Filter — Binary ASK, PSK, FSK — QASK and QPSK — TDM and FDM — PCM

generation and demodulation — SNR formula for PCM — Bandwidth of PCM signal — Concept of SNR-
Bandwidth trade-off in PCM — Concept of DM & ADM — DPCM.

BASIC TELEPHONY

7

Basic telephone circuitry — Telephone Transmitter, Receiver, Dial Tone, Side Tone, etc. — DTMF —
Concept of strowger exchange — Electronic Exchange.

REFERENCE BOOKS

Electronic Communication by G. Kennedy

Principle of Communication by Taub & Schilling

Modern Electronic Communication by A. Sharma & R.K. Sinha.

D A T A C O M M U N I C A T I O N & C O M P U T E R

D A T A C O M M U N I C A T I O N & C O M P U T E R N E T W O R K

(DCS-401)

Total Marks : 100, CPW : 3 , Credit :3

D E T A I L C O U R S E C O N T E N T

G R O U P - A

(1st half)

INTRODUCTION TO COMPUTER NETWORKS

BASIC CONCEPTS: Servers, Client, Workstation, Hosts (definition & applications)

TYPES OF COMPUTER NETWORKS: LAN, MAN and WAN., TYPES NETWORK ARCHITECTURE: Peer-to-peer,
Client-Server, Distributed.

NETWORK TOPOLOGY (PHYSICAL & LOGICAL)

Bus, Ring, Star, Mesh and Tree.

TRANSMISSION MEDIA & SWITCHING

GUIDED: Coaxial, Twisted-pair (UTP, STP), fibre-optics cable., UNGUIDED: Line of site transmission and
communication satellites. SWITCHING: Circuit Switching, Packet Switching, Message Switching.

MODES OF DATA TRANSMISSION & MULTIPLEXING

Parallel and Serial, Asynchronous and Synchronous, Simplex, Half duplex and Full duplex

FDM, TDM.

G R O U P - B

(2nd half)

NETWORK REFERENCE MODEL, PROTOCOLS, SERVICES & STANDARDS

OSI reference model of Data Communication and its different layers.

Protocols, Services and Standards (in brief): TCP, FTP, TELNET, DNS, ICMP, IP (IP addressing, Subnet
masking).

DEVICES OF NETWORK & INTER-NETWORK CONNECTIVITY

Repeater, Bridge, Router, Switches, Gateways, Modem.

FLOW CONTROL, ERROR CONTROL & NOISE

FLOW CONTROL: Stop-and-wait, Sliding window
ERROR CONTROL: Stop-and-wait ARQ, Sliding window ARQ.
NOISE: Definition and different types of Noise,.

REFERENCE BOOKS

Data Communications and Networking / B.A. Forouzan / Tata McGraw Hill
Data and Computer Communications / William Stallings / Prentice Hall of India
Data Networking Communication / M.A. Miller / Vikas Publishing House
Networking Protocols and Standards / Prentice Hall of India
Encyclopaedia of Networking / M. Tulloch / Prentice Hall of India
Basics of Network Security / Firewalls and VPNs / Prentice Hall of India
TCP/IP Protocol suite / B.A. Forouzan / Tata McGraw Hill
Data Communications / P.C. Gupta / Prentice Hall of India

OBJECT ORIENTED METHODOLOGIES (DCS-402)

Total Marks : 100 , CPW : 3 , Credit :3

Group- A

Introduction to OOP (1st half)

OO Paradigm, Objects and Classes, Features Object oriented Programming, Structured Vs Object Oriented Development, Features of OO Languages, Applications of OOP, Merits and Limitations of OOP

Data types, Operators and I/O Operation

Basic Data types, Basic Type modifiers, Derived Data types, Variables, Storage class specifiers, Initializing variables, Operators, Unformatted Console and stream I/O Functions, Formatted Console I/O Functions

Classes and Objects

Classes ,Class Members and Creating Objects, Member functions, Member Access Specifiers (public, private, protected), Static class member, Inline Functions, Arrays within a Class and Array of Objects, Passing Objects as function arguments and returning object from a function

Constructors and Destructors

Constructors, Overloaded Constructors, Null Contradictor, Copy Constructor, Destructors
Constraints on Constructors and Destructors

Overloading Functions and Operators

Overloading Functions, Overloading Operators (Unary, binary, string manipulation using operator)
Group –B (2nd half)

Inheritance

Base and Derived classes, Accessing Base class members and Access Control, Overriding member functions, Multi Level, Multiple, Hierarchical& Hybrid Inheritance, Virtual Base Class

Polymorphism

Fundamental of Polymorphism, Pointer to object and derived class, 'This' pointer, Virtual Functions, Early and Late Binding, Rules of Virtual Functions, Pure Virtual Function, Friend Functions

File Handling

Basic File Operations, File Handling, Classes for file stream operation, Opening and Closing Files, File modes

Exception Handling & Templates

Introduction to Exception Handling, Catching Class Types, Multiple Catch Handlers, Exception Specification, Generic Functions/Function Templates, Template Arguments

Reference : 1. Object oriented programming in Turbo C++ , Robert Laffore
2. OOPs , Balaguruswamy, TMH

DATABASE MANAGEMENT SYSTEM

(DCS-403) Total Marks : 100, CPW : 3, Credit : 3

DETAIL COURSE CONTENT

Group- A

(1st half)

Basic Concepts of DBMS

Purpose of database systems – Data abstraction – Database Users – Data Independence (Logical & Physical) – Instance & Schemes – Three layered Architecture of DBMS – Different Levels of Abstraction.

DATA MODELLING, E-R MODELLING

LOGICAL MODELS: Object & Record based – Object oriented model – Entity relationship models – Entity sets & relationships sets – Attributes — KEYS in entity & relationship sets: (a) super key, (b) candidate key, (c) primary key, (d) unique key — Mapping constraints – E-R Diagrams – Relational Model – Hierarchical model – Network Model.

RELATIONAL DATABASE MANAGEMENT, RELATIONAL ALGEBRA & RELATIONAL CALCULUS

RDBMS Technology, The relational Data Structure, Keys, Relational Data Manipulation, The Relational Algebra, Relational algebraic Operations, The Set Operations, Fundamental Operations, Relational Calculus. Data definition language – Data manipulation language – Relational algebra — OPERATORS: select, project, join, rename etc – Simple examples.

GROUP - B

STRUCTURED QUERY LANGUAGE, QUERIES AND SUBQUERIES

Give elementary idea of Structured Query Language – SQL Commands – SQL Data Types and Literals – SQL Operators, Basic Queries in SQL – Aggregate Functions – Grouping Selecting – Joins – Set Operations – SubQueries – Join Vs SubQueries.

(2nd half)

DML AND DDL COMMANDS, PL/SQL PROGRAMMING

Data manipulation Language Commands - Data Definition Language Commands – Tables - Views. PL/SQL Introduction – Block Structure, Variables – PL/SQL control Structures, Cursors, Error Handling, Triggers – ODBC Concepts (or Any API).

GROUP - C

NORMALIZATION IN RELATION SYSTEM

Pitfalls in relation databases – Functional Dependencies – Lossless join and Dependency Preservation – Importance of normalization – 1st NF, 2nd NF, 3rd NF and comparison with each other – BCNF – Multi-valued Dependency & 4th NF (Elementary idea).

TRANSACTION PROCESSING CONCEPTS , CONCURRENCY CONTROL CONCEPTS

Transaction processing – Transaction & System Concepts – Desirable properties of transaction - Basic concepts of concurrency control – Concepts of locks – Live Lock – Deadlock

SECURITY & INTEGRITY

Authorization and View – Security constraints – Integrity Constraints – Encryption (only Fundamentals).

Reference Books: 1. DBMS, Korth 2. DBMs, Navathe

SESSIONAL PAPERS

COMMUNICATION ENGINEERING-I LAB

(DIT-402S)

DETAIL COURSE CONTENT

1. Study of Amplitude Modulation and Demodulation technique.
Main parameter of A.M. signal through oscilloscope.
Envelop Detector.
Design of simple Balanced Modulator using 4-diode switching.
Design of envelop detector.
2. Study of Frequency Modulation & Demodulation.
 - a) FM modulation using VCO.
 - b) Frequency Division and Modulation Index.
 - c) Operation of FM Detector and FM Demodulation Techniques.
3. Study of Pulse Modulation.
 - a) PWM and its wave form.
 - b) Generation of PPM and PWM.
4. Studies of different digital modulation.
 - a. ASK, FSK, QPSK, etc.
 - b. Performance study of different digital communication system like PCM, DM, ADM.
 - c. Complete PCM system – Codec based on Microprocessor or Digital Circuit.
 - d. Complete DM modulator using digital circuit.
5. Detection of pulse dialling, tone dialling, reversal on a telephone line using hybrid circuit.

OBJECT ORIENTED PROGRAMMING LAB

(DCS- 405S) Total Marks : 100, CPW : 4 Credit : 3

DETAIL COURSE CONTENT

PROGRAMMING WITH C++

Classes – objects – Declaring & Creating Objects – Concept of members variable, methods – Private, Public, protected variable.

1. Constructors: Constructor with parameter – Constructor without parameter – Copy Constructor.
2. Destructor.
3. Passing objects to method.
4. Inheritance: Private, Public, protected inheritance – Single, Multiple inheritance – Multilevel, hierarchical inheritance.
5. Operator overloading & polymorphism: Unary operator overloading like ++, - - etc. – Binary operator overloading like arithmetic operator – Comparison operator, Assignment operator etc. – Introductory problem on virtual function & friend function.
6. Class Templates and Exception handling.

REFERENCE BOOKS

1. Objected Oriented Programming with C++, By – E Balaguruswami (TMH)
 2. Object Oriented Programming in Microsoft C++, By- Robart Lafore.
 3. Let Us C++, By- Y Kanethkar.
-

D A T A B A S E M A N A G E M E N T S Y S T E M S L A B

(DCS-406S), Total Marks : 100, CPW : 4, Credit : 2

D E T A I L C O U R S E C O N T E N T

INTRODUCTION TO ORACLE OR MS-SQL SERVER

Introduction to oracle — Various Data types — Creating Tables, Modifying structure of tables — Inserting, Updating, Deleting table data — Many faces of SELECT command — Data Constraints — Logical operators, Range Searching , Pattern Matching, Oracle Function — Grouping data from tables — Views — JOINS: Equi-Join, Self-Join.

UNDERSTANDING PL / SQL

Introduction to PL/SQL — PL/SQL Syntax and PL/SQL execution environment — Variables and Various Data types — Understanding PL/SQL block structure — ERROR HANDLING IN PL/SQL: (a) user defined error condition, and, (b) pre-defined internal PL/SQL exception — Introduction to cursor — CURSOR CONTROL: open, fetch, close statements — Implicit & Explicit cursor and their attributes.

WORKING WITH FORMS

Basic Components of Form — Understanding Block, Item, Frame, Canvas View, Window, PL/SQL Code — Form construction, Default Form, Customizing Form layout — Standard data retrieval and data manipulation operation using form — Understanding and using Triggers and user-defined procedure — Form data validation — Context sensitive help — Constructing master-detail form — Using LOV and list items — Working with Multiple Canvases — Passing parameter between forms.

WORKING WITH MENU

Components of custom menu — Creating custom menu & menu module — Attaching PL / SQL code to menu items — Saving & Compiling a menu module — Attaching menu module to form module.

WORKING WITH REPORT

Basic Concepts — Using Oracle report interface — Creating default tabular report — Customizing report layout — Familiarity with Break & Matrix report.

REFERENCE BOOKS: ORACLE DEVELOPER 2000 / Ivan Bayross.

NETWORKING LAB (DCS-404S)

Total Marks : 100, CPW :3 , Credit : 2

DETAIL COURSE CONTENT

Job 1. To be familiar with different network cables (UTP, STP, Coaxial), Connectors (BNC, BNC-T, RJ-11 (4 wire) RJ-45 (8 wire), DB9, DB15) and Terminator.

Job 2 To study crimping: RJ-45, RJ-11, Cross-over Cable.

Job 3 To study the different expansion slots of a motherboard, set the NIC to expansion slot and to install the driver.

Job 4 To connect HUB with other nodes and HUB-to-HUB.

Job 5 To make a peer-to-peer Network System.

Job 6 To run the following application in a network system and get knowledge: (i) FTP, (ii) Telnet, (iii) Mail, and, (iv) Talk.

Job 7 To use the ping utility in order to understand its use in a trouble shooting environment.

Job 8 To be familiar with loop back testing.

Job 9 To be familiar with the idea of socket and to write a socket program.

REFERENCE BOOKS

1. Hands on networking essentials with projects / M.J. Palmer
2. Internet working with TCP-IP / D.E. Comer and D. Stevens / Prentice Hall of India
3. CISCO Internet working / Charles Riley / SPD Pvt. Ltd.
4. Networking Cabling handbook / Chris Clark / Tata McGraw Hill
5. Designing and implementing local and WANs / M.J. Palmer and R.B. Sinclair / Vikas Publishing House.

COMPUTER GRAPHICS LAB (DIT- 403S)

DETAIL COURSE CONTENT

Job 1 To practice point plotting, line and regular figure algorithms.

- Job 2** Raster scan line and circle drawing algorithm.
- Job 3** To practice clipping and windowing algorithms for points, lines and polygons.
- Job 4** To practice 2-D / 3-D transformations.
- Job 5** Simple fractal representation.
- Job 6** To practice filling algorithms.
- Job 7** To create animation using Flash.

REFERENCE BOOKS

1. Computer Graphics / Hearn & Baker
2. Computer Graphics / Harrington
3. Computer Graphics / Rankin

COMMUNICATION SKILL-II (DHU 400S)
1st half (For all Discipline)
Total Marks : 100, CPW : 4 , Credit : 2

DETAIL COURSE CONTENT

MODULE –1 LOOKING FOR A JOB

8 PERIODS

- 1.1 Identifying Sources — Skimming Newspapers for Information
- 1.2 *JOB INTERVIEWS Preparing for an interview — Responding Appropriately — Group Discussions — Using Language Effectively for Interaction
 *Mock interviews are to be arranged and to be conducted by any suitable person
- 1.3 Preparation of C.V.

MODULE –2 PHONETICS

12 PERIODS

- 2.1 The speech mechanism
- 2.2 Speech sounds : Vowels & consonants
- 2.3 Phonetic symbols
- 2.4 The syllable
- 2.5 Intensive drilling in phonetic skills, and accent and intonation

MODULE –3 WRITING SKILLS

8 PERIODS

- 3.1 Writing using a variety of simple and complex sentences and a range of subordinate and co-ordinate clauses of time, manner, reasons, relation, results etc.
- 3.2 Knowledge to construct a coherent and cohesive text, using a range of cohesive devices dealing with consequences, addition, concession, apposition, agreement, contrast.
- 3.3 Dialogue writing considering various purposes – formal, semi-formal, informal

MODULE – 4 DEVELOPING CONVERSATIONAL SKILLS

6 PERIODS

Develop different forms of conversation, formal or informal in different situations like–
 a) Greetings, Salutations b) Asking the way c) In the Post office d) Catching a train
 e) Booking a room at a hotel f) At the bank g) Making a telephone call h) At the police station
 I) Receiving and seeing off a guest.

- 5.1 Methods of speaking – speaking from a manuscript – speaking from memory – Impromptu delivery – extemporaneous delivery.
- 5.2 Analysing the Audience.
- 5.3 Organizing the presentation – Using visual Aids – Designing and presenting visual Aids.

Examination Scheme:

- 1. Continuous internal assessment of 30 Marks is to be carried out by the teachers throughout Part-II 4th Semester.
- 2. External Assessment of 70 Marks shall be held at the end of the part – II 4th Semester on the entire syllabus. Distribution of Marks : Looking for a Job : 10, Phonetic : 15, writing Skills : 10 Developing conversational skills : 10, Making presentations : 25.

TEXT BOOK AND OTHER RECOMMENDED BOOKS

ENGLISH SKILLS for Technical Students – TEACHERS’ HANDBOOK / West Bengal State Council of Technical Education in collaboration with THE BRITISH COUNCIL / Orient Longman – Business Correspondence, by V.G. Natu and C Kaur – Professional Communication Skills, by Pravin Bhatia and A.M. Shaikh – English Grammar, by Wren & Martin

- A text book of English : Phonetics for Indian Students / T. Balasubramanian / Macmillan India Ltd., Writing skills – A . Parry, S. Harlle and M. Bartram.

5th SEMESTER

THEORETICAL PAPERS

INDUSTRIAL MANAGEMENT (DHU-501)

1ST HALF

DETAIL COURSE CONTENT

Introduction to Management Science

Principles & functions of management — Contributions of F.W. Taylor, Henry Fayol, Max Weber in development of the theories of management science.

Organisational Behaviour

Objectives — Brief introduction to: Motivation– Perception – Leadership & Leadership Styles – Communication – Team Building – Work Culture.

Human Resources Management

Scope & Functions – Human Resources Planning – Selection & Recruitment – Training & Development – Performance Appraisal .

Production & material Management

Production Planning: Routing – Loading – Scheduling — Production Control: Expediting – Dispatching — Materials Handling Inventory Management Inventory Management — Productivity — Quality Management: Tools & Techniques – Quality Management System.:

Financial Management

Financial Ratios — Elements of Costing — Auditing

Marketing & Sales Management

Marketing of products & Services — Advertising & Sales Promotion — Consumer Behaviour

REFERENCE BOOKS

Essentials of Management / Kontz / McGraw-Hill of India

Organization & Behaviour / M. Banerjee / Allied Publishers

Human Behaviour at Work: Organizational Behaviour / Keith Davis & Newstrom / McGraw-Hill of India

Human Resources Management / Mirza Saiyatain / Tata McGraw-Hill

Production Management & Control / Nikhil Bharat / U.N. Dhar & Co.

Production Management / Keith Lockyer / ELBS

Marketing Management / Philip Kotler / Prentice Hall of India

Lectures on Management Accounting / Dr. B.K. Basu / Basusri Bookstall, Kolkata

An Insight into Auditing: A Multi-dimensional Approach / Dr. B.K. Basu / Basusri Bookstall, Kolkata

Business Strategies, Financial Management & Management Accounting / S.K. Poddar / The Association of Engineers (India)

2ND HALF

ENTREPRENEURSHIP DEVELOPMENT (DHU-501)

Entrepreneurial Development

Definition of entrepreneurship, Characteristics of entrepreneurship, Factors influencing entrepreneurship, Types and Functions of Entrepreneurs.

Need for promotion of entrepreneurship, Entrepreneurial Environment, Govt. policies for setting-up new small enterprises.

Planning a SSI

What is planning, Types of planning, Importance of planning, Steps in planning.,Steps for starting a small enterprise. ,Commercial Banks and Financial Institutions.

Problems of Small Industries

Power shortages, Project planning, Finance.,Raw materials, Production constraints, Marketing. ,Personal constraints, Regulation., Entrepreneurial Motivation Training, Motivating factors of Entrepreneurs, Achievement Motivation, Institutions assisting entrepreneurs.

REFERENCE BOOKS

Starting your own business, A step-by-step Blue print for the first-time Entrepreneur – Stephen C. Harper, McGraw-Hill

Harward Business Review on Entrepreneurship – Harward Business School Press.

Entrepreneurship Development in small scale – proceedings of National Seminar, DCSSI, New Delhi – Patel, V.G.

Entrepreneurship: Strategies & Resources – Abrams Grant Pass. Oregon: Oasis press.

The Business Planning Guide – David H Bangs, Upstart Publishing Company in Chicago.

Entrepreneurship Development in India – Dr. C.B. Gupta, Dr. N.P. Srinivasan, Sultan Chand & Sons.

Entrepreneurship – Madhurima Lall and Shikha Sahai, Excel Books.

DISCRETE MATHEMATICS (DIT-501)

Total Marks : 35+15

1ST HALF

DETAIL COURSE CONTENT

GROUP – A

15 PERIODS

Module 1 SET THEORY

15

- 1.1 CONCEPT OF SETS: Notation – Subset – Superset – Empty set – Universal set – Examples —
OPERATION ON SETS: Union – Intersection – Complementation – Difference – Symmetric difference

– Problems relating simple set identities – Definition of power set – Cartesian product of finite number of sets – Simple problems – Cardinality of a set – Finite and infinite sets

1.2 RELATION BETWEEN TWO SETS: Binary relation as a subset of Cartesian product – Reflexive, symmetric & transitive relations – Examples — Equivalence relation – Examples

1.3 FUNCTIONS: Definition of function – Domain, Co-domain & Range of a function– Related problems

GROUP – B

15 PERIODS

MODULE 2

RECURRENCE RELATION:

8

Definition – Examples (Fibonacci series etc.) – Linear recurrence relations with constants coefficients – Homogeneous solutions – Particular solutions – Total solutions – Problems

MODULE 3 GRAPH THEORY

7

Introduction – Definition of a graph – Subgraph – Isomorphism – Walk, Paths and Circuits – Connectedness and components – Euler graphs

Graph theoretic algorithms – Minimal Spanning tree algorithm – Shorted path algorithm.

REFERENCE BOOKS

1. Foundation of Discrete Mathematics / K. D. Joshi
2. Discrete Mathematics with Algorithms / Albertson & Hutchinson / John Wiley
3. Discrete Mathematics / Iyenger, Venkatesh, Chandrasekaran & Arunachalam / Vikash Publishing House
4. Discrete Structure and Graph Theory / S.K.S. Rathore and H. Chaudhuri / Everest Publishing House

2ND HALF

A U T O M A T A T H E O R Y (DIT-501)

Total Marks : 35+15

DETAIL COURSE CONTENT

GROUP - A**15 PERIODS****MATHEMATICAL PRELIMINARIES****3**

- 1.1 Sets, Relations and Functions (Brief Discussion), Graphs, Trees.
- 1.2 Strings and their properties: Definition, operation on strings, palindrome, prefix & suffix of a string, Levi theorem (Statement only), Terminal & Non-terminal symbols.

THE THEORY OF AUTOMATA**7**

- 2.1 Definition of an Automaton, Definition of finite Automaton, Block diagram of finite Automaton, Transition system, Properties of Transition Functions, Acceptability of a string by Finite Automaton.
- 2.2 Definition of DFA and NDFAs, The equivalence of DFA and NDFAs, A theorem on equivalence of DFA and NDFAs. (Including Applications)
- 2.3 Mealy and Moore machine, Procedure for Transforming a Mealy Machine into a Moore Machine (with applications), Procedure for Transforming a Moore Machine to a Mealy Machine (with applications).

FORMAL LANGUAGE**5**

- 3.1 Concept of a language, Definition of a grammar, Language generated by a grammar (definition with application).
- 3.2 Chomsky classification of languages (definition), Relation between the classified languages.
- 3.3 Procedure, Algorithm, Recursive and recursively enumerable set (definitions); Theorem related CSL and recursive set (statement only).

GROUP - B**15 PERIODS****REGULAR SETS & REGULAR GRAMMAR****7**

Definition of Regular expression and regular set, Identities of regular expressions, Arden's theorem (statement & application)

Relation between regular expression and finite automata, Transition system containing Λ -moves (application), Conversion of Non-deterministic systems to deterministic system (application), Construction of finite automata equivalent to a regular expression (with application), Equivalence of two finite automata (application), Equivalence of two regular expressions; Pumping lemma (Statement & application), Closure properties of regular sets, Construction of regular grammar for a given DFA and a transition system for a given regular grammar G.

CONTEXT-FREE LANGUAGES**4**

Introduction – Definition – Derivation trees (Definitions & application) – Ambiguity in CFG.

PUSHDOWN AUTOMATA & TURING MACHINE**4**

Basic definition of PDA – Turing machine model & its representation.

REFERENCES

Introduction to Automata Theory, languages & computation / J.E. Hopcroft & J.D. Ullman / Narosa
Theory of Computer Science / K.L.P. Mishra & N. Chandrasekharan / PHI
Theory of Automata and Formal Language / Kain / TMH
Switching and Finite Automata / Z.V.I. Kohavi / TMH.

SOFTWARE ENGINEERING (DIT-502)**Total Marks : 70**

DETAIL COURSE CONTENT

GROUP - A

20 PERIODS

SOFTWARE ENGINEERING PARADIGMS

6

The evolving role of Software – An industry perspective and Software competitiveness.
Software Crisis – Problems and Causes.
Generic Process Model – Linear Life Cycle Model, Spiral Model, Prototype Model, Iterative Model.

SOFTWARE COST ESTIMATION

6

Software Cost Factors; Software Cost Estimation Techniques – Expert Judgment, Delphi-Cost Estimation; COCOMO – a heuristic estimation technique.

SOFTWARE REQUIREMENT ANALYSIS

8

Requirement Process; Problem Analysis – Informal approach, structured analysis, object-oriented modelling, prototyping; Software Requirement Specification (SRS).

GROUP - B

21 PERIODS

SOFTWARE DESIGN

10

Design and Software quality; Evolution of software design; Fundamental Design concepts- Abstraction, Refinement, Information hiding, Structure, Modularity, Software architecture, Data structure, Concurrency, Verification; Effective Modular Design – Functional independence, Cohesion, Coupling; Basic concepts of Data Flow-Oriented Design & Object-Oriented Design.

PROGRAMMING LANGUAGES & CODING

5

Programming Languages Features – Type checking, separate compilation, User Defined Data types, Data abstraction, Exception handling;
Structured Coding Techniques; Coding Styles; Coding Standards and Guidelines; Documentation Guidelines;

SOFTWARE TESTING

6

Testing Objectives; Testing principles; Testability; Walkthrough, Symbolic Execution & Inspection; Black-Box testing; White-Box testing; Software Testing Strategies – Unit testing, Integration testing, Validation testing, System testing; Debugging approaches.

GROUP - C

19 PERIODS

SOFTWARE QUALITY ASSURANCE, VERIFICATION & VALIDATION

6

Software quality factors; Software Quality Assurance (SQA); SQA activities; Software reliability – errors and faults; Software reliability models; A framework for technical software metrics;

SOFTWARE MAINTENANCE

5

Enhancing maintainability during development; Managerial aspects of Software Maintenance; Software Configuration management; Software Maintenance activities – Corrective, Adaptive, Perfective, preventive; Estimating Software Maintenance Cost;

SOFTWARE DOCUMENTATION

2

SOFTWARE PROCESS MANAGEMENT

6

Concepts of Software Process Management; Objectives; Scope; Planning; Estimation; Risk analysis; Scheduling; Software process and project metrics;

REFERENCE BOOKS

Software Engineering, A Practitioner's Approach / Roger S. Pressman / McGraw-Hill
Software Engineering Concepts / Richard E. Fairly / Tata McGraw Hill

COMMUNICATION ENGINEERING – II

DIT-503 , Total Marks : 70+30

DETAIL COURSE CONTENT

GROUP - A	21 PERIODS
MICROWAVE ANTENNA & WAVE PROPAGATION	14
1.1 Need of antenna in communication systems.	
1.2 Microwave antenna	
Characteristic & typical application of parabolic reflectors.	
Characteristic & typical application of horns, lens & slot antenna.	
1.3 Wave propagation	
Propagation mode for different frequency.	
Salient features of ground, sky and space wave propagation.	
Line-of-sight propagation.	
Effect of the atmosphere & curvature.	
Repeaters, fading, diversity reception.	
RADIO RECEPTION	7
2.1 Concept of heterodyning and block diagram & critical explanation super heterodyning receiver.	
2.2 Block schematic diagram and operational description of an AM receiver.	
2.3 Sensitivity, selectivity & fidelity of a receiver.	
2.4 Working principle of AM and FM systems.	
GROUP - B	20 PERIODS
SATELLITE & SPACE COMMUNICATION	10
3.1 Introduction and brief history.	
3.2 Orbits of satellite – low, medium and geo synchronous.	
3.3 Satellite links.	
3.4 Synchronisation	
Principle of frequency division multiple access (FDMA)	
Spade system, time division multiple access (TDMA)	
Spread spectrum multiple access (SSMA)	
Basic principle of VSAT.	
OPTICAL FIBRE COMMUNICATION	10
4.1 History of Fibre Optics.	
4.2 Principles of fibber optics communication.	
4.3 Optical fibber and fibber cables, fibber characteristics & classification.	

4.4 Brief idea of components of optical fiber communication system and representation by block diagram.

4.5 Insulation, testing & repair.

GROUP - C

19 PERIODS

INTRODUCTION TO WIRELESS, CELLULAR, DIGITAL & MOBILE

7

5.1 Mobile Communication: Evolution and Fundamentals.

5.2 International Mobile Satellite, Low orbit and medium altitude, Earth orbit, Satellite frequency band.

5.3 Personnel communication systems.

5.4 Standards – the importance of national and international standardisation.

5.5 Mobile personal computer (PC) and personal communication systems.

SPREAD SPECTRUM SYSTEM

7

Introduction.

Fundamental concepts.

Code division multiple access (CDMA), direct sequence and frequency hopped spread – spectrum system.

Frequency hopping spread – spectrum system.

Synchronisation of spread – spectrum system.

Spread – spectrum application in cellular, PC and mobile.

CELLULAR AND WIRELESS SYSTEM ENGINEERING

5

Introduction.

Time division multiple access wireless cellular system.

Code division multiple access (CDMA) spread spectrum digital cellular system.

5th SEMESTER
SESSIONAL PAPERS

MULTIMEDIA LAB (DIT-502S)

DETAIL COURSE CONTENT

Module 1 SOUND FORGE 15

Sound recording and editing through sound forge XP

- 1.1 The main screen, data window.
- 1.2 Opening an existing file-playing a sound file.
- 1.3 Playing a section of a file.
- 1.4 Coping data to new file and saving a file.
- 1.5 Simple Editing.
- 1.6 Advanced Editing.
- 1.7 Editing Sound Formats.
- 1.8 Applying sound processing functions.
- 1.9 Recording sound using sound forge.

Module 2 ADOBE PHOTOSHOP 15

- 3.1 Scanning image.
- 3.2 Creating new images.
- 3.3 Changing background and foreground colours.
- 3.4 Creating and using paths.
- 3.5 Editing and retouching.
- 3.6 Duplicating images.
- 3.7 Layers – linking with layers.
- 3.8 Grouping images.
- 3.9 Rubber stamp and pattern stamp tool.
- 3.10 Painting – Paintbrush tool, pencil tool, eraser tool, gradient tool.

Module 3:- Flash 5

Flash editor, creating simple graphics, modifying simple graphics, complex graphics on single layer/multiple layers, reusing graphics objects, frame by frame animation, animation with motion tweening, animation with shape tweening, interactivity with simple frame actions, interactivity with objects, adding sound to your movies, delivering movies to your audience.

REFERENCE BOOKS

Multimedia: Production, Planning and Delivery by John Villamil-Casanova and Louis Molina, PHI
Multimedia: Sound and Video by Jose Lozano, PHI
Multimedia Graphics by Leony Fernandez – Elias and John Villamil-Casanova, PHI
Multimedia on the Web by Stephen McGloughlin, PHI

JAVA PROGRAMMING LAB (DCS-505S)

DETAIL COURSE CONTENT

JAVA

60 PERIODS

Module 1 JAVA PROGRAMMING FUNDAMENTALS 2

To write a Java application program which clarify the following points:

- (i) How to compile and run,
- (ii) How to set path and classpath,
- (iii) Single and Multi-line comments, and,
- (iv) Command line arguments.

Module 2 DATA TYPES, VARIABLES OPERATORS & ARRAYS 3

To write a Java program which defines and initialized different data types: byte, short, int, long, float & double and clarify the following points: (a) dynamic initialization, (b) type conversion and casting.

Problems related to Character and Boolean data type.

Problems related to one and two dimensional array.

Problems related to Arithmetic, bit wise and relational operators.

Module 3 CONTROL STATEMENTS & LOOPING STRUCTURE 3

Problems related to: IF-ELSE, IF-ELSE-IF, SWITCH statements.

Problems related to the following looping statements — WHILE, DO-WHILE & FOR.

Problems related to nested looping and jump statements (BREAK, CONTINUE & RETURN)

Module 4 CLASSES ,OBJECTS & METHODS 10

To write a Java program to clarify the following points: (a) how to declare a class, (b) how to create an object, (c) how methods are defining in a class, (d) access variables and methods.

To construct a Java program which defines: (a) how arguments values are passed to a method, (b) use of new operator, constructor and finalize) method, (c) passing objects to a method, (d) declaration of static keyword.

To practice problems related to: (a) Method overloading, (b) Multiple constructor, (c) Calling constructor from a constructor.

Module 5 EXCEPTION HANDLING 4

To write a Java program which is constructed using TRY, CATCH and FINALLY blocks

Module 6 INHERITANCE & EXTENDING CLASSES (INTERFACE) 12

6.1 To write Java programs which clarify the following: (a) super class, (b) sub-class / derive class, (c) understanding abstract and final class, (d) polymorphism.

6.2 To practice problems related to: (a) Multiple Inheritance, (b) Interface, (c) Extending Interfaces.

Module 7 THREAD & MULTI-THREAD 6

7.1 To practice problems related to main thread, sub-threads and thread priorities.

Module 8 JAVA NETWORKING 6

8.1 To write a Java program which displays the: (a) IP address of a corresponding host name, (b) Different parts of an URL (e.g. Protocol, Port no, hostname, Filename).

8.2 To practice problems related to Socket programming (minimum two problems).

9.1 To practice problems related to data base connection using JDBC: ODBC bridging driver.

9.2 To write a Java program which connects to the data base (Access / Oracle) and displays the output.

REFERENCE BOOKS

1. JAVA 2: The Complete Reference / Herbert Schildt / Tata Mc-Graw Hill Pub. Co. Ltd.
2. Head First Java / K. Sierra & B. Bates , O'Reilly
3. Internet and Java Programming / R. Krishnamoorthy & S. Prabhu / New Age International (p) Ltd.
4. Beginning Java 2 / Ivor Horton / Wrox Press Ltd (SPD)
5. Beginning Java Networking / C. Darby, J. Griffin and others / Wrox Press Ltd. (SPD)
6. Teach yourself Web Technologies Part – I / Ivan Bayross / BPB Publications
7. Teach yourself Web Technologies Part – II / Ivan Bayross / BPB Publications
8. Java foundations of programming / Prentice Hall of India Pvt. Ltd.

WEB TECHNOLOGY LAB (DCS-504S)

Total Marks: 100, Cpw: 4, credit: 2

Html Basics : To create an HTML document with the main structure elements (HTML, HEAD, BODY), save it and display it on a browser.
To create an HTML document and add the following: (a) Comments, (b) Headings (H1 to H6), (c) Paragraph, (d) Visual line break.

b. Fonts ,Colour ,Lists & Tables :To create an HTML document and add the following: (a) Fonts, (b) Colours, (c) Lists, (d) Signature Text blocks.

To create in an HTML document a Table and mention the following: (a) Table variables, (b) Table element, (c) CAPTION element, (d) Table ROW element, (e) Table Data element, (f) Table Heading element.

c. Hyper Links ,Frames & Images : To create a web page using HTML and clarify the following: (a) how to create hyperlink, (b) how to create frames, (c) how to Insert an image.

HTML / Applet : Creating simple HTML file, place it in web server and access it from client Browser. Creating a HTML form incorporating GUI components (Command button, text box, radio button, check box, combo box etc).

Creating a simple applet and embedding it in HTML file. Writing applet to incorporate GUI components (Command button, text box, radio button, check box, combo box etc).

Writing applet to incorporate events.

Active Server Pages Introduction to Active Server Pages.

Elements of ASP (Scripts, Objects, Components). Making your first Active Server Page.

Working with ASP: Using HTTP — Writing simple ASP files — Controlling Execution of server side scripts — Problems on HTML forms to get user information and retrieving HTML form contents — Working with query string.

ASP Session: Introduction to session — Familiarity and working with session objects (simple problems) — Using session events — Familiarity and working with cookies.

ASP Application: Introduction to ASP Application features of ASP Application — Creating a Simple ASP Application, Setting the properties of ASP Application — Using Application objects and Application events.

ASP Components: Using Components in ASP (Simple problems) — Creating Components with page scope, session scope, Application scope — Working with browser capability component, file assess components , counter components etc.(Simple problems)

Reference Books :

HTML: The Complete Reference / Thomas A. Powell / Tata Mc-Graw Hill Pub. Co. Ltd.

HTML and XML an Introduction / Prentice Hall of India Pvt. Ltd.

Internet: An Introduction / Tata Mc-Graw Hill Pub. Co. Ltd

VISUAL BASIC LAB(DIT-503S)

DETAIL COURSE CONTENT

- 1.Start & Exit Visual Basic-Understanding Properties, Methods, Events-Visual Basic arithmetic operator.
- 2.Understanding Variable names – Variable types- Range of Variable values, Working with String function, Numerical function – Visual Basic Programming Fundamental.
- 3.Creating, Opening, Saving and Running VB Projects.
- 4.Working with Form & Form Events: Form properties – Working with following Form Tool (Tool box, Tool Bar, Menu Bar, Colour Palate)
- 5.Custom Control-Picture Box-Label Control –Text Box-Command Button-Shape-Frame-Check Box-Radio button-Combo Box-List Box etc.
- 6.Understanding Focus-Setting Tab Order.
- 7.Prompting user with Dialog Boxes.
- 8.Programming with various objects.9.Working with Control array.10.Working with MDI Form.

Reference book

1. Beginning Visual Basic 6 by : Peter Wright (SPD)
2. Mastering Visual Basic 6 by : Evangelos Petroustos(bpb)

PROJECT –I (DIT-504S)

COURSE SCHEDULE THE PROJECT

Each group will take at least one project in the entire session. The following subject areas may be selected for project work. The selected topic, however, need not be limited to those areas only:—

Database Management System,

Operation Research,

Microprocessor interfacing,

Object Oriented Programming,

Graphics Users Interface,

Computer Graphics,

Web based application, and,

a particular project may be part of a bigger project depending upon the complexity.

The Project Report must include the following sections:—

Introduction – Problem definition – Scope and Objective of the problem,

System Environment,

System Analysis and Requirement Analysis,

System Design and Implementation,

System Testing, and,

INDUSTRIAL TRAINING(DIT-500S)

All the students must undergo at least 2 weeks Industrial training to local / outside company /organisation after completion of 4th semester examination .

A feedback form will be taken from the respective industry which will indicate the students performance during the training and same will be reflected on the grade card of 5th semester.

6th SEMESTER
THEORETICAL PAPERS
1ST HALF
PROFESSIONAL ETHICS & VALUES(DHU-601)

DETAIL COURSE CONTENT

Effects of Technological Growth:

Rapid Technological growth and depletion of resources. Reports of the Club of Rome. Limits to growth; sustainable development. Energy Crisis; Renewable Energy Resources. Environmental degradation and pollution. Eco-friendly Technologies. Environmental Regulations. Environmental Ethics. Appropriate Technology Movement of Schumacher: later developments. Technology and developing nations. Problems of Technology transfer. Technology assessment/ impact analysis; Industrial hazards and safety, safety regulations safety engineering. Politics and technology, authorization versus democratic control of technology; Human Operator in Engineering projects and industries. Problems of man machine interaction. Impact of assembly line and automation. Human centered Technology

Ethics of Profession:

Engineering profession: Ethical issues in engineering practice. Conflicts between business demands and professional ideals. Social and ethical Responsibilities of Technologists. Codes of professional ethics. Whistle blowing and beyond. Case studies.

Profession and Human Values :

Value Crisis in contemporary society. Nature of values: Value Spectrum of a 'good' life
Psychological values: Integrated personality; mental health. Societal values: The modern search for a 'good' society, justice, democracy, secularism, rule of law; values in Indian Constitution. Aesthetic values: Perception and enjoyment of beauty, simplicity, clarity
Moral and ethical values: Nature of moral judgments; canons of ethics; Ethics of virtue; ethics of duty; ethics of responsibility. Work ethics, professional ethics.

REFERENCE BOOKS:

1. Blending the best of the East & West, Dr. Subir Chowdhury, EXCEL
2. Ethics & Mgmt. & Indian Ethos, Ghosh, VIKAS
3. Business Ethics, Pherwani, EPH
4. Ethics, Indian Ethos & Mgmt., Balachandran, Raja, Nair, Shroff Publishers
5. Business Ethics: concept and cases, Velasquez, Pearson

2ND HALF

OPTIMIZATION TECHNIQUE (DHU-601)

Introduction to Operation Research & Optimization technique

Linear Programming :

Introduction to linear programming, Formulation, LPP in the standard form, LPP in canonical form, conversion of LPP in standard form to canonical form, procedure of solving LPP by graphical method.

Introduction to Simplex method, Simplex algorithm.

Shortest path **DJKstra** method.

Project Scheduling :

Project scheduling by PERT/ CPM, Decisions and game theory,

Classical optimization theory, unconstrained External problem.

SOFTWARE PROJECT MANAGEMENT(DIT-601)

TOTAL MARKS : 70+30

DETAIL COURSE CONTENT

1ST HALF

MODULE:-1 10

Overview of Software Project Planning:-

Software Project, Categorization of Software Project, Introduction to Stepwise Project Planning, Project Scope, Infrastructure, Resource Allocation, Project Plan Execution.

MODULE:-2 10

Project Evaluation:-

Strategy Assessment, Technical Assessment, Cost Benefit Analysis, Cash Flow Forecasting, Risk Evaluation, Selection of Technologies, Rapid Application Development, Prototyping Example.

MODULE:-3 10

Software Effort Estimation:-

Software Effort Estimation & Activity Play Over & Under Estimation Problem, Basis For Software Estimation, Estimation by analogy, COCOMO, Parameter Model Function, Point Analysis, Project Schedule, Planning Model, Project Time Management, Activity Duration Estimation.

2ND HALF

MODULE:-4**15****Risk Analysis:-**

Risk Management, Identification, Analysis and Abatement of Risk, Nature of Resources, Critical, Country Cost, Cost Schedule, Monetary & Control, Cost Monitoring, Priority by Monetary, Contract Management, Human Resource Management.

MODULE:5**15****Software Quality Management:-**

Software Quality Assurance, Software Quality in Project Planning, Software Quality Definition, ISO 9126 Standards, Product Quality Management, SEI-CMM model.

References:

- 1.Hughes,Cotterell,"Software Project Management" TMH
- 2.Schwalbe,"IT Project Management",Thomson,VIKASH
- 3.ManachamMarliss,"Software Quality",Thomson,VIKASH

E-COMMERCE (DIT-602)

Total Marks : 70+30

DETAIL COURSE CONTENT**IST HALF****Module 1.**

Introduction : What is E-Commerce, Forces behind E-Commerce Industry Framework, Brief history Of Commerce,Inter Organizational E-Commerce Intra Organizational E-Commerce, and Consumer to Business Electronic Commerce, Architectural framework.
8

Network Infrastructure for E-Commerce : Commerce Network Infrastructure for E-Commerce, Market forces behind I-Way, Component of I way Access Equipment, Global Information Distribution Network, Broad band Telecommunication. 8

Module 2.

Business Models of e – commerce : Model Based On Transaction Type, Model Based On Transaction Party - B2B, B2C,C2B, C2C, E – Governance. 10

Mobile Commerce : Introduction to Mobile Commerce, Mobile Computing Application, Wireless Application Protocols, WAP Technology, Mobile Information Devices, Web Security ntrouction to Web security, Firewalls & Transaction Security, Client Server Network,Emerging Client Server Security Threats, firewalls & Network security.
10

2ND HALF**Module 3.**

Encryption : World Wide Web & Security, Encryption, Transaction security, Secret Key Encryption, Public Key Encryption, Virtual Private Network (VPM), Implementation Management Issues. 8

Electronic Payments : Overview of Electronics payments, Digital Token based Electronics payment System, Smart Cards, Credit Card I Debit Card based EPS, Emerging financial Instruments, Home Banking, Online Banking. 8

Net Commerce : EDA, EDI Application in Business, Legal requirement in E -Commerce, Introduction to Supply Chain Management, CRM, issues in Customer Relationship Management. 8

References:

1. Greenstein and Feinman, "E-Commerce", TMH
2. Ravi Kalakota, Andrew Whinston, "Frontiers of Electronic Commerce", Addison Wesley
3. Denieal Amor, " The E-Business Revolution", Addison Wesley
4. Diwan, Sharma, "E-Commerce" Excel
5. Bajaj & Nag, "E-Commerce: The Cutting Edge of Business", TMH

ERP SYSTEMS (DIT -603)(Elective-A)

Total Marks : 70+30

DETAIL COURSE CONTENT

1ST HALF

36 PERIODS

Module -1

Enterprise wide information system, Custom built and packaged approaches, Needs and Evolution of ERP Systems, Common myths and evolving realities, ERP and Related Technologies, Business Process Reengineering and Information Technology, Supply Chain Management, Relevance to Data Warehousing, Data Mining and OLAP, ERP Drivers, Decision support system. 12

Module -2

ERP Domain, ERP Benefits classification, Present global and Indian market scenario, milestones and pitfalls, Forecast, Market players and profiles, Evaluation criterion for ERP product, ERP Life Cycle: Adoption decision, Acquisition, Implementation, Use & Maintenance, Evolution and Retirement phases, ERP Modules. 12

Module -3

Framework for evaluating ERP acquisition, Analytical Hierarchy Processes (AHP), Applications of AHP in evaluating ERP, Selection of Weights, Role of consultants, vendors and users in ERP implementation; Implementation vendors evaluation criterion, ERP Implementation approaches and methodology, ERP implementation strategies, ERP Customization, ERP-A manufacturing Perspective. 12

2ND HALF

24 PERIODS

Module -4

Critical success and failure factors for implementation, Model for improving ERP effectiveness, ROI of ERP implementation, Hidden costs, ERP success inhibitors and accelerators, Management concern for ERP success, Strategic Grid: Useful guidelines for ERP Implementations. 12

Module -5

Technologies in ERP Systems and Extended ERP, Case Studies Development and Analysis of ERP Implementations in focusing the various issues discussed in above units through Soft System approaches or qualitative Analysis tools, Learning and Emerging Issues, ERP and E-Commerce. 12

References

1. A. Lexis Leon, "Enterprise Resource Planning", TMH
2. Brady, Manu, Wegner, " Enterprise Resource Planning", TMH
3. A. Lexis Leon, "ERP Demystified", TMH

NETWORK SECURITY(DIT -603) (Elective-B)

Total Marks : 70+30

DETAIL COURSE CONTENT

Total Contact : 60

credit : 4

1ST HALF

30

Introduction :

Attacks, Services, Mechanisms, Security Attacks, Security Services, Model for Network Security
8

Conventional Encryption and Message Confidentiality : 10

Conventional Encryption Principles, Conventional Encryption Algorithms, Location of Encryption Devices, Key Distribution

Public Key Cryptography and Message Authentication : 12

Approaches to Message Authentication, SHA-1, MD5, Public-Key Cryptography Principles, RSA, Digital Signatures, Key Management

2ND HALF

30

Network Security Applications : 8

Kerberos , PGP Notation, PGP Operational Description

IP Security : 10

IP Security Overview, IP Security Architecture, Authentication Header

Intruders and Viruses : 8

Intruders, Intrusion Techniques, Password Protection, Password Selection Strategies, Intrusion Detection, Malicious Programs, Nature of Viruses, Types of Viruses, Macro Viruses, Antivirus Approaches

Firewalls : 4

Firewall Characteristics, Types of Firewalls, Firewall Configuration

Text :

1. "Network Security Essentials: Applications and Standards" by William Stallings, Pearson
2. "Network Security private communication in a public world", C. Kaufman, R. Perlman and M. Speciner, Pearson

Reference :

1. "Cryptography and Network Security", William Stallings, 2nd Edition, Pearson Education Asia
2. "Designing Network Security", Merike Kaeo, 2nd Edition, Pearson Books
3. "Building Internet Firewalls", Elizabeth D. Zwicky, Simon Cooper, D. Brent Chapman, 2nd Edition, Oreilly
4. "Practical Unix & Internet Security", Simson Garfinkel, Gene Spafford, Alan Schwartz, 3rd Edition, Oreilly

Mobile Computing(DIT -603)(Elective-C)

Total Marks : 70+30

DETAIL COURSE CONTENT

Total Contact : 60

credit : 4

1ST HALF

26

Module –1 : Introduction to Personal Communications Services (PCS): PCS Architecture, Mobility management, Networks signalling. Global System for Mobile Communication (GSM) system overview: GSM Architecture, Mobility management, Network signalling. **8**

Module –2 : General Packet Radio Services (GPRS): GPRS Architecture, GPRS Network Nodes. Mobile Data Communication: WLANs (Wireless LANs) IEEE 802.11 standard, Mobile IP. **8**

Module –3 : Wireless Application Protocol (WAP): The Mobile Internet standard, WAP Gateway and Protocols, wireless mark up Languages (WML). Wireless Local Loop(WLL): Introduction to WLL Architecture, wireless Local Loop Technologies. **10**

2ND HALF

36

Module –4 : Third Generation (3G) Mobile Services: Introduction to International Mobile Telecommunications 2000 (IMT 2000) vision, Wideband Code Division Multiple Access (W-CDMA), and CDMA 2000, Quality of services in 3G. **12**

Module –5 : Global Mobile Satellite Systems; case studies of the IRIDIUM and GLOBALSTAR systems. Wireless Enterprise Networks: Introduction to Virtual Networks, Blue tooth technology, Blue tooth Protocols. **12**

Module –6 : Ad Hoc networks, localization, MAC issues, Routing protocols, global state routing (GSR), Destination sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), Temporary ordered routing algorithm (TORA), QoS in Ad Hoc Networks, applications. **12**

Text :

1. "Pervasive Computing", Burkhardt, Pearson
2. "Mobile Communication", J. Schiller, Pearson
3. "Wireless and Mobile Networks Architectures", Yi-Bing Lin & Imrich Chlamtac, John Wiley & Sons, 2001
4. "Mobile and Personal Communication systems and services", Raj Pandya, Prentice Hall of India, 2001.
5. J. Schiller, Mobile Communications, Addison Wesley.
6. A. Mehrotra , GSM System Engineering.
7. M. V. D. Heijden, M. Taylor, Understanding WAP, Artech House.
8. Charles Perkins, Mobile IP, Addison Wesley.
9. Charles Perkins, Ad hoc Networks, Addison Wesley.

Reference :

1. "Guide to Designing and Implementing wireless LANs", Mark Ciampa, Thomson learning, Vikas Publishing House, 2001.
2. "Wireless Web Development", Ray Rischpater, Springer Publishing,
3. "The Wireless Application Protocol", Sandeep Singhal, Pearson .
4. "Third Generation Mobile Telecommunication systems", by P.Stavronlakis, Springer Publishers,

Total Marks : 70+30

DETAIL COURSE CONTENT

1ST HALF

Module 1: Introduction

Bioinformatics objectives and overviews, Interdisciplinary nature of Bioinformatics, Data integration, Data analysis, Major Bioinformatics databases and tools. Metadata: Summary & reference systems, finding new type of data online. 10

Molecular Biology and Bioinformatics:

Systems approach in biology, Central dogma of molecular biology, problems in molecular approach and the bioinformatics approach, Overview of the bioinformatics applications. 8

Module 2: The Information Molecules and Information Flow

Basic chemistry of nucleic acids, Structure of DNA, Structure of RNA, DNA Replication, -Transcription, -Translation, Genes- the functional elements in DNA, Analyzing DNA, DNA sequencing. Proteins: Amino acids, Protein structure, Secondary, Tertiary and Quaternary structure, Protein folding and function, Nucleic acid-Protein interaction. 12

2ND HALF

Module 3: Perl

Perl Basics, Perl applications for bioinformatics- Bioperl, Linux Operating System, Understanding and Using Biological Databases, Java clients, CORBA, Introduction to biostatistics. 8

Module 4: Nucleotide sequence data

Genome, Genomic sequencing, expressed sequence tags, gene expression, transcription factor binding sites and single nucleotide polymorphism. Computational representations of molecular biological data storage techniques: databases (flat, relational and object oriented), and controlled vocabularies, general data retrieval techniques: indices, Boolean search, fuzzy search and neighboring, application to biological data warehouses. 12

Module 5: Biological data types and their special requirements:

sequences, macromolecular structures, chemical compounds, generic variability and its connection to clinical data. Representation of patterns and relationships: alignments, regular expressions, hierarchies and graphical models. 10

Books:

1. O'Reilly, "Developing Bioinformatics computer skills", Indian Edition's publication
2. Rastogi, Mendiratta, Rastogi, "Bioinformatics concepts, skills & Applications", CBS Publishers
3. Rashidi, Hooman and Lukas K. Buehler, "Bioinformatics Basic Applications" CRC Press.
4. "Bioinformatics", Addison Wesley
5. Stephen Misner & Stephen Krawetz, "Bioinformatics- Methods & Protocols"

6th SEMESTER

SESSIONAL PAPERS

SOFTWARE PROJECT MANAGEMENT LAB (DIT-604S)

DETAIL COURSE CONTENT

1. MS PROJECT 20 PERIODS
 - i. Understanding of MS PROJECT
 - ii. Understanding of Gantt chart
 - iii. Designing Gantt chart for project scheduling using MS PROJECT

2. MS VISIO 20 PERIODS
 - i. Understanding of MS VISIO
 - ii. Preparing Flowchart using MS VISIO
 - iii. Preparing DFD using MS VISIO
 - iv. Preparing Gantt chart using MS VISIO
 - v. Preparing Basic network diagrams using MS VISIO

E- COMMERCE LAB (DIT-606S)

DETAIL COURSE CONTENT

Following E-Commerce experiments are to be implemented using either VB, ASP, SQL or JAVA, JSP, SQL.

- **Creating E-Commerce Site** : Designing and maintaining WebPages. Advertising in the Website, Portals and Vortals.
- **E-Commerce Interaction** : Comparison Shopping in B2C, Exchanges Handling in B2B, Interaction Examples: Virtual Shopping Carts.
- **E-Commerce Applications** : Online Store, Online Banking, Credit Card Transaction Processing.

Books:

- 1.E-Commerce through ASP by W Clarke- BPB
- 2.Beginning E-Commerce with VB, ASP, SQL Server 7.0 & MTS by Mathew Reynolds, Wrox Publishers
- 3.Professional Java Server Programming J2EE 1.3 Edition By Allamaraju et al, SPD.

ADVANCED JAVA LAB(DCS-605S)

Total Marks: 100, , CPW : 4, Credit: 2

DETAIL COURSE CONTENT

Client & server side programming.

Enterprise architecture styles, Servlet, JSP: Introduction, Architecture/Life cycle, Different types of JSP architectures and relative comparison. JSP tags, Directives, Scripting elements, Actions, Scriptlets.

EJB: Introduction, Applications, Drawbacks, Different types of enterprise beans, Services provided by EJB container.

JNDI: Introduction and applications, Comparison between LDAP and JNDI
JDO (Java Data Objects): Introduction, Integration of EJB and JDO.

JDBC: Introduction, Database driver, Different approaches to connect an application to a database server, Establishing a database connection and executing SQL statements, JDBC prepared statements, JDBC data sources.

Text :

“Professional JAVA Server Programming”, Allamaraju and Buest ,SPD Publication

“Beginning J2EE 1.4” Ivor Horton, SPD Publication.

“Advanced Programming for JAVA 2 Platform” Austin and Pawlan, Pearson

Reference Books:

Internet & Java Programming by Krishnamoorthy & S. Prabhu(New Age Publication)

P R O J E C T - II (DIT-605S)

Project Work is intended to provide opportunity for students to develop understanding of the interrelationship between different courses learnt in the entire diploma programme and to apply the knowledge gained in a way that enables them to develop & demonstrate higher order skills. The basic objective of a project class would be to ignite the potential of students' creative ability by enabling them to develop something which has social relevance, aging, it should provide a taste of real life problem that a

diploma-holder may encounter as a professional. It will be appreciated if the TIT develop interaction with local industry and local developmental agencies viz. different *Panchayet* bodies, the municipalities etc. for choosing topics of projects and / or for case study. The course further includes preparation of a Project Report which, among other things, consists of technical description of the project. The Report should be submitted in two copies, one to be retained in the library of the institute. The Report needs to be prepared in computer using Word and CADD software wherever necessary.

THE PROJECT

Each group will take *at least one project* in the entire session. The following subject areas may be selected for both mini project & project work. The selected topic, however, need not be limited to those areas only:—

Database Management System,
Operation Research,
Microprocessor interfacing,
Object Oriented Programming,
Graphics Users Interface,
Computer Graphics,
Web based application, and,
a particular project may be part of a bigger project depending upon the complexity.

The Project Report must include the following sections:—

1. Introduction – Problem definition – Scope and Objective of the problem,
2. System Environment,
3. System Analysis and Requirement Analysis,
4. System Design and Implementation,
5. System Testing, and,
6. Conclusion.

GENERIC SKILL (DHU-600S)

Each class may be divided into two groups. Each group may meet once a week and discuss topics mentioned below under.

Professionalism: Professional characteristics, professional education, professional development in Industry.

Values and Ethics in Profession: Value system- goodness, means and ends; Ethics- ethical premises, expectations, conflicts and practices; Moral and ego, Ethics and morality.

Right, virtue, ethics and justice, utility and justice; Privacy, Challenges to privacy, Privacy on the Internet.

Professional Competence: Important technical topics covered in Semesters II-V as well as topics of current professional interest.

Books:

1. Ethics and Engineering ---by Martin and Schinizger, TMC.
2. Issues and Ethics—by Correy G.Correy , Brooks & Cole Pub.
3. Ethics and Professionalism ---by John Kultgen
4. Ethics and the conduct of business-- by John R.Boatright, PE.

FINAL V I V A (DIT-607S) TOTAL MARKS :50

COURSE CONTENT

The syllabi of all the theoretical and Sessional subjects taught in the three years of diploma education.