RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 401   **Paper Code:**
Name Of Course: Computer Network
Common With Program (S):

RATIONALE

Virtually every computer is connected, or has the potential to be connected, to other computers. When connected locally, they provide vital services such as print servers, file servers, CPU servers and when connected externally, offer access to the Internet, world-wide-web and electronic mail. Millions of people worldwide have been exposed to the World Wide Web of computers and the information they provide.

The explosion in the use of such technologies and the long established use of local area networks has made the study of computer networks and the underlying communication technology as important as the more traditional foundations of computer science such as computer architecture, operating systems and programming. The main objective of this subject is to develop an understanding of the modern network technologies in common use today .To appreciate how computer networks are able to format and transfer data at high speed and over both the local and wide area .To identify potential and actual limitations with existing networks and identify advances in technology that may solve them. To be able to demonstrate an understanding of the physical properties and performance characteristics of communication media; specifically copper cable, fibre optics and wireless networks .To be able to demonstrate an understanding of the importance of communication standards, including an appreciation of protocol layer models and enhancements to those standards .To be able to demonstrate an appreciation of the theory and practice of common local area networks including virtual and wireless LANs. To be able to demonstrate an appreciation of the theory and practice of wide area networks and their interconnection. To be able to demonstrate an appreciation of the significance of network and inter-network protocols; specifically IPv4, IPv6, TCP and UDP .To be able to describe the importance of reliability and quality of service, including examples of error recovery strategies, traffic differentiation and prioritization .

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 401   **Paper Code:**
Name Of Course: Computer Network
Common With Program (S):

SCHEME OF STUDIES AND SPECIFICATION TABLE

Lectures: **4**Hrs. per week
Practical: **4** Hrs. per week

SCHEME OF STUDIES

Sr. No	Topics	Theory (Hrs)	Practical (Hrs)	Total (Hrs)
1	**Introduction**	06	06	**14**
2	**Networking Models And Addresses**	12	14	**26**
3	**Networking Components And Network Operating System**	10	12	**22**
4	**Internet Protocol**	09	07	**15**
5	**Host To Host Protocols**	04	03	**07**
6	**Application Layer Protocol**	05	04	**08**
7	**Routing And Multicasting**	08	08	**16**
8	**Wireless Networking**	06	06	**12**
	Total	**60**	**60**	**120**

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 401   **Paper Code:**
Name Of Course: Computer Network
Common With Program (S):

COURSE CONTENT

Lectures: **4** Hrs. per week

Sr. No.	Course Content	Hours of Study
1.	**INTRODUCTION**: 1.1 Basics of Networks - Definition, Need, Uses and Advantages. 1.2 Types of Computer Networks-Local area Networks (LAN), Wide Area Networks(WAN) , Metropolitan Area Network (MAN). 1.3 Network Architectures- Peer to Peer , Client-Server, Hybrid, Intranet, Internet and Extranet. 1.4 Different Topologies – Bus, Ring, Star, Hybrid etc.	06
2.	**NETWORKING MODELS AND ADDRESSES**: 2.1 Detailed Layered architecture of OSI andTCP/IP Reference Model. 2.2 Comparison Between OSI Vs. TCP/IP reference Model. 2.3 Introduction to various LAN and WAN Protocols. 2.4 Network Address: Overview, Type of Addresses, Need, advantages and disadvantages. 2.5 IP Addresses : Class Full Addressing Network ID, Host ID Special Addressing 2.6 Overview Subnetting and Supernetting, VLAN	12

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   Scheme: Jul. 09
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Name Of Course: Computer Network
Common With Program (S):

3.	**NETWORKING COMPONENTS AND NETWORK OPERATING SYSTEM**	**10**
	3.1 Networking Media – Coaxial, UTP, Shielded Twisted Pair, Fiber Optical Cable, and wireless media.	
	3.2 Networking Devices – NIC, Modem , Hub, Repeater, Switches, Bridge, Router, Gateway, Wi-Fi, VSAT.	
	3.3 Structured cabling- Concept, advantages, racks, patch panel, crimping and punch tool, patch cords, RJ Connectors, Information Outlets (I/O Box) , Media Converter	
	3.4 Types of Connectivity – Dial up, Digital Subscriber Link (DSL), Asynchronous Digital Subscriber Link (ADSL) , Leased line Non Exchange , Cable Net , WI-FI, WI-MAX, CDMA,GSM.	
	3.6 Introduction to Network Operating System(NOS):	
4.	**INTERNET PROTOCOL:** 4.1 ARP/RARP: Resolution, Packet format mapping and encapsulation 4.2 Internet protocol: Virtual network, Connectionless, unreliable, Packet Delivery System. Datagram format: Datagram size, Network MTU and fragmentation, Time stamp option. IP Routing algorithm.IP Checksum. 4.3 ICMP and IGMP : Introduction and message format	**09**
5	**HOST TO HOST PROTOCOLS** 5.1 UDP: Introduction to User Data gram Protocol, Format of UDP Message, Pseudo Header, Multiplexing & Demultiplexing, 5.2 TCP:Introduction to Transmission Control Protocol, Ports, Collections And Endpoints, TCP Segment Format, Checksum Computation, Establishing a TCP Connection	**04**

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 401   **Paper Code:**
Name Of Course: Computer Network
Common With Program (S):

6	**APPLICATION LAYER PROTOCOL** 6.1 Introduction to FTP,TELNET, NFS,SMTP,rlogin,SNMP 6.2 DNS Applications**:** Concept of DNS, Mapping DNS resource record, DNS Resolution, DHCP , VPN, IPv6, ICMPv6	05

7.	**ROUTING AND MULTICASTING**
	
	7.1 Vector Distance & link state routing protocol
	         Routing Information Protocol
	         Open SPF Protocol
	         Gateway to Gateway Protocol
	7.2 Hardware Broadcast, Hardware Multicast
	         IP Multicast and Address
	         Mapping IP Multicast to Ethernet Multicast
		08

8	**WIRELESS NETWORKING** 8.1 Basics, hardware and Software Requirement for wireless network 8.2 Types of wireless network 8.3 Wireless technologies 8.4 Wireless networking standards 8.5Application of wireless network	06

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   Scheme: Jul. 09
Course Code: 401   Paper Code:
Name Of Course: Computer Network
Common With Program (S):

LIST OF EXPERIMENTS

Practical: 4 Hrs. per Week

S.NO.	NAME OF EXPERIMENTS	Hours of Study
1	Observation and Study of Various Network component and Devices.	
2	Study of Various Type of Network Topologies	
3	Crimping of UTP Cable (cross , straight) and Testing of cables.	
	Installation of Various types of Network Devices	
4	Identifying valid IP Addresses, Defining Subnet IDs and Host IDs.	
5	DNS Configuration	
6	Designing a network system for an organization using TCP/IP Network using a. Class A address b. Class B address c. Class C address d Telnet e. FTP f. Ping	
7		
8	Configuration of wireless network on mobile phone and notebook/netbook.	

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 401   **Paper Code:**
Name Of Course: Computer Network
Common With Program (S):

BOOKS RECOMMANDED

1.   **Computer Networks, Andrew S Tanenbaum, Publisher- PHI, New Delhi**
2.   **B. A. Fourozan, TCP/IP Protocol Suite, Tata McGraw Hill**
3.   **Internetworking with TCP/IP, Douglas E. Comer, Publisher- PHI, New Delhi**
4.   **Hardware and networking by Vikas Gupta Publisher: Dreamtech press**
5.   **Network Cabling Handbook by Chris Clerk Publisher Tata Mcgraw Hills Ltd.India.**
6.   **Introduction to Networking by Richard McMohan Publisher Tata Mcgraw Hills Ltd. India.**
7.   **TCP/IP Illustrated by Richard Stevens, Publisher- Addison – Wesley.**

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth
Course Code: 402
Name Of Course: Data Base Management System
Common With Program (S):

Scheme: Jul. 09
Paper Code:

RATIONALE
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DBMS is the major data base management system that we are using for the general data processing and web based processing. Design provides an excellent means of communication. Clients are more likely to get what they need, when data base system design is approached carefully and thoughtfully. Clients may also discover how their organizations really function once a good data base design is completed.

Data base management has evolved from a specialized computer application to central component of a modern computing environment and as a result knowledge about data base systems has become an essential part of education in computer science. The aim is to give a start to the student to quickly understand the concept behind relational data base and SQL and many new upcoming technologies related to data bases.

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 402   **Paper Code:**
Name Of Course: Data Base Management System
Common With Program (S):

SCHEME OF STUDIES AND SPECIFICATION TABLE

Lectures: 4Hrs. per week
Practical: 4Hrs. per week

SCHEME OF STUDIES

Sr. No.	TOPICS	THEORY (HRS)
1.	DATA BASE CONCEPTS	06
2.	DATA MODELS	10
3.	DATA BASE DESIGN CONCEPTS AND NORMALIZATION	15
4.	INTRODUCTION TO SQL	05
5.	ADVANCED SQL	15
6.	ADVANCED DATA BASE CONCEPTS	09
	TOTAL	**60**

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   Scheme: Jul. 09
Course Code: 402   Paper Code:
Name Of Course: Data Base Management System
Common With Program (S):

COURSE CONTENT

Lectures: 4 Hrs. per week

Sr. No.	Course Content	Hours of study
1.	**DATABASE CONCEPTS** 1.1 Introduction to database and databade management system, history of DBMS. 1.2 Disadvantages of file system data management. 1.3 Database system applications. 1.4 Advantages and disadvantages of DBMS. 1.5 Three level architecture: Mapping between views , data independence. 1.6 DBMS users and administrators, DBMS Architecture. 1.7 DML, DDL & DCL.	6
2.	**DATA MODELS** 2.1 Introduction to data models. 2.2 Entities, attributes & association, Relationship among entities, representation of association & relationship. 2.3 Entity-Relationship model: Entity sets, relationship sets, constraints, E-R diagram, Entity- Relationship design issues, Generalization, Specialization & aggregation. 2.4 Relational Model: Attributes and Domains, tuples, relations and their schemas, relation representation, keys, relationship, integrity rules. 2.5 Codd's Relational database rules	10

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 402   **Paper Code:**
Name Of Course: Data Base Management System
Common With Program (S):

3.	**DATABASE DESIGN CONCEPTS & NORMALIZATION** 3.1 Relational algebra: Basic operation, select, join, projection, additional relational algebra, queries. 3.2 Functional dependency: Definition, inference axioms for functional dependency, closure, cover and equivalence of FD, Referential integrity 3.3 Normalization 3.3.1 Introduction to Normalization. 3.3.2 1 NF, Data anomalies in 1 NF. 3.3.3 Partial dependency, 2 NF, Data anomalies in 2 NF. 3.3.4 Transitive Dependency, 3NF, Data anomalies in 3 NF. 3.3.5 Boyce-Codd Normal Form, Lossless or Lossy Decomposition.	**15**
4.	**INTRODUCTION TO SQL** 4.1 Introduction to SQL language. 4.2 Structure of SQL statements & SQL writing guidelines. 4.3 Data Definition commands, describing the structure of a table. 4.4 Data manipulation commands. 4.5 Basic structure of SQL queries	**05**
5.	**ADVANCED IN SQL** 5.1 SQL query structure for selection & join operators, defining primary keys, foreign keys in a table, CHECK constraints, removing constraints from table. 5.2 SQL functions: SUM(), AVG(), MAX(), MIN(), COUNT(). 5.3 Introduction to Triggers, stored procedures & views	**15**
6.	**ADVANCE DATABASE CONCEPTS** 6.1 Introduction to transactions. 6.2 Introduction to concurrency control. 6.3 Data mining & Data Warehousing. 6.4 Distributes & Object based database. 6.5 Introduction to Cloud based database.	**9**

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 402   **Paper Code:**
Name Of Course: Data Base Management System
Common With Program (S):

LIST OF EXPERIMENTS

Practical: 4 Hrs. per Week

S.NO.	NAME OF EXPERIMENTS	HOURS OF STUDY
1	Execute Data Definition SQL commands like create table	2
2	Execute Data Manipulation SQL commands like insert, update, delete data from single & multiple tables.	10
3	Creating users, granting & revoking permission, set roles to users.	8
4	Basic PL/SQL program using flow control statement functions.	10
5	Creating triggers, stored procedure and cursors.	10
6	Database access from a programming language such as JAVA or C++.	10
7	Building web application	10
	TOTAL	**60**

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Semester: Fourth   **Scheme: Jul. 09**
Course Code: 402   **Paper Code:**
Name Of Course: Data Base Management System
Common With Program (S):

REFERENCES

****

TEXT BOOKS
1. Silberschatz A. , Korth, Sudarshan 6th edition, Database System Concepts, TMH New Delhi.
2. Schaum's Outlines, Database Management System, TMH.

REFERENCE BOOKS

1. Desai Biplin C. (2001), An Introduction to Database Management System, Galgotia Publication Pvt. Ltd., New delhi.
2. Ivan Byrose, SQL programming.
3. Peter Rob & Carlos Coronel, Database System Concepts, Indian Edition, Cengage Learning India Pvt. Ltd..
4. Date C.J., An Introduction to Database Systems, Narosa.
5. Leon, SQL complete reference, TMH.

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 403   **Paper Code:**
Name Of Course: Linux and Shell programming
Common With Program (S):

Rationale:
The objective of the course is to make students aware of a multi-user operating system. This course will serve as a foundation course for the higher level course in LINUX. The students are expected to learn the commands while doing practical and emphasis should be given to those switches/options and flags, which are most frequently used in real life. After completion of the course students will be able to:

- Understand Operating System concepts.
- Use System calls and memory management.
- Use LINUX commands and editors.
- Carry out LINUX File management and shell programming in LINUX.
- Do Network configuration and security management in LINUX.

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 403   **Paper Code:**
Name Of Course: Linux and Shell programming
Common With Program (S):

SCHEME OF STUDIES AND SPECIFICATION TABLE

Lectures: **5** Hrs. per week
Practical: **2** Hrs. per week

SCHEME OF STUDIES

Sr No	TOPICS	THEORY (HRS)	PRACTICAL (HRS)	TOTAL (HRS)
1.	Introduction	08	01	09
2.	Linux Usage and Basics	12	01	13
3.	Text processing and Standard I/O	08	02	10
4.	Shell Programming and Processes	12	02	14
5.	System Administration	12	02	14
6.	Networking Services On LINUX	08	02	10
	Total	60	30	90

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 403   **Paper Code:**
Name Of Course: Linux and Shell programming
Common With Program (S):

COURSE CONTENT

Lectures: **5** Hrs. per week

S.No.	Course Content	Hours of study
1	**Introduction** **1.1 Linux Ideas and History** Understanding Open Source, Linux Origins, Distributions, Linux Principles **1.2 Linux Usage and Basics** Logging in to a Linux System, Switching between virtual consoles and the graphical environment, Elements of the X Window System, Starting the X server, Changing your password, The root user, Changing identities, Editing text files.	08 Hrs.
2	**Linux Basics and File System** **2.1 Running Commands and Getting Help** Running Commands, Some Simple commands, Getting Help, The whatis command, The – help Option, Reading Usage Summaries, The man command, Navigating man pages, The info command, Navigating info pages, Extended Documentation. **2.2 File System** Linux File Hierarchy Concepts, Some Important Directories, Current Working Directory, File and Directory Names, Absolute and Relative Pathnames, Changing Directories, Listing Directory Contents, Copying, Moving, Renaming, Creating and Removing Files & Directories, Using Nautilus, Determining File Content. **2.3 The Linux File System In-depth** Partitions and File system, I-nodes, Directories, Hard Links, Symbolic (or soft) Links, The Seven Fundamental File types, Checking Free Space, mounting & unmounting File system , working with etc/fstabe, Archiving Files, Compressing, Creating, Listing and Extracting File, Other Archiving Tools	12 Hrs.

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 403   **Paper Code:**
Name Of Course: Linux and Shell programming
Common With Program (S):

3	**Text processing and Standard I/O** **3.1 Text Processing** Vi: Opening, Modifying, saving and exiting vi text editor, mode of vi. Viewing file contents, sorting text, Eliminating Duplicate lines, Comparing files, Compressing the file. **3.2 Standard I/O and Pipes** Standard Input and Output, Redirecting Output to a File, Redirecting STDOUT to a Program(Piping), Combining Output and Errors, Redirecting to Multiple Targets (tee), Redirecting STDIN from a file, Sending Multiple Lines to STDIN.	**8**
4	**Shell Programming and Process** **Using and configuring the Bash Shell** Introduction of Bash shell, Bash Features, Command Line, Command Line Expansion, and Editing, gnome-terminal. **Shell Programming** Scripting Basics, Creating Shell Scripts, Handling Input/ Output, Control Structures, Conditional Execution, File and string Tests, continue and break, Using positional parameters, Scripting at the command line, Shell Script debugging. **Investigating and Managing Process** Process, Listing Processes, Finding Processes, Signals Sending, Signals to Processes, Scheduling Priority, Altering Scheduling Priority, Interactive Process management tools, Job Control, Scheduling a Process to execute later, Crontab File format. Different run levels	**12hrs**
5	**SYSTEM ADMINISTRATION:** Common Administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts –adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance, file security, password and Permissions,becoming super user using su. Getting system information – host name, disk partitions & sizes, users, kernel. Backup and restore files, linuxconf. Utility in GUI, reconfiguration hardware with kudzu.	**12 hrs**
6	**NETWORKING SERVICES ON LINUX:** Server –side setup, configuration, and basic administration of common networking services: Sambha, DNS, NIS, Apache, SMB, DHCP, Sendmail, FTP Other common services: tftp, pppd, proxy	**8**

DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 403   **Paper Code:**
Name Of Course: Linux and Shell programming
Common With Program (S):

LIST OF EXPERIMENTS

Practical: **2** Hrs. per Week

S.NO.	Name of experiments	Hours of Study
1.	**Files and Directories** Cat, cd, chgrp, chmod, cp, file, find, grep, head, just, lpq, lpr , lprm, cancel, ls, mkdir, more, page, mv, pwd, rm, rmdir, tail, touch,	
2.	**File Editors** Editors are used to create and amend files.	
3	Emacs, ex, edit, gedit, nedit, xemacs, emacs, dtpad, pico, vi, **Manipulating data** The contents of files can be compared and altered with the following commands.	
5.	Awk, cmp, comm, cut, diff, expand, unexpand, gawk, Join, look, perl, paste, sed, sort, split, tr, uniq, wc, **Compressed files**	
6.	Files may be compressed to save space.Compressed files can be created and examined. Compress, uncompress, zcat, zcmp, zdiff, zmore, gzip, gunzip.	
7.	**Information** Manuals and documentation are available on-line. The following Shell commands	
8	give information. answerbook2, apropos, dthelpview, man, info, help.	
9	**Shell Programming** Writing shell scripts for arithmetic operations, file permission. **Messages between Users** The UNIX systems support on-screen messages to other users and world-wide electronic mail, pine, elm, dtmail, frm, from, dtmail, mesg, parcel, talk, write **Networking** Setup a small network in your lab and connect to that network Internet Protocol Service. These commands are used to send and receive files from Campus UNIX hosts and from other hosts and the Internet around the world.	
	TOTAL	30

Semester: Fourth   **Scheme: Jul. 09**

Course Code: 403   **Paper Code:**

Name Of Course: Linux and Shell programming

Common With Program (S):

BOOKS RECOMMANDED.

MAIN READING
1. Sumitabha Das, UNIX/LINUX: Concepts and Applications, Tata McGraw-Hill, 2008.
2. ISRD Group, Basics of OS, UNIX and SHELL Programming, Tata McGraw-Hill, 2006.
3. Stephen Prata Advanced UNIX -A programmer's Guide, BPB Publication, 2008.

REFERANCES
1. Kochan S & Wood P, UNIX Shell Programming, Pearson Education, 2008.
2. Sarwar, Koretsky, and Sarwar, UNIX, the Text Book, Pearson Education, 2007.
3. Stevens W R, Rago S.A, Advanced Programming in UNIX Environment, Pearson Education, 2008.
4. Maurice J. Bach, Design of the UNIX Operating System, Pearson Education, 2008.

WEB REFRERANCES:

http://www.linux-tutorial.info/index.php
http://www.ee.surrey.ac.uk/Teaching/Unix/
http://www.aboutdebian.com/
www.developer**tutorials**.com/**tutorials**/**linux**/
www.yo**linux**.com/**TUTORIALS**/
www.**linux**questions.org/
http://bash.cyberciti.biz/guide/Main_Page
http://stommel.tamu.edu/~baum/programming.html
http://williamstallings.com/

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 404   **Paper Code: 6352**
Name Of Course: Microprocessor & Interface
Common With Program (S):

Rationale

The microprocessor is heart of any computer systems, communication equipments and control systems. It helps in understanding the different concepts involved in interfacing of peripherals, programming of peripherals and building microprocessor based systems. It will clear the concepts of writing assembly language, coding and executing the programs on microprocessor kits. It gives basic idea of minimum configuration of computer system, it's functioning.

This also gives an overview of the history of evolution of microprocessor and microcomputer along with further developments in this field.

After completion of this course, students will be able to understand the internal architecture of microprocessor, understand interfacing of peripheral devices with microprocessor and understand the functioning of microprocessor.

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 404   **Paper Code: 6352**
Name Of Course: Microprocessor & Interface
Common With Program (S):

SCHEME OF STUDIES

Lectures: 4 Hrs. per week
Practical: **2** Hrs. per week

S.No.	TOPICS	THEORY (HRS.)	PRACTICAL (HRS.)	TOTAL (HRS.)
1	Microprocessor & Assembly Language	10	5	15
2	Microprocessor architecture & microcomputer systems	10	3	13
3	Assembly language program	10	5	15
4	Programming Techniques	10	5	15
5	Peripheral chips	08	3	11
6	Microprocessor application	08	5	13
7	Comparison of 8085 to other microprocessor	04	04	08
	TOTAL	**60**	**30**	**90**

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 404   **Paper Code: 6352**
Name Of Course: Microprocessor & Interface
Common With Program (S):

Course Content

Lectures: 4 Hrs. per week
Practical: **2** Hrs. per week

Sr. No.	Course Content	Hours of Study
1.	**Microprocessor, Microcomputer & Assembly Language** Microprocessor as programmable device, memory, input, output, microprocessor as CPU, Organization of microprocessor based system, working of microprocessor. Microprocessor instruction set and computer languages, m/c language, assembly language, high-level language.	15
2.	**Microprocessor architecture & microcomputer systems** Microprocessor architecture, Memory map & addresses, input & output device, peripherals mapped I/O & memory mapped I/O. Pin out details and the function of each pin. Microprocessor communication & bus timings. 8085 m/c cycle & bus timings, control signals, memory read & writes. Memory interfacing, basic concepts, address decoding, interfacing of 8155-memory section.	13
3	**Assembly language program** Instruction classification, instruction format, 1,2,3 byte instructions, addressing modes, data transfer, arithmetic, logical, branch, input/output, m/c controls operation. Writing & executing assembly language programs.	15
4	**Programming Techniques** Looping, counting, indexing, rotate, compare, 16-bit instruction, counters, time delays, stacks & subroutines. Interrupts: EI, DI instructions, RST instructions, Vectored interrupts & priorities.	15
5	**Peripheral chips & Interfacing** Functional block diagram, pin configuration & modes of operation IC chips 8255, 8275, 8279,8237.	11
6	**Microprocessor application** Interfacing multiplexed displays, interfacing to a matrix keyboard, A/D converter, D/A converter ,stepper motor control	13
7	**Comparison of 8085 to other microprocessor** Comparison of 8085 to 8086,80186,80286,80386 and 80486, multicore technology.	08

Semester: Fourth   **Scheme: Jul. 09**
Course Code: 404   **Paper Code: 6352**
Name Of Course: Microprocessor & Interface
Common With Program (S):

LIST OF EXPERIMENTS

Practical:2 Hrs per week

S. No.	Name of Experiments	Hours of study
1	Introduction to Microprocessor kit, instruction manual, writing simple assembly language program.	
2	Addition. Subtraction using 1's Complement	
3	Multiplication of 16 bit numbers.	
4	Finding smallest, largest numbers from given list of numbers	
5	Arranging numbers in Ascending and descending orders	
6	Display of real clock on microprocessor kit.	
7	Interfacing of LED and relays using 8255	
8	Interfacing with ADC	
9	Interfacing of DAC.	
10	Keyboard interfacing with 8085.	
11	Interfacing with 8255.	
12	Code conversion, program (Binary to BCD) (BCD to Binary)	
13	Checking even or odd numbers finding numbers of zeros in a given no.	
14	Demonstration of 8085 simulators and its feature.	
15	Writing simple program using 8085 simulators.	
	Total	**30 Hrs**

REFERENCES

- Gaonkar, Microprocessor Architecture, programming and app.
- B.Ram, Microprocessor & microcomputers
- Ajit Pal, Microprocessor principle & application
- Douglas Hall, Microprocessor interfacing and programming
- Computer System Architecture (Third Edition),. Morris Mono - Prentice Hall of India Pvt. Ltd., Eastern Economy Edition, Sept. 2002
- Peter Norton: Assembly Language for the PC, PHI.