GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

TEACHING SCHEME (w. e. f. Jan'2012)

SEMESTER- VI

Sr. No	SUB. CODE	SUBJECT	TEACHING SCHEME (HOURS)			CREDITS
			THEORY	TUTORIAL	PRACTICAL	
1	**2360701**	PHP & MY SQL	3	0	4	7
2	**2360703**	Computer Maintenance	4	0	2	6
3	**2360704**	Project - II	0	0	12	12
4		Elective	3	0	2	5
		TOTAL	**10**	**0**	**20**	**30**

Select **ANY ONE** from the following subjects

Sr. No.	Subject Code	Name of Subject (Elective)
1	**2360702**	Database Programming with VB.NET
2	**2360705**	Computer Graphics and Multimedia
3	**2360706**	Programming with 8051
4	**2360707**	Data & Computer Communication
5	**2360708**	Network Operating System

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER- VI

Subject Name: PHP & My SQL
Subject Code: 2360701

Sr. No.	Subject Content	Total Hrs.
1	**INTRODUCTION TO PHP.** 1.1 History of PHP, Apache Web Server, MySQL and Open Source 1.2 Relationship between Apache, MySQL and PHP (AMP Module) 1.3 PHP configuration in IIS 1.4 Apache Web server	**2**
2	**BASICS OF PHP.** 2.1 PHP structure and syntax 2.2 Creating the PHP pages 2.3 Rules of PHP syntax 2.4 Integrating HTML with PHP 2.5 Constants, Variables : static and global variable 2.7 Conditional Structure & Looping 2.8 PHP Operators 2.9 Arrays, foreach constructs 2.10 User defined function, argument function, Variable function, Return Function, default argument, variable length argument	**4**
3	**WORKING WITH FUNCTIONS.** 3.1 Variable Function : gettype, settype, isset, unset, strval, floatval, intval, print_r 3.2 String Function : chr, ord, strtolower, strtoupper, strlen, ltrim, rtrim trim, substr, strcmp, strcasecmp, strops, strrpos, strstr, stristr, str_replace, strrev, echo, print 3.3 Math Function : abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand 3.4 Date Function : date, getdate, setdate, checkdate, time, mktime 3.5 Array Function : count, list, in_array, current, next, previous, end, each, sort, array_merge, array_reverse 3.6 File Function : fopen,fread,fwrite,fclose	**3**

4	**WORKING WITH DATA.** 4.1 FORM element, INPUT elements 4.2 Processing the form 4.3 User Input 4.3.1 INPUT checkbox type 4.3.2 one form, multiple processing 4.3.3 Radio INPUT element 4.3.4 Multiple submit buttons 4.3.5 Basic input testing 4.3.6 Dynamic page title 4.3.7 Manipulating the string as an array 4.4 Adding items 4.5 Validating the user input 4.6 Passing variables between pages 4.6.1 Passing variables through a URL 4.6.2 Passing variables with sessions 4.6.3 Passing variables with cookies 4.6.4 Passing information with forms	**5**
5	**ERROR HANDLING.** 5.1 Error types in PHP 5.2 Generating PHP errors 5.3 Exceptions 5.4 Not meeting conditions 5.5 Parse errors	**2**
6	**IMAGES WITH PHP.** 6.1 Working with GD Library 6.2 File types with GD and PHP 6.3 Compiling PHP with GD 6.4 Creating the image table 6.5 Uploading the image	**3**
7	**INTRODUCTION TO MYSQL** 7.1 MySQL structure and syntax 7.2 Types of MySQL tables and storages engines 7.3 MySQL commands 7.4 Integration of PHP with MySQL 7.5 Connection to the MySQL server 7.6 Working with PHP and arrays of data 7.7 Referencing two tables 7.8 Joining two tables	**4**

8	**WORKING WITH DATABASE** 8.1 Creating a table 8.2 Manipulating the table 8.2.1 Filling the table with data 8.2.2 Adding links to the table 8.2.3 Adding data to the table 8.2.4 Displaying the new information 8.2.5 Displaying the movie details 8.3 Editing the database 8.4 Inserting a record 8.5 Deleting a record 8.6 Editing data	**5**
	Total	**28**

NOTE: - Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences:

Students should write programmes on the basic of prescribed Syllabus of this Subject (minimum 20 programmes)

It should include the followings:	Hrs.
1. Creating the PHP page.	2
2 Programs using arrays and control and loop structures	6
3 Testing different PHP functions and user define function.	4
4 Creating forms using buttons, textboxes and other form elements. Use ($_POST and $_GET to retrieve data.)	8
5. Passing hidden information to the form processing script via hidden form controls and a URL query string.	4
6. Creating forms with sessions and cookies.	2
7. Error handling and exception creating error handling pages with PHP.	4
8. Enabling PHP setup to include the GD Library.	2
9. Allowing the user to upload their own images.	4
10. View the data contained in the My SQL database.	6
11. Connect to the database from your website.	4
12. Programs to manipulate the table.	10
Total	56

Note: Number of programs for any topics can be vary, depends on the weightage of the topic.

Reference Books:

(1) **Beginning PHP, Apache, MySQL Web Development**
Elizabeth Naramore, Jason Gerner , Yann Le Scouarnec, Jeremy Stolz, Michael K. Glass, Gary Mailer - By Wrox Publication

(2) **PHP, MySQL and Apache** - Julie C. Melone By Pearson Education

(3) **Beginning PHP 5.3**
by Matt Doyle - By Wrox Publication

(4) **PHP and MySQL Bible** – Tim Converse and Joyce Park with Clark Morgam By Wiley INDIA

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER- VI

Subject Name: Computer Maintenance
Subject Code: 2360703

Sr. No.	Subject Content	Total Hrs.
1	**INTRODUCTION TO COMPUTER** 1.1 Definition of computer 1.2 Computer Hardware, Software and Firmware 1.3 History of computer 1.4 Classification of computer 1.5 Basic parts of Digital computer 1.6 Difference between PC, PC-XT and PC-AT 1.7 General faults of computer system	**2**
2	**MOTHERBOARD** 2.1 Types of motherboard 2.2 Functional block diagram of Motherboard 2.3 CPU and supporting chips 2.4 BIOS 2.5 CMOS setup 2.6 Types of Buses on the motherboard 2.7 Jumper setting on motherboard 2.8 Connectors on motherboard 2.9 Battery on Motherboard 2.10 Faults of Motherboard	**4**
3	**STORAGE DEVICES** 3.1 Types of memory 3.1.1 Permanent Memory (Secondary storage device) 3.1.2 Temporary Memory (Random Access Memory) 3.1.3 Read Only Memory 3.1.4 Cache Memory 3.1.5 Flash Memory(USB flash Drive) 3.1.6 Faults of RAM & Flash Drive 3.2 Hard Disk Drive 3.2.1 SCSI 3.2.2 IDE 3.2.3 SATA 3.2.4 USB	**5**

	3.2.5 Hard Disk Drive Installation process 3.2.6 Preparation of Hard Disk Drive for software Installation (Hard Disk Partitioning and Formatting) 3.2.7 Faults of Hard Disk Drive 3.3 CD-ROM Drive : Write once and Rewritable 3.3.1 CD-ROM Drive Installation 3.3.2 Faults of CD-ROM Drive 3.4 DVD Drive 3.4.1 DVD Drive installation 3.4.2 Faults of DVD Drive 3.5 Floppy disk Drive 3.5.1 Types of floppy Disk Drive • 1.2 MB Floppy Disk Drive • 1.44 MB Floppy disk Drive 3.5.2 Installation of Floppy Disk Drive 3.5.3 Faults of Floppy Disk Drive	
4	**KEYBOARD AND MOUSE** 4.1 Types of keyboard 4.1.1 Wired Keyboard • DIN type Keyboard • PS/2 type Keyboard • USB Keyboard 4.1.2 Wireless Keyboard • Bluetooth keyboard • Infrared(IR) Keyboard • Radio Frequency Keyboard 4.2 Types of Keyboard Switches 4.3 Faults of Keyboard 4.4 Types of Mouse 4.4.1 Wired Mouse • Serial Port Mouse • PS/2 type Mouse • USB Mouse 4.4.2 Wireless Mouse • Bluetooth Mouse • Infrared(IR) Mouse • Radio Frequency mouse 4.5 Faults of Mouse	**2**
5	**PRINTER** 5.1 General Features of Printer 5.2 Classification of Printer 5.2.1 Impact Printer • Dot Matrix Printer • Line Printer	**4**

	5.2.2 Non Impact Printer • Thermal Printer • Inkjet Printer • Laser Printer 5.3 Faults of Printer	
6	**DISPLAY UNIT** 6.1 Types of Monitor 6.1.1 CRT Monitor 6.1.2 LCD Monitor 6.2 Faults of Monitor	**4**
7	**POWER SUPPLY** 7.1 SMPS 7.1.1 Working Principle of SMPS 7.1.2 Block Diagram of SMPS 7.1.3 Difference Between Linear power supply and UPS 7.1.4 Output Connectors of SMPS 7.1.5 Faults of SMPS 7.2 UPS 7.3 Stabilizer	**3**
8	**OTHER INPUT/OUTPUT DEVICES** 8.1 Scanner 8.2 Plotter 8.3 Speaker 8.4 Microphone 8.5 Web Camera 8.6 Joy Stuck 8.7 Light Pen 8.8 Bar code Reader 8.9 MODEM 8.9.1 Internal MODEM 8.9.2 External MODEM 8.10 Faults of Input/Output Devices	**6**
9	**TROUBLESHOOTING AND REPAIRING OF COMPUTER** 9.1 Requirement of computer maintenance 9.2 Types of Computer Maintenance • Preventive Maintenance • Breakdown Maintenance 9.3 Troubleshooting Strategy and skill 9.4 Systematic Troubleshooting 9.5 Types of Computer Faults 9.6 Nature of Computer Faults 9.7 Layman Checks for troubleshooting of faulty computer	**7**

	system 9.8 Diagnostic software 9.9 POST 9.10 Symptom observation 9.11 Symptom Analyses 9.12 Fault Rectification 9.13 Fault Elimination 9.14 Testing and Measuring Instruments 9.14.1 Multimeter 9.14.2 C.R.O. 9.14.3 Logic Probe 9.14.4 Logic Pulser 9.14.5 Current Tracer 9.14.6 Logic Analyzer	
10	**ASSEMBLING THE COMPUTER SYSTEM** 10.1 Study of configuration of computer system 10.2 Introduction of Computer assembling 10.3 Instruction for assembling the computer system 10.4 Instruction for disassembly the computer system 10.5 Calculation of power supply requirement for the computer laboratory 10.6 Calculation of A.C. requirement for the computer laboratory 10.7 Calculation of UPS requirement for the computer laboratory	**3**
11	**PREPARATION OF COMPUTER CENTRE** 11.1 Prepare List of Hardware required for computer centre 11.2 Calculation of power supply requirement for computer centre 11.3 Calculation of A.C. requirement for computer centre	**2**
	Total	**42**

NOTE: - Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences:	**Hrs.**
(1) Study of Maintenance Kit	4
(2) Introduction of Computer Peripherals	2
(3) Disassembling Faulty Computer system	2
(4) Reassembling Computer system	2
(5) Troubleshooting and Repairing of motherboard and Components on Motherboard	2
(6) Troubleshooting and Repairing of Keyboard and Scanner	2
(7) Troubleshooting and Repairing of Printer	2
(8) Troubleshooting and Repairing of Hard Disk Drive	2
(9) Troubleshooting and Repairing of CD-ROM drive/ CD-Writer/Combo Drive/DVD writer	2

(10)	Troubleshooting and Repairing of Pen drive	2
(11)	Troubleshooting and Repairing of Speaker and Web camera	2
(12)	Troubleshooting and Repairing of Mouse and SMPS	2

	Total	**28**

Reference Books:

(1) The complete PC update and maintenance guide by Mark Minasi
(2) IBM PC and clones by Govind Rajalu
(3) Literature Survey using Net

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN COMPUTER ENGINEERING
SEMESTER- VI

Subject Name: Project -II
Subject Code: 2360704

1. RATIONALE:
To develop practical skill and confidence amongst the students, the Project in various electronic and computer related establishment / industries plays a very important role. As per the demand of business world, there is a great need of practical knowledge for personnel as well as skill development and other procedure, which will be furnished by this course

2. PROJECT GUIDELINE:

The guideline is made keeping in view generalizing the work carried out by students. The guide or concerned faculty may suggest necessary changes in this guideline to fulfill his/her requirement. The Project may be arranged considering following points.

Note: - Select any **ONE** of the following project area

For Software Project:

SR NO	NAME OF TOPICS	Total Hrs.
1	Analysis	32
2	Design	24
3	Important Data Structure & Algorithms	16
4	Implementation	24
5	Testing	24
6	Evaluation	16
7	Layout and Report Generation	16
8	Documentation	16
	Total	**168**

For Hardware Project:

Sr. No	NAME OF TOPICS	Total Hrs.
1	System Study	24
2	Maintenance	24
3	Assembling	40
4	Disassembling	32
5	Troubleshooting	48
	Total	**168**

1. Students should be placed in the organization / industry, which is oriented in the filed of electronics and computer, manufacturing, marketing, servicing, maintenance & R & D.
2. Industrial practice and term work should be evaluated periodically.
3. Industrial follow up work should be done at least once in the semester at Industry / Organization.

Layout & Report Generation:

Project should be able to generate various reports using any report generation tools. Student should include minimum required reports in their project.

Documentation:

The student should prepare Project report and submit it. The documentation should include below mentioned topics in given sequence. The guide may suggest necessary changes in the topics if required.

Title Page, Preface, Certificate, Acknowledgement, Index, Introduction, Literature Survey, User requirement specifications, Analysis and Design, Data structure, Implementation, Limitations of the system, Future scope of the system, References, Bibliography

Student should defend the report of the Industrial Project in the oral / viva examination at the end of semester by internal as well as External Examiner

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN COMPUTER ENGINEERING
SEMESTER- VI

Subject Name: Database Programming With VB.Net (Elective)
Subject Code: 2360702

Sr. No.	Subject Content	Total Hrs.
1.	**Developing Windows Forms Using Bound Controls** 1.1. Create a Bound List Box 1.2. Limit the Data Displayed in a Bound List Box 1.3. Bind and View Individual Text Boxes Based Off a Selected List Box Item 1.4. Edit and Update Data Using Bound Controls. Add and Delete Records Using Bound Controls 1.5. Take Care of Error Handling with Bound Controls. Put the Finishing Touches on a Data Bound Form 1.6. Bind Data to ComboBox and DataGrid Controls	3
2.	**Creating SQL Server Database Objects from Visual Studio .NET** 2.1. Create a New SQL Server Database from Within Visual Studio .NET 2.2. Define Tables and Fields 2.3. Define a Primary Key and Other Indexes 2.4. Define Relations Between Tables 2.5. Define Defaults and Constraints 2.6. Create Views 2.7. Create Stored Procedures	3
3.	**Viewing Data with ADO.NET** 3.1. Retrieve Data by Using the DataReader Object 3.2. Results from SQL Server by Using the DataTable Object 3.3. Locate Records with the DataTable Object 3.4. Filter and Sort Records Using the DataView Object	5
4.	**Manipulating Data with ADO.NET** 4.1. Edit Data and Update Changes That Are Made to an ADO.NET DataSet Object 4.2. Add and Delete Rows in a Dataset with ADO.NET 4.3. Execute Parameterized Stored Procedures in ADO.NET 4.4. Create and Execute On-the-Fly Batch Updates by UsingADO.NET	4

5.	**Working with Data in Web Forms** 5.1. Use Bound Controls with Web Form 5.2. Validate Data Using Validation Controls 5.3. Populate DropDown and ListBox Controls 5.4. Display Data Using the Table Control 5.5. Display Data Using the Repeater Control 5.6. Display, Sort, and Page Data in the DataGrid Control. 5.7. Add, Edit, and Delete Data Using the DataGrid Control 5.8. Hyperlink from a Row in the Data Grid to a Detail	**5**
6.	**Creating Transact-SQL Commands** 6.1. Retrieve Unique Records Using Only a Select Query 6.2. Use Variables and Functions in T-SQL 6.3. Use Wildcards and Ranges of Values in a SQL Query 6.4. Find Records in a Table Without Corresponding Entries in a Related Table 6.5. Take Advantage of Using Subqueries. 6.6. Create, Modify, and Delete Tables 6.7. Create a New Table with Data from Existing Tables 6.8. Create and Call SQL Server 2000 User-Defined	**5**
7.	**Using Classes with Databases to Make Life Easier** 7.1. Define a Class in Visual Basic .NET 7.2. Create a Class That Implements the Interface You Defined 7.3. Use Visual Studio .NET Tools to Speed Up Writing ADO.NET Code 7.4. Control the Creation and Behavior of Classes 7.5. Implement the Methods That Update the Database 7.6 Validate Data Passed to Properties and Communicate Errors to Developers 7.7. Write Data Validation Code That Can Be Reused in Other Classes	**4**
8.	**Creating Reports Using Crystal Reports** 8.1 Create a Report Using Crystal Reports Report Expert 8.2. Display a Report That Was Created 8.3. Add Calculated Fields to the Crystal Reports Report 8.4. Select Whether the Report Will Be Displayed, Printed, or Exported Using Visual Basic .NET Code. 8.5. Determine Which Records Will Be Printed at Runtime 8.5. Print Labels and Control the Order in Which Records Will Be Printed 8.6. Create an Onscreen Report That Contains Hyperlinks.	**5**

9.	**Utilizing XML Data in Your Visual Basic.NET Applications** 9.1. Use XMLWriter to Create an XML Document 9.2. Use XMLReader to Read an XML Document 9.3. Work with the XML Document Object Model 9.4. Retrieve XML from SQL Server2000 9.5. Work with Datasets and XML	**4**
10.	**Creating XML Web Services** 10.1. Get Started with XML Web Services 10.2. Create a Simple XML Web Service Using Parameters 10.3. Consume XML Web Services 10.4 Pass a Dataset Back from an XML Web Service	**4**
	TOTAL	**42**

NOTE: - Following are the minimum experiences required, but the college can do more experiences if possible.

LABORATORY EXPERIENCES: - **Hrs**

1. Develop windows application using Bound Controls 4
2. Create an application that retrieves data using DataReader object 4
3. Insert, Update, Edit and Delete data using an ADO.NET DataSet object 6
4. Create an application that shows the use of Stored Procedures 6
5. Create simple web application and validate data using validation controls
6. Create an application which populate data using Repeater Control 6
7. Manipulate data in Data Grid Control also sort and page data in it. 6
8. Create a Report using Crystal Reports Export 6
9. Create and read XML Document. 6
10. Create a simple XML Web Service Using Parameters 6

Total 56

Reference Books:

1. Database Programming With Visual Basic .Net And Ado.Net: Tips, Tutorials, And Code, 1/E –Barke
2. Database Access with Visual Basic. .Net, 3/E - McManus & Goldstein
3. Murach's VB.Net Programming with ADO.Net , Training & References
4. Mastering Databse programming with visual basic .net

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA IN COMPUTER ENGINEERING
SEMESTER- VI

Subject Name: Computer Graphics and Multimedia (Elective)
Subject Code: 2360705

Sr. No.	Subject Content	Total Hrs.
1	**Introduction to Computer Graphics** 1.1 History of Computer Graphics 1.2 Graphics standard 1.3 Application of Computer Graphics	2
2	**Output Primitives** 2.1 Line drawing Algorithm 2.1.1 Simple Line Drawing Algorithm 2.1.2 DDA algorithm 2.1.3 Bresenham's Line Algorithm 2.1.4 Parallel Line Algorithm 2.2 Circle Drawing Algorithm 2.2.1 Mid-point circle algorithm 2.3 Filled Area Primitives 2.3.1 Scan Line polygon fill algorithm 2.3.2 Boundary Fill algorithm 2.3.3 Flood fill Algorithm	6
3	**2D Geometry** 3.1 Basic Transformations 3.1.1 Translation 3.1.2 Rotation 3.1.3 Scaling 3.2 Matrix Representations and Homogeneous Co-ordinates 3.3 Composite Transformations 3.3.1 Translation 3.3.2 Rotations 3.3.3 Scaling 3.4 Other Transformation 3.4.1 Reflection 3.4.2 Zooming 3.4.3 Shear	6

4	**2D Viewing** 4.1 Viewing Pipeline 4.2 Windows to Viewpoint co-ordinate transformation 4.3 Clipping Operations 4.4 Point Clipping 4.5 Line Clipping 4.5.1 Cohen Sutherland Line Clipping 4.6 Polygon Clipping 4.6.1 Sutherland Hodgeman Polygon Clipping 4.7 Translation 4.8 Rotation 4.8.1 Coordinate Axes Rotation 4.8.2 General Three Dimensional Rotations 4.9 Scaling 4.10 Projection 4.10.1 Parallel projection 4.10.2 Perspective projection	**10**
5	**Multimedia** 5.1 Introduction to multimedia 5.1.1 Multimedia ,Hypertext, Hypermedia 5.1.2 Application of Multimedia in various fields 5.1.2.1 Education 5.1.2.2 Media 5.1.2.3 Home 5.1.2.4 Marketing etc. 5.2 Storage medium, 5.3 Representation medium, 5.4 Transmission medium, 5.5 Independent media, 5.6 Combination of media, 5.7 Integration, data characteristics, 5.8 Transmission types i.e. asynchronous, synchronous	**4**
6	**Sound / Audio ,Video & Animation** 6.1 Basic concept of sound 6.2 Computer Representation of sound 6.3 Audio formats 6.3.1 MIDI concept 6.3.2 WAVE,MP3 ,MP4 6.4 Concept of Images 6.4.1 Image types – captured images and stored images 6.4.2 Image formats - .JPEG,.BMP ,.GIF 6.5 Concept of Video 6.5.1 Video formats 6.6 Concept of Animation 6.6.1 Computer based animations	**9**

	6.6.2 Animation languages.	
7	**Data compression techniques** 7.1 Storage requirements for Audio/ Video 7.2 Data compression techniques 7.2.1 Run Length 7.2.2 Arithmetic 7.2.3 Huffman 7.3 JPEG standard (Image encoding) 7.4 MPEG standard (Audio/Video encoding)	**5**
	Total	**42**

LABORATORY EXPERIENCES Hrs.

1. Draw line using different line style	4
2. Draw the circle using Brezenham algorithm	2
3. Perform the operation of scaling for two dimension picture	2
4. Perform the operation of translation for two dimensional picture	2
5. Perform the operation of rotation for 2-D picture	2
6. Perform the operation of shear transformation for 2-D picture	2
7. Perform the operation of windowing and clipping technique	4
8. To study about the computer representation of Audio.	2
9. To study about the Audio\ Video file formats	2
10. To study about the Image file formats	2
11. To study about the data compression techniques	2
12. Develop Animation movie using flash.	2

Total	28

Reference Books:

1. Computer Graphics	Donald Hearn & M Paulin Baker PHI
2. Computer Graphics	Steven Harington MGH
3. Multimedia	Parekh- TMH
4. Multimedia Computing and Applications	Ralf Steinmetz (Pearson)
5. Multimedia and Computer Graphics	D.P.Mukharjee

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER- VI

Subject Name: Programming with 8051 (Elective)
Subject Code: 2360706

Sr. No.	Subject Content	Total Hrs.
1	**Microprocessor and Microcontrollers** 1.1 Microprocessors 1.2 Microcontrollers 1.3 Comparison of Microprocessor and Microcontrollers 1.4 4, 8, 16 and 32 bit Microcontrollers	2
2	**The 8051 Architecture** 2.1 8051 Microcontroller Hardware 2.2 Input/output Pins, Ports and Circuits 2.3 Extended Memory 2.4 Counter and Timers 2.5 Serial Data Input/ Output 2.6 nterrupts	7
3	**8051 Assembly Language Programming** 3.1 Introduction to 8051 Assembly Programming 3.2 Assembling and running an 8051 Program 3.3 The Program counter and ROM space in the 8051 3.4 8051 Data types and directives 3.5 8051 Flag bits and the PSW register 3.6 8051 Register banks and stack	4
4	**Jump, Loop and Call Instructions** 4.1 Loop and Jump Instructions 4.2 Call instructions 4.3 Time delay for various 8051 chips	4
5	**I/O port Programming** 5.1 8051 I/O Programming 5.2 I/O bit manipulation Programming	4
6	**8051 Addressing Modes** 6.1 Immediate and Register addressing modes 6.2 Accessing memory using various addressing modes 6.3 Bit addressing for I/O and RAM	6

7	**Arithmetic and Logic unit Instructions** 7.1 Arithmetic Instructions 7.2 Signal number concepts and arithmetic operations 7.3 Logic and compare instructions 7.4 Rotate instruction and data serialization 7.5 Application programs.	**7**
8	**8051 Programming in C** 8.1 Data types and time delay in C 8.2 I/O Programming of 8051 in C 8.3 Logic operations in 8051 C 8.4 Data conversion Programs in 8051 C 8.5 Accessing Code ROM space in 8051 C 8.6 Data Serialization using 8051 C	**8**
	Total	**42**

NOTE: - Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences:

		Hrs.
1	Study of 8051 Trainer Kit	2
2	Running 8051 Programs using Trainer Kit/ Simulation Software	2
3	Simple 8051 Programming Exercises	4
4	Programming exercises using loop, jump and call instructions	4
5	Programming exercises on I/O port programming	4
6	Programming exercises using arithmetic and logic instructions	4
7	Application Programs	4
8	8051 Programming exercises in C	4

	Total	**28**

Reference Books:

1. The 8051 Microcontroller and Embedded systems (Second Edition)
   By Mulchandani Ali Mazidi, Jawice Gillisqie Mazidi Rollin D Makinlay Pearson Publication

2. The 8051 Microcontroller – Architecture, Programming & Applications 2nd Edition By Kenneth J. Ayala Penran International Publishing (I) Pvt. Ltd.

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER- VI

Subject Name: Data and Computer Communication (Elective)
Subject Code: 2360707

Sr. No.	Subject Content	Total Hrs.
1	**INTRODUCTION** 1.1 Communication model 1.2 Data Communication Model 1.3 Data Communication network	3
2	**DATA TRANSMISSION AND ITS MEDIA** 2.1 Concept and terminology 2.1.1 Transmission terminology 2.1.2 Time domain concept 2.1.3 Frequency domain concept. 2.1.4 Relationship between data rate and bandwidth 2.2 Analog and Digital data transmission 2.2.1 Data and Signals 2.2.2 Transmission 2.2.3 Comparison of analog and digital transmission 2.3 Transmission media 2.3.1 Guided Transmission media 2.3.1.1 Twisted pair-shielded and unshielded 2.3.1.2 Coaxial cable 2.3.1.3 Optical fiber 2.3.2 Wireless transmission media 2.3.2.1 Terrestrial microwave 2.3.2.2 Satellite microwave	6
3	**DATA ENCODING** 3.1 Digital data, Digital signal 3.2 Digital data, Analog signal 3.2.1 Encoding Technique as ASK, FSK, PSK 3.3 Analog data, Digital signal 3.3.1 Pulse code modulation & Delta modulation 3.4 Analog data, Analog signal 3.4.1 AM, FM, PM (basic concept)	7

4	**DATA COMMUNICATION INTERFACE** 4.1 Asynchronous and Synchronous transmission 4.2 Line Configuration 4.2.1 Topology 4.2.2 Simplex, half duplex and full duplex 4.3 Interfacing 4.3.1 Important interfacing characteristic 4.3.2 Interfacing standards-RS 232 and ISDN	**5**
5	**MULTIPLEXING** 5.1 Frequency Division Multiplexing 5.1.1 Characteristic 5.1.2 Analog carrier system 5.2 Synchronous time division multiplexing 5.2.1 Characteristic 5.2.2 TDM link control, framing pulse stuffing, digital carrier system	**5**
6	**SWITCHING AND FRAME RELAY** 6.1 Switching network 6.2 Switching concept 6.3 Circuit switching network 6.4 Packet switching principles 6.5 Comparison of circuit switching and packet switching 6.6 Frame relay and its background.	**5**
7	**INCLUDING IMAGES** 7.1 Protocol architecture 7.2 Logical connection 7.3 Cells 7.3.1 Format 7.3.2 Transmission 7.4 ATM LAN configurations	**5**
8	**PROTOCOL AND ARCHITECTURE** 8.1 Product characteristic and function 8.2 OSI 8.2.1 Model, Principle and justification 8.2.2 OSI layer 8.3 TCP/IP Protocol suite 8.3.1 Approach 8.3.2 Architecture and operation	**6**
	Total	**42**

NOTE: - Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences: Hrs.

1. Study of different transmission media	2
2. Study of TCP/IP protocol	2
3. Study of ATM	2
4. Study of RS 232 and ISDN standard	2
5. Observe and measure important parameters of AM	2
6. Observe and measure important parameters of FM	2
7. Observe and measure important parameters of FSK	2
8. Observe and measure important parameters of TDM	2
9. Observe and measure important parameters of FDM	2
10. Observe and measure important parameters of PCM	2
11. Set Up and study NULL modem connection between two computers	4
12. Set UP and study Modem connection between two computers	2
13. A technical visit to one or more of the following ISP/ATM Banking center/telephone exchange/ TV station/Radio Station /VISA etc.	2
Total	**28**

Reference Books:

1. Data & Computer Communication Williams Stallings PHI Pub.
2. Data Communication and networking S.Jaiswal Galgotia Pub.
3. Data Communication & Networking Forouzan TMH

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

SEMESTER- VI

Subject Name: Network Operating System (Elective)
Subject Code: 2360708

Sr. No.	Subject Content	Total Hrs.
1	**TRADITIONAL SERVICES OF A NOS** 1.1. File and Resource sharing 1.2. Configurability and usability 1.3. BANYAN Network system 1.3.1 Services and applications 1.3.2 VINES supported standards 1.4. Novell Netware 1.4.1 Features of netware 1.4.2 Novel services- Directory, Security, Data base, Messaging, print 1.4.3 Netware Loadable Modules(NLM) 1.4.4 Netware Supported Standards 1.4.5 Strength and weakness of Netware 1.5. Microsoft Windows NT 1.5.1 Features. 1.5.2 Supported standards, Security 1.5.3 Strength and weakness of Windows NT	**5**
2	**NETWORK ADMINISTRATION** 2.1. What is Network Administration.? 2.2. Managing Network Account. 2.2.1. -Managing and Creating 2.2.1.1.--User accounts 2.2.1.2.--Group Accounts and Built in group accounts 2.3. Managing Resources 2.3.1. -Hardware,Disk,Files and directories, software installation/upgrade 2.3.2. -E-mail application and Network printing. 2.4. Management Tools 2.4.1. -User manager for Domains 2.4.2. -Server manager 2.4.3. -Event Viewer 2.4.4. -Network Client Adiministrator 2.5. Managing Network Performance	**10**

	2.5.1. -Potential Network Performance Problem 2.5.2. -Physical layer issue 2.5.2.1.--Exceeding Media Limitations 2.5.2.2.--Interference 2.5.2.3.--Wear and Tear 2.6. Network Traffic Issue 2.6.1. -Network Collisions 2.6.2. -Inefficient Network Protocols 2.6.3. -Hardware Overload 2.6.4. -Poorly implemented network Stacks 2.6.5. -Garbage 2.6.6. -Denial – of – Service attacks 2.6.7. -Address resolution problem 2.6.8. -Internetworking issues 2.7. Tools and techniques 2.7.1. -Ping,traceroute 2.8. NT performance monitor 2.9. Network analysers 2.10. Hardware trouble shooting	
3	**PROTECTING THE NETWORK** 3.1. -Ensuring data integrity 3.2. -Protecting the O.S. 3.3. -Installation 3.3.1. --File systems 3.3.2. --Back up domain controller 3.4. -Maintenance Techniques 3.4.1. --Boot disks 3.4.2. --NT boot floppy 3.4.3. --Emergency Repair disk 3.5. -Disk administrator , Service packs 3.6. -Protecting your hardware 3.7. -Protecting user data	**5**
4	**PLANNING NETWORK AND DATA SECURITY** 4.1. -Security policies 4.2. -Work group ,Domain and Trust 4.3. -Domain models 4.4. -Security in Windows 95/98 and NT 4.5. -Auditing 4.6. -Diskless workstations 4.7. -Encryption , Virus shields	**5**
5	**NETWORK DIRECTORY SERVICES** 5.1. -Purpose of Network directory 5.2. -Directory frame work – Scope , structure, presentation 5.3. -Network directory special features	**6**

	5.4. -Network name Resolution – DNS, nameservers, Resolvers 5.5. -Database replication and management 5.6. -WINS 5.7. -SAP 5.8. -Authentication Process 5.9. -Trust relationship 5.10. -Active Directory Services (ADS)	
6	**TROUBLE SHOOTING AND PREVENTING PROBLEMS** 6.1. **-**Proactive Network Control operation 6.2. **-**Proactive Network disaster operation 6.3. -Logical fault isolation 6.4. -Common Networking problems	**5**
7	**REMOTE ACCESS SERVICES** 7.1. -Introduction 7.2. -Remote connection setup 7.3. -RAS protocols 7.4. -RAS transport services 7.5. -NOS and RAS capabilities 7.6 -RAS security	**6**
	TOTAL	**42**

NOTE: - Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences: **Hrs.**

1. Installation of NOS Server.	2
2. Installation of NOS Client	2
3. Configuration of network environment	4
4. Managing system policy and file systems	4
5. Creating and managing partitions	2
6. Creating users accounts	2
7. Creating group accounts	2
8. Managing hardware resources --Printer, Modem, CD Drive etc.	2
9. Managing software resources -- Installation and Updation of Softwares	2
10. Configuration of clients	2
11. Any other practical based on syllabus.	4
Total	28

Reference Books:

1. Peter Norton's complete guide to Networking -Peter Norton & Dave Kearns Pub. Sams Techmedia
2. NT Server 4 Study Guide - Matthew strobe & Charles Perkins Pub. BPB
3. Using Windows NT Server 4 - Roger Jennings 2nd Ed. Special edition Pub. PHI