

COMPUTER ENGINEERING

Shri Vile Parle Kelavani Mandal's
Shri Bhagubhai Mafatlal Polytechnic
Natakkar Ram Ganesh Gadkari Marg,
Vile Parle (West), Mumbai – 400 056.

DIPLOMA IN COMPUTER ENGINEERING

(Three Years Full Time) w.e.f. – July, 2008

Autonomous Course, Multi Point Entry & Credit System,

Non Sandwich Pattern

OBJECTIVES

- 1) Impart knowledge to the students in the field of Computer.
- 2) Make the students enable to persue higher education if they wish.
- 3) Make the students eligible to be absorbed by industry at supervisory level.
- 4) Incorporate the knowledge of emerging technology as per the requirement.

CURRICULUM

Shri Bhagubhai Mafatlal Polytechnic started 3/4 Years Diploma courses and was affiliated to the Board of Technical Examinations, Maharashtra State, in 1963. Since 1969, academic freedom was granted to the Polytechnic. Since 1978 – 79 academic freedom was extended to all the full-time diploma courses. In 1989 –90, full autonomy was granted to all seven full time diploma courses.

As a further development to the above, the multi-point entry and credit system (MPECS) was initiated in 1981 on progressive basis. In this scheme students can regulate their pace of studies within the rules prescribed.

From 1993-94, full academic autonomy was extended to all the 19 courses, which includes full-time diploma, part-time diploma, and post-diploma courses. The students have to qualify for appearing in the final examinations are conducted by the institute and the final diploma is awarded by the institute at the convocation function.

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DIPLOMA IN COMPUTER ENGINEERING

The Course is Three Years Full Time Diploma in Computer Engineering (Un-aided) with Non-Sandwich Semester-Pattern having Multipoint Entry & Credit System. The emphasis of the course is on Computer Education at a Technician Level covering Knowledge of Software: Programming Languages, System Analysis and Design, Database, Concepts of Operating Systems, Hardware: Maintenance & Servicing of Electronic Circuits, PC Architecture, Basics of Computer Technology, Maintenance & Servicing of Computer, Peripheral Devices and Instruments at higher semesters along with basic Science Subjects – Mathematics, Physics, Communication Skill / English – in first and second semester. The Students learn the fundamentals of Computer Maintenance and Servicing leading to become

- A Service Technician
- Assistant Programmer in software Industry
- Computer Maintenance Technician
- A Computer Programmer

For Award of Diploma under Multipoint Entry & Credit System, the student/candidate has to earn total 180 credits including compulsory subjects out of total available 211 credits from 36 subjects. The examination pattern /scheme will be same as per the other diploma examination of this institute. The Final Award of Grade will be given on the basis of marks obtained in the final year of Computer Engineering i.e. Vth & VIth Semester under grade point average scheme/criteria/norms as laid down in the MPE&C System.

Full Time Diploma in Computer Engineering Course is approved by All India Council For Technical Education (AICTE) vide file no. 740-89-124(E)/RC/95 and by Department of Higher and Technical Education, Government of Maharashtra vide PTI 202K/ (331/2000)/TE-2.

The Course is approved by AICTE vide their reference each F.No. 740-89-007/E/RC/95/TME-1963 dated:13/08/2004. The approval of equivalence to Diploma is granted by Maharashtra State Board of Technical Education vide their Certificate No. MSBTE/ D-53/ SBMP EQU/2004/5989 dated: 30/07/2004.

admitted in July, 2008

DIPLOMA IN COMPUTER ENGINEERING

					Scheme L/Pr./Cr.	Gr.
Ist Year	Ist Sem.	(1)	Fundamentals of Computer & Networking System	CSE-39	246	C*
		(2)	Mathematics – I (Ver 2.0)	CSE-47	404	B*
		(3)	Physics	CSE-3	348	B*
		(4)	Programming in C / C++	CSE-35	326	C*
		(5)	Development of Generic Skill	CSE-34	303	B*
IInd Year	IInd Sem.	(6)	Electrical Engineering	CSE-6	326	C*
		(7)	Mathematics – II (Ver. 2.0)	CSE-48	404	B*
		(8)	Electronic Workshop	CSE-8	325	C*
		(9)	Electronic Devices & Circuit – I	CSE-9	326	C*
		(10)	Communication Skill	CSE-36	303	B*
		(11)	Engineering Graphics	CSE-41	246	C*
IInd Year	IIIrd Sem.	(12)	Electronic Devices & Circuit – II	CSE-12	426	C*
		(13)	Mathematics – III (Ver 2.0)	CSE-49	404	C*
		(14)	Computer Network	CSE-38	325	C
		(15)	Power Electronics	CSE-15	427	A*
		(16)	Elements of computer Engineering	CSE-16	426	C*
	IVth Sem.	(17)	Data Structure	CSE-17	426	B
		(18)	Digital Electronics	CSE-18	326	C*
		(19)	Fundamentals of Operating System	CSE-40	426	C
		(20)	Data Base Management System	CSE-20	326	C*
		(21)	PC. Architecture	CSE-21	426	C*
IIIrd Year	Vth Sem.	(22)	Communication System	# CSE-22	427	A
		(23)	Microprocessor – I	# CSE-23	326	A*
		(24)	Web Programming & Java	CSE-42	426	C
		(25)	Networking & Security	# CSE-25	326	M*
		(26)	Computer Graphics	# CSE-26	326	A*
	VIth Sem.	(27)	LINUX Administration	CSE-43	326	A
		(28)	Microprocessor – II	# CSE-27	427	A*
		(29)	PC Maintenance and Instruments	CSE-44	427	M
		(30)	Elective I (Any One) #			
		(30.1)	System Analysis & Design	CSE-30	326	M
		(30.2)	Entrepreneurship Development	CSE-32	606	M
	(30.3)	Advanced Web Technology	CSE-45	326	A	
	(31)	Elective II (Any One) #				
	(31.1)	System Programming	CSE-29	326	A	
	(31.2)	Embedded System	CSE-46	326	A	
	(31.3)	Instrumentation & Control	CSE-33	326	A	
	(32)	Project	# CSE-31	099	A*	

*=Compulsory Subjects

Total Credit=211

Total Credits Offered = 211 (Compulsory Credit=132, Optional Credit=79)

Total Minimum Credits Required for Award =180

	Max. Credit	Compulsory Credit	Optional Credit
B= Basic	28	22	06
C= Core	88	71	17
A= Applications	72	35	37
M= Management	25	06	19

Note :I) 1 Tutorial hour / period = 1 Practical hour / session for practical subjects & 1 tutorial hour to be treated as 1 Theory / Assignment for non-practical subjects.

II) # - Discipline oriented award winning subjects for Diploma along with Vth & VIth semester Subjects registered.

Registration Prerequisite required of Term Work granted for post subject study (Discipline Subject).

Sr. No.	Prerequisite Subject Code	Post Subject Code	Sr. No.	Prerequisite Subject Code	Post Subject Code
1	CSE-39	CSE-40	7.	CSE-35	CSE-42
2	CSE-9	CSE-12	8.	CSE-6	CSE-15
3.	CSE-38	CSE-25	9.	CSE-25	CSE-31
4.	CSE-35	CSE-17 / CSE-40	10.	All * - Sem. I to V	CSE-31
5.	CSE-20	CSE-30	11.	CSE-42, CSE-35	CSE-45
6.	CSE-23	CSE-27			

Note: Refer Exam scheme term wise in the syllabus copy &

- i) Sessional is to be accessed by Internal Examiner
- ii) Theory & practical is to be accessed by Internal Examiner & External Examiner combined.
- iii) Termwork is to be accessed by Internal Examiner & External Examiner as per the ratio.
- iv) Weightage for sessional marks will be of 20% & for Term end theory exam will be of 80% combinely considered for the subject award out of 100% weightage

For Award of Diploma under Multipoint Entry & Credit System, the student / candidate has to earn total 180 credits including compulsory subjects out of total available 211 credits from 36 subjects. The examination pattern / scheme will be same as per the other diploma examination of this institute. The Final Award of Grade will be given on the basis of marks obtained in the final year of Computer Engineering i.e. Vth & VIth Semester including discipline oriented award winning subjects under grade point average scheme / criteria / norms as laid down in the MPE&C System.

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

Ist Semester (Diploma in Computer Engineering)

w. e. f. Batch admitted in July, 2008

Sr. No	Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
		Lecture	Pract. or Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract. Exam		
1.	Fundamentals of Computer & Networking System	2	4	--		20	-	50	50	120	CSE-39	246
2.	Mathematics – I (Ver 2.0)	3	--	1	1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-47	404
3.	Physics	3	4	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-3	348
4.	Programming in C / C++	3	2	1	1, 3 Hrs , 100 Mks.	20	80	50	50	200	CSE-35	326
5.	Development of Generic Skill	2	--	1	1, 3 Hrs., 100 Mks	20	80	--	--	100	CSE-34	303
Total		13	10	4	4 Paper	--	--	--	--	720		
Total Periods : 27				Total Marks : 720								

1 Period= 1 Hour

Note:

- i) Sessional is to be accessed by Internal Examiner
- ii) Theory & practical is to be accessed by Internal Examiner & External Examiner combined.
- iii) Term work is to be accessed by Internal Examiner & External Examiner as per the ratio.
- iv) There will be three periodical test of 25 Marks for each subject. Best of two periodical test marks will be considered as a sessional of 20 % weghitage.
- v) Final term end examination will be of 100 marks having weitage of 80%

FUNDAMENTALS OF COMPUTER & NETWORKING SYSTEM (CSE-39)

(T.W. = 50 Marks, Pr. = 50 Marks, Lecture 2/week,

Practical 4/week, Credit: 6)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial		Sessional	Work	Paper	term work	Pract.	Exam		
Fundamentals of Computer & Networking System	2	4	--		20	-	50	50	120	CSE-39	246	

Rationale:

This subject envisages to make the students know the fundamentals of computer systems and its organisation. It will enable the students to comprehend the organisation and working of various units of personal computer system for storing and processing information. It will also help the students to have hands on experience of operating systems and different application software used for office automation, day to day problems sharing in particular for creating business documents, data analysis graphical representations and business presentations. It also deals with basics of Internet technology available services internet connectivity and accessing information on internet.

The student will also familiarize themselves with case study on Linux o.s., its design architecture, command structures, utilities and Linux

Objective:

The student will be able to:

1. Get familiarized with computerisation.
2. Utilise computers in engineering /technical field.
3. Use computer concepts for Microsoft applications
4. Promote Computer Literacy and Programming Skills.
5. Study of Linux as Operating System & Shell Programming
6. Made to expose towards computer area.
7. Learn networking concepts
8. Operate Internet/e-mail facility

Theory Contents:**1. Fundamentals of Computer concepts :****(Periods-6 hrs, Mks-20)**

To acquaint with computer Hardware and Software, To get familiar with various operating system (DOS);To use DOS internal commands ;To familiarise with DOS external commands; Study of computer specifications PC, PC-XT , PC-AT, Pentium and its applications, general architecture of computers; Computer peripherals (I/O Device),CD player , Storage units , floppy diskette , printers and output peripherals; General computer terms, computer software, applications software , operating systems, advantages of software and application packages.

2. Introduction to Windows:**(Periods-5 hrs, Mks-10)**

Structure of a Window, Basic techniques for working in Windows, Using Menus; Working with A dialogue box, Type of Options ; Starting Windows , Task Bar, Start Menu

3 Introduction to MS-Office**3.1 Introduction to WORD package****(Periods-2 hrs, Mks-15)**

Starting Word Document ; Typing and Editing text, Copying and Moving, Typing Special Characters (Symbols); Some common features : Changing the case of text, Moving & copying text with drag and drop, Justifying text, inserting bulleted & numbered lists , Arranging and moving between open documents; Finding and replacing, formatting ; Using the spell checker , Checking grammar

3.2 Concepts of POWER POINT**(Periods-2 hrs, Mks-15)**

How to make an effective presentation, Physical aspects of presentation ; A Presentation Graphics package ; Creating a presentation : creating a Title slide, Creating a Graph, Creating Tables, Make Organization Chart, To Save and close presentation; Working with Tools: Create , Edit, Move, Delete , Resize , Format text object, Working with Graphics tools; Slide show

3.3 Fundamentals of EXCEL**(Periods-2 hrs, Mks-15)**

Starting EXCEL: What is a spreadsheet, creating & editing spreadsheet, modifying the sheet. Study of Toolbars, Formula bar and Status bar. Inserting Header and footer, cells, rows, columns, worksheet, formatting individual cells row, column, sheet, manipulating Data by using Sort. Saving and Retrieving saved worksheet.

4. LINUX as Operating System

Linux Fundamentals

(Periods-6 hrs, Mks-25)

Basics of Unix & Linux, Multi-user & Multitasking capabilities of Linux, change of password, the file types, structures of file system, important directories of the file system.

5 Introduction to Shell Programming

(Period-5 hrs, Mks-24)

What is Shell. Tools for working with Linux & Shell Programming. Function of a Shell, access permissions of file in Linux, editing files with Vi. Important commands related to Vi editor. Introduction to Bash Shell basics, Shell. Bash variables, basics scripts element (input / output), simple Shell programs.

6. Networking and LAN commands

(Periods-2 hrs, Mks-20)

Network Concept and classification; Local Area Network(LAN) : LAN Topology, LAN Software / Operating System, LAN commands and elementary Administrative commands like ATTACH, BROADCAST, CAPTURE, LOGIN, LOGOUT, MAP, REVOKE, RIGHTS, SYSCON, SYSTIME.

7. Introduction to INTERNET:

(Periods-2 hrs, Mks-20)

What is INTERNET, Application of INTERNET: E-mail, TELNET, WWW, Study of various search engine using LYNX, LOGIN PROCEDURE, Study of INTERNET EXPLORER, Creating mailing account, Difference between SHELL and TCP/IP account. Surfing using WORLD WIDE WEB information relating to employment, education, alumni.

The Distribution of Marks / weight age of each topic specified in this subject is considered taking into account sessional / assessment Exam.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Fundamentals of Computer concepts	06	20	12	E
2.	Introduction to Windows	05	10	07	E
3.	Introduction to WORD package	02	15	09	M
4.	Concepts of POWER POINT	02	15	09	M
5.	Fundamentals of EXCEL	02	15	09	M
6.	Linux Fundamentals	06	25	16	M
7.	Introduction to Shell Programming	05	24	14	M
8.	Networking and LAN commands	02	20	12	M
9.	Introduction to INTERNET	02	20	12	E
Total		32	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Fundamentals of Computer concepts
2. Introduction to Windows
3. Introduction to WORD package
4. Concepts of POWER POINT
5. Fundamentals of EXCEL

Section II

6. Linux Fundamentals
7. The File System in Linux
8. Introduction to Shell Programming
9. Networking and LAN commands
10. Introduction to INTERNET

Total Theory Hrs.= 32 hrs

Total Practical Hrs. = 64 hrs.

List of practical:

- 1) Study of Computer hardware and peripherals
- 2) Study of DOS Internal and External Commands
- 3) i) Getting started with Windows by using different menus and working with dialogue box
ii) Study of Control panel, Screen saver and Help commands using Windows
- 4) i) Creating, Editing and Saving a document , Table using Word package creating Document with Table, editing using special characters & saving.
ii) Study of tool bar menus like Standard , Formatting , Tables and Borders
iii) Study of spell check , find , replace , go to , page setup , print preview and print commands.
- 5) i) Creating a new presentation and getting acquainted with various menus like FILE, EDIT, VIEW, INSERT, FORMAT, TOOLS, SLIDESHOW
ii) Choosing Auto Layout and working with tools and to prepare a slide show
iii) To study special effects using one slide show demonstration
- 6) Creating Spread Sheet for various combinations of computational tables.
- 7) LINUX basic commands.
- 8) LINUX Advanced commands.
- 9) Creating file using Vi editor, editing, saving file & quit from Vi editor.

- 10) Study of different run levels.
- 11) Shell Programming-I
- 12) Shell Programming -II.
- 13) Study of KDE environment
- 14) Networking concepts and LAN commands.
- 15) Introduction to administrative command like Create Users, Mapping, Assigning, etc.
- 16) Internet terms, Use of Shell account and study of mailing , Software to send & receive mail on Hard Disk.
 - 17) To study internet explorer package & retrieve education related information from TCP/IP account and downloading procedure

Note:- Minimum of twelve experiments must be performed /completed in journal for approval of term work acceptance other than the 75% requirement of attendance.

Reference Books:

1. Computer and Common sense by Hunt & Shelly.
2. Computer Fundamentals by V. Rajaraman (Prentice hall)
3. PC Guide for Windows (ITC Publication/Galgotia publication)
4. Learning Word 6.0 for Windows step-by-step, Galgotia.
5. Linux: TheComplete reference - 5/E by petterson
6. Unleashed Linux

Additional References:

1. Mastering MS Office (BPP Publication)
2. Data Communications and Distributed Networks, U.D. Black, Prentice-Hall

MATHEMATICS-I (Ver. 2.0) (CSE-47)

(One Paper- 3 Hrs. Theory =100,

Lectures: 3/Week; Tutorial: 1/Week, Credit: 4)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial		Sessional Work	Paper	Term work	Pract. Exam	Total		
Mathematics – I	3	--	1	1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-47	404

Rationale:

Algebra, Trigonometry and Coordinate Geometry are introduced as prerequisite for the topics to be studied later on to solve the engineering problems.

Objective:

- (i) The students will be able to use the Mathematical Methods to solve the engineering problems
- (ii) Students will be able to use principles to solve problems in Mathematics at Higher Semester level.

Theory Contents:

- 1. Trigonometry:** **(Periods-18 hrs, Mks-62)**
 - 1.1 Trigonometric ratio of any angle, Definition of radian, Length of arc of sector $s=r\theta$
Area of sector $A= \frac{1}{2} r^2\theta$, θ in radians.
 - 1.2 Trigonometric ratios of allied, compound angles and multiple angles
 - 1.3 Inverse Circular trigonometric functions
 - 1.4 Properties and solution of triangle
 - 1.5 Solution of trigonometric equation by graph
- 2. Matrices:** **(Periods-06 hrs, Mks-20)**
 - 2.1 Definition of a matrix of order $m \times n$. types of matrices.
 - 2.2 Addition and subtraction of two matrices
 - 2.3 Multiplication of a matrix by a scalar, multiplication of two matrices.
- 3. Algebra:** **(Periods-24 hrs, Mks-82)**
 - 3.1 Determinant, Properties of Determinant without proof, Use of Determinant in solving equations and condition of consistency of equation.
 - 3.2 Partial fractions
 - 3.3 Binomial theorem
 - 3.4 Progression (A.P./G.P.)
 - 3.5 Permutations and Combinations

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Trigonometry:	18	62	35	M
2.	Matrices	06	20	15	E
3.	Algebra	24	82	50	M
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Trigonometry
2. Matrices

Section II

1. Algebra

Reference Books:

- (1) Mathematics for polytechnic students I & II, by S.P. Deshpande.
- (2) Engg. Mathematics-I & II, by G.V. Kumbhojkar
- (3) Applied Mathematics-I, by Patel/ Rawal & others.

Additional References:

- (1) Engg. Mathematics (1st year), by Patel Rawal.

PHYSICS (CSE-3)

(One Paper-3 Hrs, Theory 100 Marks. Pract.– 50 Marks, T.W.=50Marks,

Tutorial: 1/Week ,Lecture : 3/Week, Pract.:4/Week, Credit:8)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial			Sessional	Work	Paper	term work	Pract.	Exam		
Physics	3	4	1		1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-3	348	

Rationale :

To develop the basic concepts, facts, principles of scientific phenomena in the field of Physics and material properties and Applications. Also it will help to develop the laboratory skill.

Objectives:

Students will be able to:

1. Understand the basic facts about field of Physics, viz. mechanics, heat light magnetism and electricity in the area of Physics : Scalars and Vectors, Kinematics, Elasticity, Heat conduction, Prism, Sound and Magnetic field, Electrical current, Resistance, Whetstone's Bridge.
2. Understand the basic concepts in the area of Physics: Resolution of vectors, Kinematics, Viscosity, Co-efficient of thermal conductivity, Absolute zero, gas equations, simple harmonic equation, sound wave, heating effect, quantum.
3. Understand the basic Principles of scientific phenomena in Physics: Newton's law of gravitation, Young's modulus, Stokes' law, Boyle's law, Charies' law, GayLussac's law, Newton's formula for Velocity Sabine's formula, Coulomb's law, Ohm's law, Joule's law, Bio-Savart's law, specific heat.
4. Understand the basic techniques of physical process: Resolutions of vectors, Kinematics, equation of motion under gravity, determination of "Y", viscosity, Co-efficient of expansion of heat, analysis of simple resistance circuit, construction and working of motor.
5. Understand the importance of above knowledge in the context Core Technology and Technology areas.
6. Develop laboratory skill of investigation for use in actual production system.

Theory Contents :**1. FUNDAMENTALS****(Periods-10 hrs. Mks-36)**

Vectors & scalars, Representation of a Vector, Unit Vector, Triangle law of Vectors, resultant-vector, parallelogram of Vectors, Resolution of Vector, Definition sand significance of scalar product & Vector Product of two vectors

Definition-Kinematics, displacement, speed velocity and acceleration. Equation of motion with uniform acceleration, velocity time diagram.

Newton's law of Gravitation acceleration due to gravity. Motion under gravity, escape velocity. Velocity and period of artificial satellite, communication satellite.

Uniform circular motion, Tangential velocity, Relation between linear and angular velocity, radial acceleration, centripetal and centrifugal forces, super elevation of roads and tracks.

2. GENERAL PHYSICS**(Periods-09 hrs. Mks-30)**

Elastic limit, Hooke's law. Types of deformation, definitions of Bulk, Rigidity and Young's modules, Determination of "Y" by Searle's method, behaviour of a wire under continuously increasing stress, yield point, Breaking stress, Factor of safety Definition and explanation of viscosity, co-efficient of viscosity, determination of viscosity by Poiseuilles method (Derivation of formula not necessary), Stokes' law (derivation not necessary) viscosity of a liquid by Stokes' law, application of viscosity, critical velocity, Reynolds' number.....

3. HEAT**(Periods-05 hrs. Mks-16)**

Statement of Boyle's Law, Charle's Law, Gay Lussac's Law, concept of absolute zero. Kelvin scale of temperature general gas equation, gas constant, Universal gas constant definitions of specific heat of gas at constant, pressure and at constant volume. Relation between Cp & Cv, ratio of Cp and Cv, adiabatic and isothermal expansion of gases, isothermal and Adiabatic elasticity of gases. Conduction along a bar, steady state of temperature. Coefficient of expansion

4. **OPTICS** (Periods-2 hrs. Mks-07) Prism
formula, spectrometer, Refractive index of prism by spectrometer.
Definition and explanation of linear simple harmonic motion, concept of wave motion, amplitude, frequency, wave length periodic time, phase, relation between velocity of a wave, frequency and wavelength, Transverse wave, Longitudinal wave.
5. **SOUND** (Periods-05hrs.,Mks-16)
Sound as a longitudinal wave, equation of a progressive wave, Newton's formula for velocity of sound, Laplace's correction, effect of temperature, pressure and humidity on velocity of sound, resonance tube, application in brief. Echo, Reverberation, Sabine's formula (derivation not necessary), factors affecting reverberation time, acoustical planning of a building. Ultrasonic waves & their application
6. **ELECTROSTATICS** (Periods-05 hrs. Mks-16)
Coulomb's inverse square law, unit charge electric field, intensity of electric field, definition and properties of electric lines of force, electric flux, electric flux density relation between flux density and intensity, electric flux due to a given charge.
Electric potential, potential difference, difference absolute potential at a point. Capacitance principle of capacitor, capacitors in series and parallel.
7. **CURRENT ELECTRICITY** (Periods-5 hrs. Mks-16)
Ohm's law, resistance, specific resistance, resistance in series and parallel, Theory of shunt, General equation of Ohm's law, Wheatstone's network, Wheatstone's bridge, fall of potential along a uniform wire, potentiometer, comparison of e.m.f. and determination of internal resistance of cell by using potentiometer, effect of temperature on resistance, platinum resistance thermometer.
Effect of electric current, Joule's Law, electric power and electricity bills, Seebeck effect, Peltier effect law of intermediate temperatures, law of intermediate metals, measurement of high temperatures by thermocouple.
Magnetic effect of electric current, magnetic induction, Biot-savart's Law, Ammeter, Volt meter, Construction and working.
8. **MODERN PHYSICS** (Periods-7 hrs. Mks-27)
Explanation of Planck's concept of quantum, Energy of quantum (photon), Electron-volt. Characteristics of photo electric effect, Planck-Einstein Equation, Application of Photo-Electric Cell.
Classification of solids into conduction, semiconductors and Insulations, Intrinsic and Extrinsic semiconductors.
X-rays Coolidge tube, continuous x-ray spectrum, minimum wavelength, use of x-rays.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D	
1.	ELECTRICITY MECHANICS	10	36	24	M	
2.	GENERAL PHYSICS	09	30	20	M	
3.	HEAT	05	16	08	E	
4.	OPTICS	02	07	04	D	
5.	SOUND	05	16	08	E	
6.	ELECTROSTATICS	05	16	08	E	
7.	CURRENT ELECTRICITY	05	16	08	E	
8.	MODERN PHYSICS	07	27	20	M	
		Total	48	164	100%	#
		(# M=Most Essential, E=Essential,	D=Desirable)			

Section I

1. FUNDAMENTALS
2. GENERAL PHYSICS
3. HEAT

Section II

4. OPTICS
5. SOUND
6. ELECTROSTATICS

7. CURRENT ELECTRICITY

8. MODERN PHYSICS

Total Theory Hrs. = 48 Hrs.,

Total practical hours = 64 hrs.

List of Practicals :

The experiments to be grouped area as under

GROUP A (Any 6) :

1. Use of Vernier Callipers and Micrometer screw gauge.
2. Verification of law of parallelogram of forces.
3. Determination of "g" by simple pendulum.
4. Verification of Boyle's Law.
5. Determination of Surface tension by capillary rise method by using travelling Microscope
6. Determination of Young's Modulus by Searle's method.
7. Determination of coefficient of viscosity by Poiseuille's method.
8. Determination of coefficient of viscosity by Stokes' method.

GROUP B (Any 5) :

9. Determination of coefficient of thermal conductivity of a good conductor by Searle's method.
10. Determination of coefficient of thermal conductivity of a bad conductor by Lee's disc method.
11. Measurement of temperature by thermocouple
12. Refractive index of material of the prism by using spectrometer.
13. Determination of Refractive index of prism by minimum deviation – Pin method.
14. Determination of Velocity of sound by Resonance Tube.

GROUP C (Any 5) :

15. Determination of specific resistance of material of wire by Voltmeter and Ammeter.
16. Determination of specific resistance of material of wire by metre bridge.
17. Verification of Law of resistances in Series by metre bridge
18. Verification of Law of resistances in parallel by metre bridge
19. Measurement of Temperature coefficient of resistance by Platinum resistance thermometer.
20. To determine electrical equivalent of heat (J) by Joule's electrical calorimeter

GROUP D (Any 3) :

21. Comparison of e.m.f. of two cells by single cell method using potentiometer
22. Comparison of e.m.f. of two cells by sum and difference method using potentiometer.
23. Determination of internal resistance of a cell using potentiometer.
24. Calibration of a voltmeter by potentiometer

A Journal should contain minimum 19 experiments. Internal examiner will assess it by continuous assessment.

Reference Books :

1. Applied Physics for Polytechnic by B.G. Dhande.
2. Applied Physics by B.G. Bhandarkar.

Additional References:

3. Applied Physics by Umrani, Joshi and Deshpande.

Programming in C / C ++ (CSE-35)(T.W.= 50 Marks, Pr.= 50 Marks, Lecture 3/week,
Practical 2/week, Credit:6)**Teaching And Examination Scheme:**

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial			Sessional	Work Paper	Term work Pract.	Exam	Total			
Programming in C / C++	3	2	1		1, 3 Hrs , 100 Mks.	20	80	50	50	200	CSE-35	326	

Rationale:

Concept of programming large programs are probably the most complicated entities ever created by humans because of this complexity, programs are prone to error and software errors can be expensive and even life-threatening object-oriented programming offers a new and powerful way to cope with this complexity. Its goal is clearer, more reliable, more easily maintained programs. This will act as backbone all other subject that based on object Oriented concept.

Objective:

The student will be able to:

1. Apply the techniques of simplifying complex programmes.
2. Learn the concept of object oriented technology
4. Develop the skill for programming the object oriented concepts using C++ as the Language
5. Debug pitfalls of conventional programming methods considering programming features
5. Expertise in Eliminating Redundant Code
6. Build Secure Program

Theory Contents:**1. Introduction to Programming :** (Periods-2 hrs, Mks-07)

Algorithms, flowchart, Programming Languages, Types of Languages Character

2. C Fundamentals (Periods-2hrs, Mks-07)

Character Sets, Keywords, Identifiers, Constants, Declaration, Storage classes

3. Operators & Expressions (Periods-4 hrs, Mks-14)

Arithmetic Operators, Unary operator, Assignment operators, Conditional Operator

4. Data Input / Output (Periods-4 hrs, Mks-14)

Printf(), scanf(), getch(), putchar(), getchar()

5. Control Structure (Periods-10 hrs, Mks-35)

Branching statement if , nested if, if-else, switch-case

Looping constructs for, while, do-while, go to

Comma operator

6 Function (Periods-6 hrs, Mks-21)

Defining a function, Accessing a function, Argument passing: call by value and call by reference, recursion

7. Pointers

(Periods-6 hrs, Mks-21)

Pointer Declarations, passing pointer to function, dynamic memory allocation, operations on pointers. array of pointers .

8. Structure & Union

(Periods-4 hrs, Mks-14)

Defining a structure, Processing a structure User defined types Structure and pointers, Passing structure to function, self referential Structure

9. Data Files

(Periods- 6 hrs, Mks-21)

Opening and closing a data file processing a data file, unformatted and formatted data files

10. Principles of Object Oriented Programming

(Periods- 4 hrs, Mks-14)

Basic Concepts of OOP, Comparison of procedural programming and OOP, Advantages of OOP, OOP Languages, Definitions, Class, Objects, Concept of inheritance and encapsulation, Operator overloading, Dynamic binding Over view of OOP using C+, Basic Program construction, main and functions, Program statements, Class declaration, Comments, C++ compilation

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Introduction to Programming	02	07	04	E
2.	C Fundamentals	02	07	04	E
3	Operators & Expressions	04	14	08	D
4.	Data Input / Output	04	14	08	D
5.	Control Structure	10	35	21	M
6.	Function	06	21	12	E
7.	Pointers	06	21	12	D
8.	Structure & Union	04	14	09	M
9.	Data Files	06	21	12	D
10.	Principles of Object Oriented Programming	04	14	09	M
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction to Programming
2. C Fundamentals
3. Operators & Expressions
4. Data Input / Output
5. Control Structure

Section II

6. Function
7. Pointers
8. Structure & Union
9. Data Files
10. Principles of Object Oriented Programming

Total Theory Hrs.= 48 hrs

Total Practical Hrs. = 32 hrs.

List of Practical

All appropriate practical mentioned in syllabus

Reference Books:

1. Programming with C By – Byron Gottfried
2. C Programming By - Bala Guru Swami

DEVELOPMENT OF GENERIC SKILLS (CSE-34)

(One Paper-3 Hrs. Theory: 100 Marks. Lecture: 2/Week, Tutorial: 1/Week, Credit: 3)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.	
	Lecture	Pract. or	Drg.	Tutorial		Sessional	Work	Paper	Term	work Pract.			Exam
Development of Generic Skill	2	--		1	1, 3 Hrs., 100 Mks	20	80	--	--		100	CSE-34	303

Rationale:

The skills of project management have become important in all types of business and at all levels of work hierarchy. The purpose of development of generic skills is to develop the necessary skills, which will make students confident and competent in managing and executing engineering projects.

Objectives:

Over a period of time, it has been observed that effectively of polytechnic students, their utility at work place can be enhanced by imparting generic skills right from entry in the polytechnic. The generic skills are life skills; they are life long skills, whose edge needs to be sharpened every moment.

The content is divided into four logical units :

1. Information
2. Communication skills
3. Self development
4. Task-Management

It is designed by keeping self in focus with a clear objective of developing Generic skills, to enhance the capabilities in the fields of searching, assimilating and using information on job. Developing self and managing given tasks, finally to present himself as a technomener.

It is an effort to develop student that enables him to be successful in finding a practical and reaction solution to any problem he comes across. It covers more or less all aspects of life skills. The development of subject is progressively ascending parallel to development of study in polytechnic.

Theory Contents :**1. INFORMATION SOURCES****(Periods-02 hrs. Mks-10)**

Introduction, Types of Information Sources, Print media, Documentary sources, Non-Documentary sources, Non-print media, Electronic media, Conclusion.

2. INFORMATION CENTRE**(Periods-02 hrs. Mks-10)**

Introduction, Classification, Services, Conclusion.

3. PROCEDURE FOR INFORMATION SEARCH**(Periods-04 hrs. Mks-20)**

Introduction, Need of approach, Types of approach, Steps for Information search, Preparation of biographic card, Preparation of index card, Conclusion .

4. LEARNING**(Periods-04hrs. Mks-20)**

Introduction, Concept of learning, Basic model of learning, Principles of learning, Conclusion.

5. MEMORY & COGNITION**(Periods- 04hrs. Mks-20)**

Introduction, Basic concepts, Dual store model of memory, Sensory register characteristics, Attention: Factors affecting attention, Figure ground rule, Working memory (WM) : Characteristics of WM, Control processes in WM, Long term memory (LTM) : Characteristics of LTM, Control processes in LTM, Organization of Knowledge, Conclusion.

6. META COGNITION & STUDY STRATEGIES**(Periods- 04hrs. Mks-20)**

Introduction, Meta cognitive knowledge & skills, Self regulated learning, Effective learning & study strategies (Covert) : Selective attention, Maintain Rehearsal, Meaningful learning reflection, Internal organization, Elaborative ----** Visualization, Effective overt learning strategies : Effective reading, Effective listening, Notes taking, Conclusion.

7. LEARNING ON JOB**(Periods-04 hrs. Mks-20)**

Introduction, Definition, Identifying general and specific skills, Workplace as a system, Types of system, Conclusion.

8. LEARNING PRACTICAL SKILLS**(Periods-02 hrs. Mks-10)**

Introduction, Process of performing the job, Domains of learning job, Conclusion .

9. TESTING OF ACQUIRED SKILLS**(Periods-02 hrs. Mks-10)**

Introduction, Objectives, Process for skill analysis, Conclusion .

Unit - II COMMUNICATION SKILLS**10. BASIC OF COMMUNICATION****(Periods-02 hrs. Mks-10)**

Definition, Concept of communication, Communication cycle, Communication, Conclusion .

11. TECHNIQUES OF COMMUNICATIONS**(Periods-02 hrs. Mks-14)**

Introduction, Oral communication, Written communication, Body language, Conclusion.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	INFORMATION SOURCES	02	10	07	E
2.	INFORMATION CENTRE	02	10	07	E
3.	PROCEDURE FOR INFORMATION SEARCH	04	20	11	M
4.	LEARNING	04	20	11	M
5.	MEMORY & COGNITION	04	20	12	M
6.	META COGNITION & STUDY STRATEGIES	04	20	12	D
7.	LEARNING ON JOB	04	20	12	E
8.	LEARNING PRACTICAL SKILLS	02	10	07	E
9.	TESTING OF ACQUIRED SKILLS	02	10	07	D
10.	BASIC OF COMMUNICATION	02	10	07	E
11.	TECHNIQUES OF COMMUNICATIONS	02	14	07	E
Total		32	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. INFORMATION SOURCES
2. INFORMATION CENTRE
3. PROCEDURE FOR INFORMATION SEARCH
4. LEARNING
5. MEMORY & COGNITION

Section II

6. META COGNITION & STUDY STRATEGIES
7. LEARNING ON JOB
8. LEARNING PRACTICAL SKILLS
9. TESTING OF ACQUIRED SKILLS
10. BASIC OF COMMUNICATION
11. TECHNIQUES OF COMMUNICATIONS

Total Theory Hours : 32 Hrs.

Reference Books :

Learning to learn by Kenneth A. Kiewra
Independent study techniques by P.D. Kulkarni & B. B. Sharma

Additional References :

101 ways to better communication by Elizabeth Hienny.

Shri Vile Parle Kelavani Mandal's

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC

IInd Semester (Diploma in Computer Engineering)

w. e. f. Batch admitted in July, 2008

Sr. No	Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
		Lecture	Pract. or	Drg.		Tutorial	Sessional	Work	Paper	Term work	Pract. Exam		
1.	Electrical Engineering	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-6	326	
2.	Mathematics – II (Ver. 2.0)	3	--	1	1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-48	404	
3.	Electronic Workshop	3	2	--	1, 3Hrs, 100Mks	20	80	50	50	200	CSE-8	325	
4.	Electronic Devices & Circuit – I	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-9	326	
5.	Communication Skill	2	--	1	1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-36	303	
6.	Engineering Graphics	2	4	--	1, 3 Hrs., 100 Mks.	20	80	25	25 oral	150	CSE-41	246	
Total		16	10	4	6 Paper	--	--	--	--	950			
Total Periods : 30						Total Marks : 950							

1 Period = 1 Hour

Note:

- i) Sessional is to be accessed by Internal Examiner
- ii) Theory & practical is to be accessed by Internal Examiner & External Examiner combined.
- iii) Term work is to be accessed by Internal Examiner & External Examiner as per the ratio.
- iv) There will be three periodical tests of 25 Marks for each subject. Best of two periodical test marks will be considered as a sessional of 20 % weightage.
- v) Final term end examination will be of 100 marks having weightage of 80%

ELECTRICAL ENGINEERING (CSE-6)

(One Paper-03 Hrs, Marks-100, Lecture 3/ Week , Practical 2, Tutorial –1/W,
TW-50 Marks, Practical – 50 Marks , Credit-6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract.	Exam		
Electrical Engineering	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-6	326	

Rationale:

This subject will help the students to comprehend the fundamentals of various facts, laws of Electrical Engineering. The subject will also familiarize the students with various measuring instruments and electrical machines.

Objective:

The students will be able to

1. Understand the basic facts of Electrical Engineering
2. Understand the principles of operation of different electrical machine.
3. Understand the effect of varying loads on operation of electrical machine.
4. Develop ability of selecting proper ranges of meters and electrical machines.

1. Fundamentals**(Periods-3 hrs, Mks-10)**

- 1.1. Effects of Electric current
 - 1.1.1. magnetic effect – magnetic induction, electromagnets
 - 1.1.2. Chemical effect – Electrolysis, process of electroplating
- 1.2. Conductors, insulators, semiconductors, dialect various materials, properties & suitability of the purpose.
- 1.3. Electric circuits – series & parallel combination of resistances, current & volts distribution.
- 1.4. Work, Power, Energy & their SI units.

2. Electric Supply system**(Periods-4 hrs, Mks-12)**

Introduction supply system : AC, Single – phase, Three-phase & DC.

3. Measuring Instrumentation**(Periods-3 hrs, Mks-10)**

- 1.1. Salient constructional features & operation principles of PMMC & MI type voltmeters ammeters.
- 1.2. Application & Method of connection in electric circuit of following instrument ammeter, phase Energy meter.

4. D.C. Circuits**(Periods-5 hrs, Mks-20)**

Resistance temperature co-efficient, kirchoff's Law & its application for D.C. Networks, study Wheatstone Bridge, D.C. potentiometers. (Numericals)

5. Magnetic Circuits**(Periods-6 hrs, Mks-20)**

Concept of magnetic flux, flux density, intensity mmf, permeability, series magnetic circuit numericals based on it, comparison of electrical magnetic circuit, B.H. curve and hysteresis loop, hysteresis loss.

6. Electromagnetic Induction**(Periods-3 hrs, Mks-12)**

Faraday's law of self and mutual inductance, stored in magnetic field.

7. Electrostatics**(Periods-6 hrs, Mks-20)**

Electric charge flux, flux-density, Intensity, mmf permittivity, capacitance of parallel pla capacitor, capacitors in parallel & series, Rise decay of current in R.C. Series (formula not to be derived)

8. A.C. Fundamentals**(Periods-6 hrs, Mks-20)**

A.C. Cycle, Frequency, period, phase, maximum circuits average & values to current/voltage current voltage & power relations in put resistive, inductive & capacitance circuits. (No mathematical treatment required) concept of reactance, impedance, power factor, simple A.C. Circuits & numerical based on it. Three phase circuits – current voltage & power relation is balanced 3 phase star delta connected systems.

9. Single phase Transformer

(Periods-6 hrs, Mks-20)

Function and principle of operation concept of KVA rating definition of regulation & efficiency, determination of EMF equation, O.C. & S.C. tests & direct loading test on transformer efficiency & regulations.

10. D.C. Machines

(Periods-6 hrs, Mks-20)

General features of D.C. Machines/C.EMF equation of D.C. Generation, Types, Characteristics, & application of D.C. Motors, necessity of starters, Working principles of 1-phase induction motors, stepper motors.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D	
1.	Fundamentals	03	10	03	D	
2.	Electric Supply system	04	12	05	E	
3.	Measuring Instrumentation	03	10	03	D	
4.	D.C. Circuits	05	20	14	M	
5.	Magnetic Circuits	06	20	14	M	
6.	Electromagnetic Induction	03	12	05	D	
7.	Electrostatics	06	20	14	E	
8.	A.C. Fundamentals	06	20	14	E	
9.	Single phase Transformer	06	20	14	M	
10.	D.C. Machines	06	20	14	M	
		Total	48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Fundamentals
2. Electric Supply system
3. Measuring Instrumentation
4. D.C. Circuits
5. Magnetic Circuits
6. Electromagnetic Induction

Section II

7. Electrostatics
8. A.C. Fundamentals
9. Single phase Transformer
10. D.C. Machines

Total Theory Hours.= 48 hrs.

Total Practical Hours = 32 hrs.

List of Practicals

- (a) Measurement of low resistance by Wheatstone's bridge
- (b) Measurement of unknown E.M.F. by DC Potentiometer.
- (c) To Study effect of Temp. in resistance
- (d) Verification of KCL & KVL
- (e) To plot BH curve of magnetic material
- (f) To plot hysteresis loop
- (g) To plot charging curve of a capacitor
- (h) To determine R & L of a choke coil & To draw vector diagram of RLC series circuit.
- (i) Verification of relation between line & phase values of voltage & current in a balanced star circuit
- (j) Verification of relation between line & phase values of voltage & current in a balanced delta circuit
- (k) To determine transformation ratio of single phase transformer
- (l) To determine efficiency & regulation of a single phase transformer by direct.
- (m) To determine efficiency & regulation of a single phase transformer by O.C. Test & S.C. test.
- (n) Load Characteristics of D.C. shunt generator
- (o) Load Characteristics of D.C. series generator.
- (p) Speed control of DC shunt motor by
 - (i) Flux control method.
 - (ii) Armature voltage control method.
- (q) Measurement of slip of three phase induction motor stroboscope method
- (r) Study of D.C. shunt motor starter.
- (s) Study of D.C. machine.

Reference Books :

Electrical Technology Volume 1 by B. L. Thearaja.
Electrical Technology Volume 2 by B. L. Thearaja.

Additional References :Electrical Technology by Edward Hughes.

MATHEMATICS – II (Ver. 2.0)(CSE-48)

(Theory Paper –100 Marks, Lecture 3/week, Tutorial 1/week, Credit: 4)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. Or	Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract. Exam		
Mathematics – II	3	--		1	1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-48	404

Rationale :

Mathematics is the backbone of all technical courses. Understanding of Engineering concepts requires logical approach and thinking. Basic principles of mathematics are needed to analyse Engineering problems. More emphasis is to be given in selecting problems from Engineering field.

Objectives: The students will be able to

1. Create an aptitude for mathematics for higher studies and creative work in Sciences and Technology
2. Focussing attention of problem-solving in liberal sense. This aspect should take care or
 - (a) Intelligent combination of techniques
 - (b) Mathematization or mathematical modelling of problems involved in various branches of knowledge.
3. Nurturing the higher order mental processes of logical reasoning with rigor and precision.
4. Developing conceptual clarity, habit of abstracting a given concrete situation and to put it in precise language the ingredients of the problems on hand.

Theory Contents :**1. Coordinate Geometry :****(Periods-20 hrs, Mks-55)**

Equations of straight lines (various forms), general equation of a straight line, perpendicular distance of a point from a straight line, angle between two straight lines, conditions for two straight lines to be parallel and perpendicular

Circle : Equation of circles leading to the general form, centre and radius from the general form. Equation of chord, tangent and normal to any circle.

2. Differential Calculus :**(Periods-15 hrs, Mks-55)**

(a) Functions : Value of a function, types of functions.

(b) Limits : Definition of the limit of a function. Meaning of $x \rightarrow a$, $x \rightarrow \infty$, Theorem on limits. (No. proof)

Examples of varied types

3. Derivatives : Definition**(Periods-13 hrs, Mks-54)**

(a) Differentiation of a sum, product and quotient of algebraic and trigonometric functions. Implicit, parametric and inverse functions. Differentiation of exponential, logarithmic, inverse trigonometrically and function of a functions. Derivative of higher order Leibnitz rule:

(b) Applications: Geometric interpretation of derivative Equations of tangent and normal to a given curve, rates, related rates, curvature, maxima and minima of functions of one variable

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Coordinate Geometry :	20	55	35	M
2.	Differential Calculus :	15	55	35	M
3.	Derivatives : Definition	13	54	30	M
	Total	48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Coordinate Geometry :
2. Differential Calculus
- (a) Functions : Value of a function, types of functions

Section II

2. Differential Calculus
- (b) Limits : Definition of the limit of a function. Meaning of $x \rightarrow a$, $x \rightarrow \infty$, Theorem on limits. Examples of varied types
3. Derivatives : Definition

Total Theory Hours = 48 hrs.

Reference Books

Mathematics for polytechnic Students by S.P. Deshpande
Engineering Mathematics-I by B.M. Patel/J.M. Rawal

Additional References:

Engineering Mathematics by B.V. Mane
Engineering Mathematics-I by G.V. Kumbhojkar.

ELECTRONIC WORKSHOP (CSE-8)

(Paper – 3 Hrs, Marks:100, Lect.–3 /week, Practical – 2/W, T.W-50Marks, Pr. – 50 Marks,Credit:5)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial			Sessional	Work	Paper	Term work	Pract.	Exam		
Electronic Workshop	3	2	--		1, 3Hrs, 100Mks	20	80	50	50	200	CSE-8	325	

Rationale:

This subject is intended to develop skills of soldering, fabrication of small chassis, transformer winding, preparation of P.C.B. from artwork and assembly of unit. These skills are required to develop prototype designs, maintenance and troubleshooting in the industry.

- Objectives :** The students will be able to :-
1. Identify the different components & classify them.
 2. Awareness of soldering.
 3. Fabrication of PCB.

Theory Contents :

- 1. Solder and soldering techniques:** (Periods-13 hrs, Mks-30)
 1. Principles of solder connections
 2. Solder alloys
 3. Solder fluxes
 4. Forming techniques
 5. Soldering techniques
 6. Solder mask
 7. Reflow soldering techniques
 8. Resting & Quality control
- 2. Inter Connection Techniques** (Periods-8 hrs, Mks-30)
 1. BNC connection
 2. D-type connection
 3. FRC connector
 4. Cable forming – Harnessing
 5. Wire wrapping tool and wire wrapping
 6. Crimping
- 3. Wound components** (Periods-06 hrs, Mks-32)
 1. Different types of core and their characteristics
 2. Testing coils and transformers
 3. Manual and automatic winding machines
- 4. PCB fabrication** (Periods-13 hrs, Mks-40)

Film master production

 1. Properties of copper clad laminates
 2. Board clearing before pattern transfer
 3. Photo printing
 4. Screen printing
 5. Plating
 6. Etching
 7. Testing
 8. Introduction to multiplayer PCB

5. Surface mount devices and technology**(Periods-08 hrs, Mks-32)**

1. Introduction to surface mount technology
2. Advantage of SMT
3. Type of SMT assemblies
4. SMD's types
5. Costing of SMT equipments and assembly
6. Inspection methods and rework stations in SMT.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Solder and soldering techniques	13	30	18	E
2.	Inter Connection Techniques	08	30	17	E
3.	Wound components	06	32	20	M
4.	PCB fabrication	13	40	25	M
5.	Surface mount devices and technology	08	32	20	M
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Solder and soldering techniques
2. Inter Connection Techniques
3. Wound components
Different types of core and their characteristics
Testing coils and transformers

Section II

3. Wound components
Manual and automatic winding machines
4. PCB fabrication
5. Surface mount devices technology

Total Theory Hours = 48hrs,

Total Practical Hours = 32hrs

Term Work: Following jobs to be carried out:

1. Forming and soldering
2. Desoldering
3. NC or D type connecting wiring
4. Cable forming and Harnessing
5. Wire wrapping and crimping
6. Coil or transformer winding
7. One exercise of PCB fabrication for single side or double side PTH starting from phototool generation

Reference Books:

1. Printed Circuit Boards – Design & Technology by Walter C Bosshart – TMH Publication.
2. Production Technology of Electronic equipments Vol.-I and Vol.-II – NEC Bangalore

Additional References :

PCB Design and fabrication – NEC Bangalore.

ELECTRONIC DEVICES AND CIRCUITS – I (CSE-9)

(One Paper –3 Hrs., Theory=100 Marks, T.W.= 50 Marks, Pr.= 50 Marks,

Lecture 3/Week , Practical 2/Week , Tutorial – 1/W, Credit : 6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. Or	Drg.	Tutorial		Sessional	Work	Paper	Term	work	Pract.		
Electronic Devices & Circuit – I	3	2		1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-9	326	

Rationale:

The students of C.S.E. come across many electronics devices in day to day life. This subject provides essential competency in understanding the electronics circuits. This introduces various electronic devices & their applications.

Objectives:

- 1) Identify the different Components & classify them.
- 2) Identity different Devices, char, working.
- 3) Appreciate use of different Transistors, amplifier, oscillators.
- 4) Design simple circuits using above comp.

Theory Contents:**1. Semiconductors****(Periods-3 hrs, Mks-15)**

Intrinsic and Extrinsic semiconductors, electrons and holes in an intrinsic semiconductor, donor and acceptor impurities, diffusion, carrier life time, effect of temperature on intrinsic and extrinsic semiconductors.

2. Semiconductor diode characteristics**(Periods-5 hrs, Mks-15)**

Open circuited p.n.junction as a diode, current components in a P.N. diode, current components in a P.N. diode, V.I. characteristics and its temperature dependence, diode resistance, load line concept, piecewise linear diode model, transition capacitance, diffusion capacitance, diode switching time, junction diode data sheet.

3. Breakdown diodes**(Periods-3 hrs, Mks-12)**

Zener diode, Schottkey diode, V.I. characteristics, zener diode voltage regulator, zener and schottkey diode data sheet.

4. Rectifiers**(Periods-7 hrs, Mks-20)**

Half wave rectifier, Full wave rectifier, ripple factor, T.U.F. Ratio of rectification

Filters:

L.filter, C.filter, L.C.; C.L.C.; Multiple L.C. and C.R.C. filter, their ripple factor with assumptions and voltage regulation. Problem based on above topic.

5. Clipping and clamping circuits**(Periods-3hrs, Mks-11)****6.****7. BJT****(Periods-7 hrs, Mks-15)**

The junction transistor, transistor current components, transistor as an amplifier, transistor configurations and characteristics, Graphical analysis of th C.E. configuration, Analysis of cut-off and saturation regions, Typical transistor junction voltages, transistor switching times and ratings, transistor as a switching times and ratings, transistor as a switch.

- 8. Transistor biasing and thermal stabilisations** (Periods-3 hrs, Mks-16)
The operating point, effect of temperature on operating point, bias stability, different biasing circuits and their thermal stability, bias compensation techniques, problems based on above topics.
- 9. Transistor at low frequencies** (Periods-3 hrs, Mks-24)
Black box theory, h-parameters, small signal low frequency transistor hybrid model, analysis of C.E. configuration using accurate hybrid model, approximate h-equivalent circuit for the three transistor configurations and their comparison, analysis of common emitter amplifier with an emitter resistance, analysis of direct coupled and R.C. coupled multistage amplifier using h-parameter. Examples based on above topics.
- 10. Miller's theorem, Darlington amplifier, Boot strapping** (Periods-2 hrs, Mks-10)
- 11. Frequency response of BJT amplifiers** (Periods-7 hrs, Mks-16)
Single stage C.E. amplifier and its frequency response, effect of coupling and emitter bypass capacitors on low frequency response, step response of an amplifier, Hybrid transistor model at high frequencies, C.E. short circuit current gain, gain band width product. Examples based on above topics.
- 12. Multistage amplifiers** (Periods-5 hrs, Mks-10)
Decibel, types of coupling, direct coupled, R.C. coupled and transformer coupled and transformer coupled amplifiers and their frequency response, effect of cascading on B.W. and gain (Av), Classification of amplifiers.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	#
M / E / D					
1. M	Semiconductors	03	15	07%	
2. M	Semiconductor diode characteristics	05	15	09%	
3. D	Breakdown diodes	03	12	07%	
4. E	Rectifiers	07	20	13%	
5. M	Clipping and clamping circuits	03	11	07%	
6. M	BJT	07	15	13%	
7. E	Transistor biasing and thermal stabilisations	03	16	09%	
8. E	Transistor at low frequencies	03	24	10%	
9. E	Miller's theorem, Darlington amplifier, Boot strapping	02	10	6%	
10. E	Frequency response of BJT amplifiers	07	16	12%	
11. D	Multistage amplifiers	05	10	07%	
		48	164	100%	Total #

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Semiconductors
2. Semiconductor diode characteristics
3. Breakdown diodes

4. Rectifiers
5. Clipping and clamping
6. BJT

Section II

7. Transistor biasing and thermal stabilisations
8. Transistor at low frequencies
9. Miller's theorem, Darlington amplifier, Boot strapping
10. Frequency response of BJT amplifiers
11. Multistage amplifiers

Total Theory Hrs.= 48 hrs

Total Practical Hrs. = 32 hrs.

List of Practicals

1. Study of dual channel CRO.
2. Diode (Ge, Si) characteristics and effect of temperature
3. Zener diode characteristics and effect of temperature.
4. Study of H.W.R./F.W.R. with/without filter.
5. Study of zener voltage regulator.
6. I/P and O/P characteristics of C.B. configuration
7. I/P and O/P characteristics if C.E. configurations
8. BJT operating point and load lines, effect of temperature.
9. To study different biasing circuits and compare their performance w.r.t. temperature variations.
10. To study the frequency response of single stage C.E. amplifier.
11. To study the frequency response of single stage C.B. Amplifier
12. Miller's theorem
13. To study the frequency response of two stage R.C. coupled amplifier.
14. To study step response of C.E. Amplifier
15. Measurement of C.E. h-parameters.
16. Effect of CE and CC on low frequency response of an amplifier
17. Diode clipping circuits.
18. Diode clamping circuits.

Reference Books

1. Integrated electronics by Millman and Halkias
2. Electronic devices and circuits by Millman and Halkias
3. Microelectronics by Jacob Millman
4. Electronics devices and circuits theory by Robert Boylestad.

Additional References:

1. Electronic devices and circuits by Allen Mottershed
2. Basic electronics and linear circuits by Bhargava
3. Electronics-I by R. G. Karandikar.
4. Basic Electronics by V.K.Mehta

Communication Skill (CSE-36)

(One Paper-03 Hrs, Theory=100 Marks, Lecture 2 / Week , Credit-3)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial		Sessional Work	Paper	Term work	Pract. Exam	Total		
Communication Skill	2	--	1	1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-36	303

Rationale:

To develop the basics of communication, composition.

Objective:

1. Students will understand the process of communication.
2. Students will learn the basic and applied language skill useful for the study of technical subjects as well as communication with a particular emphasis on writing & oral presentation skill needed for professional career as middle level manager.

Theory Contents :**1. Aspects of Communication, nature of communication****(Periods-3 hrs, Mks-16)**

- a) Definition, need and importance of communication skills
- b) Basic types of communication

Components of the communication system.

Sender – receiver variables.

Modes of communication – human interactive periodical representations, written symbols & sound.

Media/channels of communication – types of Media – Print – non print, graphic, electronic.

The communication Process – selecting modes and Media, uncoding, decoding, transmitting message, feedback.

Barriers of Communication.

Principles of communication and conditions for effective communication

2. Language Grammar**(Periods-4hrs, Mks-21)**

Basic grammar, Morphemes, word formation process – conversion and compounding transformation of words.

Determines and modifiers

Units of Expression and units of meaning graphemes and phonemes, morphemes, words, phrases, clauses, sentences.

Common errors to be taught along with parts of speech

3. Verbal Communication**(Periods-16 hrs, Mks-80)**

Principles of written communication

The process of formal written communication: Designing and arranging ideas and preparing outlines;

Developing a message : writing, evaluating, revising and editing.

The qualities of good writing: the 'YOU' attitude, clarity, conciseness, preciseness, style, flow, accuracy, and readability.

Principles of message organization: topic, transitional and concluding sentences; Levels of meaning: conceptual, prepositional, contextual and pragmatic meaning; Independent function sentences.

Features of technical writing: Problem-solving situations, collaboration, technical and sub-technical vocabulary, use of visuals, use of formats.

Mechanics of writing: spacing and indentation; use of equations, numerals, references and access devices; spelling and punctuation;

Writing Skill

The following forms of communication

Business correspondence – letters of enquiry, reply to enquiry, order, complaint, adjustment and application

Reports – investigation, progress, appraisal, laboratory, feasibility and trouble

Principles of oral Communication formal oral communication, designing oral message, Analysing audience, selecting method presentation, extemporaneous speech, presentation of formal speech.

Oral skills.

Phonic system of English Language, Speech sounds, vowels, consonants syllable, diphthongs, and word accent;

Improving intelligibility of spoken language

4. Non-verbal Communication

(Periods-4 hrs, Mks-21)

Principles of No-Verbal Communication

Non-verbal skills – Illustration texts with figures and diagrams, Body language

5. Professional Communication Skills

(Periods-5 hrs, Mks-26)

Communication in Organizations - Business and industry, Vertical horizontal communication, formal and informal routes of communication

Using integrated skill of communication, Integrating verbal skills, Integrating verbal and non-verbal skills, Integrated Technique of Communication

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D	
1.	Aspects of Communication, nature of communication	03	16	10	D	
2.	Language Grammar	04	21	15	E	
3.	Verbal Communication	16	80	35	M	
4.	Non-verbal Communication	04	21	15	E	
5.	Professional Communication Skills	05	26	25	M	
		Total	32	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- Aspects of Communication, nature of communication
- Language Grammar
- Verbal Communication (Half Portion)

Section II

- Verbal Communication (Remaining Half Portion)
- Non-verbal Communication
- Professional Communication Skills

Total Contact Hrs. = 32

Reference Books :

- Human Communication, Burqoon, Michael : London Sage Publications 1994

2. A Communicative Grammar of English, Geoffrey Leech and Jan Svartvik : Essex, Longman Group Ltd., 1975, rpt., E.L.B.S., 2nd edition, 1994.
3. University grammar of English, Randolph Quirk and Sidney Greenbaum : Essex, Longman Group Ltd. 1973., rpt., E.L.B.S., 1993
4. Collins Cobuild English Grammar Ed. John Sinclair, London, William Collins Sons & Co. Ltd., 1990; rpt., Indus, 1991.
5. Technical Writing and Professional Communications, Thomas Huckin and Leslie Olson : New York; McGraw-Hill, 1991
6. Business English and Communication, Lyn Clark and Zimmer : New York; McGraw-Hill, 1988
7. Excellence in Business Communication John Thill and Courtland Boves : New York; McGraw-Hill, 1991

Additional References:

1. Spoken English for India, R.K. Bansal and J.B. Harrison: New Delhi, Orient Longman, 1972
2. Better English Pronunciation, J.D. O'Connor : London; Cambridge University Press, 1967; rpt. E.L.B.S., 1970.
3. Developing Communication skills, Krishna Mohan and Meera Banerji : New Delhi; Macmillan Data Book : Longman Dictionary of Contemporary English : Essex, Longman Group Ltd., 1989
rpt., Orient Longman, 1994.

Codes of Practice : IS : 790 – 1887 – Guidelines for Preliminary pages of a Book

ENGINEERING GRAPHICS (CSE-41)

(One Paper – 3 hrs, Theory: - 80 Marks, T.W. = 25 Marks, Oral =25Mks

Lecture: 2/Week, Pract. : 4/Week, Credit: 6)

Teaching and Examination Scheme:

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial		Sessional Work	Paper	Term work	Pract. Exam	Total		
Basics of Engineering Drawing	2	4	--	1, 3 Hrs., 100 Mks.	20	80	25	25 oral	150	CSE-44	246

RATIONALE:

Engineering Graphics is the language of engineers. The concepts of Engineering Graphics are used to develop, express the ideas, and conveying the instructions which are used to carry out jobs in the field Engineering. The course illustrates the techniques of graphics in actual practice. This preliminary course aims at building a foundation for the further course in drawing and other allied subjects.

OBJECTIVES:

The student should be able to: -

- 1) Draw different engineering curves and know their applications.
- 2) Draw orthographic projections of different objects.
- 3) Visualize three dimensional objects and draw Isometric Projections.
- 4) Use the techniques and able to interpret the drawing in Engineering field.
- 5) Use computer aided drafting packages.

Theory Contents:**1. Drawing Instruments and their uses****(Periods 05, Marks 28)**

Letters and numbers (single stroke vertical), Convention of lines and their applications, Scale (reduced, enlarged & full size) plain scale and diagonal scale, Sheet layout, Introduction to CAD (Basic draw and modify Command), Geometrical constructions.

2. Engineering curves & Loci of Points.**(Periods 09, Marks 45)**

To draw an ellipse by: Directrix and focus method, Arcs of circle method, Concentric circles method, To draw a parabola by: Directrix and focus method, Rectangle method, To draw a hyperbola by: Directrix and focus method, passing through given points with reference to asymptotes, Transverse Axis and focus method, To draw involutes of circle & polygon (up to hexagon), To draw a cycloid, epicycloids, hypocycloid, To draw Helix & spiral, Loci of Points:

Loci of points with given conditions and examples related to simple mechanisms.

3. Orthographic projections**(Periods 06, Marks 30)**

Introduction to Orthographic projections, Conversion of pictorial view into Orthographic Views (First Angle Projection Method Only), Dimensioning technique as per SP-46

4. Isometric projection**(Periods 05, Marks 26)**

Isometric scale, Conversion of orthographic views into isometric View/projection(Simple objects) Projection of Straight Lines and Planes (First Angle Projection Method only).

5. Planes**(Periods 07, Marks 35)** Lines

inclined to one reference plane only and limited to both ends in one quadrant, Projection of simple planes of circular,

square, rectangular, rhombus, pentagonal, and hexagonal, inclined to one reference plane and perpendicular to the other.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Drawing Instruments and their uses	05	28	15	E
2.	Engineering curves & Loci of Points	09	45	30	M
3.	Orthographic projections	06	30	20	E
4.	Isometric projection	05	26	15	D
5.	Planes	07	35	20	M
Total		32	164	100%	#
(# M=Most Essential,		E=Essential,	D=Desirable)		

Section I

1. Drawing Instruments and their uses
2. Engineering curves & Loci of Points.

Section II

3. Orthographic projections
4. Isometric projection
5. Planes

Total Theory Hours =: 32 hrs.

Total Practical Hours = 64 hrs

List of Practicals

1. Introduction to graphics

Draw Rectangle, Circle, Pentagon, Hexagon, one figure containing circle tangent, arc and dimensioning using CAD with given dimensions

2. Engineering curves & Loci of points

- i) Three different curves are to be draw using any one method.
- ii) Draw locus of point on any one mechanism

3. Orthographic projections

- i. Two objects by first angle projection method
- ii. Redraw the same sheet using CAD

4. Isometric projection

- i. Two objects one by true scale and another by isometric scale (simple objects).
- ii. Redraw the same sheet using CAD

5. Projections of line and planes.

Two problems on Projection of lines and two problems on Projection of Planes.

6. To draw layout of visited Industry, College using CAD

7. To draw orthographic projection of given machine element using CAD

Reference Books

1. N. D. Bhatt- Engineering Drawing- Charotar Publishing House
2. K. Venugopal- Engineering Drawing and Graphics+ AutoCAD- New Age Publication
3. Auto Cad User Guide

Additional References:

P.J. Shah.- Engineering Drawing

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC**IIIrd Semester (Diploma in Computer Engineering)**

Sr. No	Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
		Lecture	Drg.	Tutorial		Work	Paper	Term work	Pract.	Exam	Total		
1.	Electronic Devices & Circuit – II	4	2	-	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-12	426	
2.	Mathematics –III (Ver 2.0)	3	--	1	1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-49	404	
3.	Computer Network	3	2	-	1, 3 Hrs., 100 Mks	20	80	50	50	200	CSE-38	325	
4.	Power Electronics	4	2	1	1, 3 Hrs., 100 Mks	20	80	25	50	175	CSE-15	427	
5.	Elements of computer Engineering	4	2	-	1, 3 Hrs., 100 Mks.	20	80	25	50	175	CSE-16	426	
Total		18	8	2	5 Paper	--	--	--	--	850			
Total Periods: 28						Total Marks : 850							

1 Period = 1 Hour

Note:

- i) Sessional is to be accessed by Internal Examiner
- ii) Theory & practical is to be accessed by Internal Examiner & External Examiner combined.
- iii) Term work is to be accessed by Internal Examiner & External Examiner as per the ratio.
- iv) There will be three periodical test of 25 Marks for each subject. Best of two periodical test marks will be considered as a sessional of 20 %weightage.
- v) Final term end examination will be of 100 marks having weightage of 80%

ELECTRONIC DEVICES AND CIRCUITS – II (CSE-12)

(One Paper –3 Hrs., Theory 100 Mks, Lect. –4/Week, Pr.– 2/Week, Credit = 6,

T.W= 50Marks, Pr.=50 Marks.)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.		Tutorial	Sessional	Work	Paper	Term work		
Electronic Devices & Circuit – II	4	2	-	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-12	426

Rationale :

This subject deals with some more sophisticated electronic devices & complex types of circuits & their functions. This devices & ckts are used as functional blocks in their complete system like analog & digital control & processing system.

Objectives:

To develop the skill :

1. Identifying the diff. Components & classify them.
2. Identity diff. Devices, char., working.
3. Appreciate use of diff. Transistors, amplifier, and oscillators.
4. Design simple circuits using above comp.

Theory Contents:**1. Power Amplifier****(Periods-13 hrs, Mks-20)**

Single ended and double ended amplifiers, class A Transformer coupled amplifier, conversion efficiency, harmonic distortion o/p power, push pull amplifiers – class A, B, AB operation, complementary symmetry push pull amplifier, heat sink, problems based on above topics.

2. Voltage Tuned Amplifiers**(Periods-04 hrs, Mks-10)**

Need, single tuned and double tuned voltage amplifiers, freq. Response, B.W., Av and selectivity

3. Wide Band Amplifiers**(Periods-04 hrs, Mks-06)**

High and low freq. Compensation, rise time compensation

4. Multivibrators**(Periods-07 hrs, Mks-24)**

Astable, monostable, bistable, stable states, triggering methods, Schmitt trigger. Applications of Schmitt Trigger, Monostable, astable and Bistable MVs.

5. UJT**(Periods-06 hrs, Mks-20)**

Construction, equivalent ckt., V.I. chars, applications of UJT, UJT relaxation oscillator, Frequency stability, UJT data sheet.

6. Thyristors.**(Periods-06 hrs, Mks-20)**

Construction, char. And applications of SCR, DIAC, TRIAC, Two tr. Analogy of SCR, rate effect, ratings of above devices.

7. FET**(Periods-14 hrs, Mks-48)**

Construction and char. of JFET, effect of temp, JFET parameters, configurations, small signal DET model, FET biasing, common source and common drain amplifiers, FET applications as V.V.R. in AGC, constant current source etc.

MOSFET:

Construction and char. of D-MOSFET and E-MOSFET, VMOS, power MOSFET, data sheet, BJT_FET, combination n/w's, IGBT, problems based on above topics.

8. Photoelectric Devices**(Periods-10 hrs, Mks-16)**

Photoelectric effects, construction and char. of Photodiode, Phototransistor, Phototube, Multiplier Phototube, LED, LCD, Optocoupler, Photovoltaic cell and their applications, Burglar alarm.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D	
1.	Power Amplifier	13	20	15	E	
2.	Voltage Tuned Amplifiers	04	10	05	D	
3.	Wide Band Amplifiers	04	06	03	D	
4.	Multivibrators	07	24	16	E	
5.	UJT	06	20	15	M	
6.	Thyristors.	06	20	15	M	
7.	FET	14	48	24	M	
8.	Photoelectric Devices	10	16	07	E	
		Total	64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Power Amplifier
2. Voltage Tuned Amplifiers
3. Wide Band Amplifiers
4. Multivibrators
5. UJT

Section II

6. Thyristors.
7. FET
8. Photoelectric Devices

Total Theory Hrs = 64 hrs.
Total Practical Hrs = 32 hrs.

List of Experiments:

- V.I. characteristics of UJT.
- UJT Relaxation Oscillator.
- SCR characteristics.
- TRIAC characteristics
- JFET Characteristics
- MOSFET characteristics
- FET biasing ckts.
- Frequency response of FET amplifier
- Phototube characteristics
- Burglar alarm.
- High frequency compensation for BJT amplifier
- Freq. Response of single stage X' mer coupled amplifier.
- Study of class AB push pull amplifier.
- Freq. Response of double tuned voltage amplifier.
- Study of Astable M.V.
- VCO (symmetrical A.M.V.)
- Bistable M.V.
- Schmitt Trigger.
- Monostable m.v.

Reference Books:

- Integrated Elex. by Millman and Halkias
- Microelectronics by Millman
- Electronic Devices and Circuits by Robert Boylestad
- Electronic Devices and Circuits by Allen Mottershed
- Pulse, digital and switching waveforms by Millman & Taub

Additional References:

- Thyristors and their Applications by Ramamurthy
- Thyristorised power controllers by Dubey & Doradla
- SCR GEC manual
- Basic Elex. and linear ckts. By Bhargava.

MATHEMATICS – III Ver. 2.0 (CSE-49)

(One Paper-100 Marks – 3Hrs, Lect /week: 3, T/week –1, Credit: 4)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.	
	Lecture	Pract. or	Drg.		Tutorial	Sessional	Work	Paper	Term work	Pract.			Exam
Mathematics –III	3	--		1	1, 3 Hrs., 100 Mks.	20	80	--	--		100	CSE-49	404

Rationale:

This subject is an extension of Mathematics that is taught in the first year diploma. Many of the mathematical and engineering problems becomes easy to be computed by computers. Using these computer oriented numerical methods is found to be useful for solving algebraic equations & problems related to calculus. This approach is to ensure conceptual understanding of numerical methods.

Objectives:

- (1) To create an aptitude for mathematics for higher studies and creative work in Sciences and Technology.
- (2) Focussing attention on problem – Solving in liberal sense. This aspect should take care of.
 - (i) Intelligent combination of techniques.
 - (ii) Mathematization or mathematical modelling of problems involved in various branches of knowledge.
- (3) Nurturing the higher order mental processes of logical reasoning with rigour and precision
- (4) Developing conceptual clarity, habit of abstracting a given concrete situation and to put in precise language the ingredients of the problems on hand.

Theory Contents :

- (1) **Complex numbers :** **(Periods-08 hrs, Mks-30)**
Natural Numbers, Extensions to real numbers, Complex Numbers, Definition, Argand diagram, De Moivre's Theorem, (No proof), Roots of Complex Number, (Book : Higher Engineering Mathematics by B.S. Grewal Recommended. Chapter 4, Art. 4.1, 4.2, 4.5 and 4.6)
- (2) **Vector Algebra :** **(Periods-9 hrs, Mks-34)**
Definition of Scalars and Vectors, addition and subtraction of vectors. Multiplication of vectors by scales, Position Vector of a point, Product to two vectors, scalar dot product, Right handed and left handed systems, Vector or Cross Product (Book: Higher Engineering Mathematics by B.S. Grewal Recommended Chapter 9, Art. 9.1, 9.2, 9.6, 9.7, 9.8 and 9.9)
- (3) **Matrices :** **(Periods-10 hrs, Mks-35)**
Definition of a matrix of order $m \times n$ Types of matrices, addition, subtraction of two matrices, multiplication of matrix by a scalar, multiplication of two matrices singular, non-singular matrices, transpose of a matrix, adjoint of a matrix. Inverse of a matrix using adjoint of the matrix. Solution of simultaneous equation using matrices.
- (4) **Integral Calculus:** **(Periods-21 hrs, Mks-65)**
Rules of Integration, Integration of x , $\sin ax$, $\cos ax$, $\sin^2 x$, $\cos^2 x$, a . Rules of integration by parts (no proofs) simple examples on it.
Integration

Single
 Substitution
 By parts
 Definite Integrals
 Application : Root mean square values

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Complex numbers	08	30	20	D
2.	Vector Algebra	09	34	25	E
3.	Matrices :	10	35	20	E
4.	Integral Calculus:	21	65	35	M
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Complex numbers
2. Vector Algebra
3. Matrices (Half Portion)

Section II

3. Matrices (Remaining Half Portion)
4. Integral Calculus

Total Theory Hours = 48 hrs.

Reference Books :

Applied mathematics (Electronics & computer) By B.M.Patel, J.M.Rawal, Bahatkar, Dahale

Additional References :

Polytechnic Mathematics by P.S.S. Varma and P. P. Gupta, Kedarnath, Ramnath Publications Meerut.

COMPUTER NETWORK (CSE-38)

(T.W.= 50 Marks, Pr.= 50 Marks, Lecture 3/week,Practical 2/week , Credit : 5)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial			Sessional	Work Paper	Pract.	Exam	Total		
Computer Network	3	2	-		1, 3 Hrs, 100 Mks	20	80	50	50	200	CSE-38	325

Rationale:

The day- to-day business transaction in banks, railways reservation, industrial sale, purchase, industrial automation / process and educational environments are all dependent on computers that are connected on networks. This subject will enable to learn the basic concepts of digital communication, computer network and its applications, topologies, communication media, protocols used and OSI reference model

Objective:

The student will be able to:

1. Learn Network Architecture and physical media used to connect computers in network
2. Understand the basic component used in network and different types of networks.
3. Familiarize with OSI model

Theory Contents :**1. Introduction to Network:****(Periods-6 hrs, Mks- 20)**

Network Architecture:

Features & Applications of:-

- 1) Peer to Peer Network
- 2) Client Server Network

Network Topologies

star, bus, Ring, mesh , star bus

2. Digital Communication**(Periods-8 hrs, Mks-30)**

Channels, Demodulator, modulator, analog, digital concept of multiplexer, transmission media, Coaxial, Optical, Twisted pair, UTP.

3. Network Controls Drives**(Periods-8 hrs, Mks-32)**

Hubs, switches, Routers, Bridges, Gateways, Frequency division and time division multiplexing

Switching elements, Circuit Switching, Packet switching, Hybrid switching

4. OSI Reference Model**(Periods-20 hrs, Mks-68)**

Physical Layers, data link Layer, Network Layer, Transport Layer, session Layer, application layer

5. Distributed Operating System**(Periods-4 hrs, Mks- 14)**

Introduction, types of DOS, Comparison with Network Operating System

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Introduction to Network	06	20	12	E
2.	Digital Communication	08	30	18	M
3.	Network Controls Drives	08	32	20	E
4.	OSI Reference Model	20	68	40	M
5.	Distributed Operating System	04	14	10	D
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction to Network
2. Digital Communication
3. Network Controls Drives

Section II

4. OSI Reference Model
5. Distributed Operating System

Total Theory Hrs.= 48 hrs

Total Practical Hrs. = 32 hrs.

List of Practical

1. Demonstrate and explain types of architecture used
2. Demonstrate the topology used with computer network
3. Demonstrate the transmission media and network connectivity devices used to established computer network

Reference Books :

7. Computer Network By – A. S. Tanenbaum
8. MCSE Network by - Becky Kirsinnkas

Additional References:

3. Data and Computer Communications By – William Stallings
4. Data Communications and Distributed Networks, U.D. Black, Prentice-Hall

POWER ELECTRONICS (CSE-15)

(One paper : 3hrs, Theory : 100 Marks, Lec : 4/week, Prac: 2/week, Tutorial – 1/W
T.W. :25 Marks., Prac. Exam :50 Marks, Credit :7)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.	
	Lecture	Pract. or	Drig.		Tutorial	Sessional	Work	Paper	Term work Pract.			Exam
Power Electronics	4	2		1	1, 3 Hrs, 100 Mks	20	80	25	50	175	CSE-15	427

Rationale :

This subject is classified under Technology group & enable the students to learn facts, concepts, principles & procedures of Power electronics circuits so that students can understand the principles & analyse the problems encountered in technology subject.

Objectives:

The students will be able :

1. to know the different types of motors
2. to learn about Switch gears in motors and D.C. Choppers

Theory Contents :**1. D.C. Drive****(Periods-24hrs. Mks-30)**

- D.C. motor characteristics
- Methods of speed control
- Electrical braking
- 4 – quadrant operation of drives.
- Closed loop control scheme for following:
 - Constant torque drive with tachogenerator feedback
 - Constant torque drive with armature voltage feedback
 - Constant power derive
 - Constant torque dual converter drive. Microprocessor drives system.

2. Induction Motor Drives**(Periods-20hrs. Mks-60)**

- Induction motor characteristics
- Methods of speed control
- Closed loop control scheme for following.:
 - V-F Control
 - Constant Torque
 - Constant Power
 - Constant slip control
 - Slip Power Control
 - Sub synchronous, Super synchronous control,
 - Important, features of A.C. drive based on vector control technology
 - Programming features of modern drives
 - Interfacing and standard schematic diagram.

3. Switchgear used in drive circuits**(Periods- 4hrs. Mks-10)**

- Protection of semiconductor components and motors.

4. D.C. Choppers**(Periods-08hrs. Mks-29)**

- Series turn off chopper, Parallel capacitor turn off chopper Joans chopper, Trigg. Circuits for choppers.

5. Resistance welding**(Periods-08hrs. Mks-35)**

- Ignitron

Ignitron ratings,
 Percent duty
 Load calculations
 Ignitron and SCR line contactors
 Follow up circuits
 Timing and heat control
 Synchronous weld control
 Use of sequential timer
 Energy storage system.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	D.C. Drive	24	30	20	E
2.	Induction Motor Drives	20	60	35	M
3.	Switchgear used in drive circuits	04	10	04	D
4.	D.C. Choppers	08	29	18	E
5.	Resistance welding	08	35	23	M
Total		64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. D.C. Drive
2. Induction Motor Drives

Section II

3. Switchgear used in drive circuits
4. D.C. Choppers
5. Resistance welding

Total Theory Hours = 64 hrs.

Total Practical Hours = 32 hrs.

List of Practicals :

Sequential timer using UJT and SCR
 Open loop control of a small DC motor using SCR
 Open loop control of a Universal motor using SCR
 Study of Trigger Circuits of high power SCR.
 Closed loop control of DC motor – I
 Closed loop control of DC motor – II
 V-F Control of Induction Motor
 Joan Chopper

Reference Books:

power Electronics third Edition) by Cyril W. Lander; TMH publications
 Electric Drives concepts & Applications by Vedom subrahmanyam
 Power Engineering Using Thyristors Vol. I Techniques of Thirstier power control Mullard *Additional*

References .:

Electronics in Industry by Chutte & Chutte
 Power Electronics and Control by S.K. Datta
 Modern Industrial Electronics by Schuler & McNamee
 Electrical Machine fundamentals by S. Chapman.

ELEMENTS OF COMPUTER ENGINEERING (CSE-16)

(One paper-3 hrs, Theory - 100 Marks, Lectures - 4/Week, Pract. - 2/Week, T.W.- 25Marks,
Pract. – 50Marks, Credit : 6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg. Tutorial		Sessional	Work	Paper	Term work	Pract.	Exam		
Elements of computer Engineering	4	2	-	1, 3 Hrs., 100 Mks.	20	80	25	50	175	CSE-16	426	

Rationale:

The students after studying this subject will be able to understand the architecture and maintenance of computer system. They will understand hardware development, processors and control design of computer systems. This will develop the basic insight in student about the change in the hardware technology, technology design and thereby develop better knowledge for the maintenance and repairing of the computer system. They will also be able to learn how to plan for establishing a computer setup for a given requirement.

Objectives:

The students after studying this subject will be able to

1. Understand the architecture and maintenance of computer system.
2. Understand hardware developmental, processor and control design of computer systems.
3. Develop the basic insight in student about the change in the hardware technology
4. Develop better knowledge for the maintenance and repairing of the computer system.
5. Learn how to plan for establishing a computer setup for any given requirement.

Theory Contents:**1 Introduction of computers:****(Periods-4 hrs. Mks-19)****1.1**

- The mechanical Era
- Electronic computers
- The later generations

1.2 The VLSI Era :

- Integrated circuits
- Processor Architecture
- System Architecture

2 DESIGN METHODOLOGY:**(Periods-6 hrs. Mks-20)****2.1 System Design**

- System Representation
- Design process
- The Gate level

2.2 The Register level

- Register level components
- Programmable logic Design
- Resister level design

2.3 The processor level

- Processor level components

3 PROCESSOR DESIGN

(Periods-15 hrs. Mks-25)

3.1 Introduction

- Processor Organisation
- Information representation

3.2 Instruction sets

- Instruction format
- Instruction types

3.3 Fixed Point Arithmetic

- Addition, subtraction, Multiplication, Division

3.4 ALU Design

- Basic ALU Organisation
- Floating Point Arithmetic
- Arithmetic processors
- Pipeline processing

4 CONTROL DESIGN

(Periods-10 hrs. Mks-20)

4.1 Introduction

- Instruction sequencing
- Instruction Interpretation

4.2 Hardwired control

- Design Methods
- Multiplier control

4.3 Micro programmed control

- Control Memory
- Multiplier control unit
- CPU control unit

5. MEMORY ORGANIZATION

(Periods-10 hrs. Mks-30)

5.1 Memory Technology

- 5.1.1 Memory Device Characteristics
- 5.1.2 Random – Access Memories
- 5.1.3 Serial – Access Memories

5.2 Virtual memory

- 5.2.1 Memory Hierarchies
- 5.2.2 Main – Memory allocation
- 5.2.3 Segments, pages & files

5.3 High – speed memories

- 5.3.1 Interleaved memories
- 5.3.2 Caches
- 5.3.3 Associative memories

6. SYSTEM ORGANIZATION

(Periods-10 hrs. Mks-30)

6.1 Buses.

6.2 Arbitration

6.3 I/O systems

6.4 DMA & Interrupts

7 PARALLEL PROCESSING

(Periods-9 hrs. Mks-20)

7.1 Basic Concepts.

7.1.1 Introduction

7.1.2 Types of parallel processors

7.1.3 Performance considerations

7.2 Pipeline processors

7.2.1 Introduction

7.2.2 Pipeline structures

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	INTRODUCTION OF COMPUTERS	04	19	06	D
2.	DESIGN METHODOLOGY	06	20	14	E
3.	PROCESSOR DESIGN	15	25	16	E
4.	CONTROL DESIGN	10	20	14	E
5.	MEMORY ORGANIZATION	10	30	18	M
6.	SYSTEM ORGANIZATION	10	30	18	M
7.	PARALLEL PROCESSING	09	20	14	E
Total		64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction of computers
2. DESIGN METHODOLOGY
3. PROCESSOR DESIGN
4. CONTROL DESIGN

Section II

5. MEMORY ORGANIZATION
6. SYSTEM ORGANIZATION
7. PARALLEL PROCESSING

Total Theory Hours = 64 hrs

Total practical Hours = 32 hrs

List of practical:

- 1) Study of Gates.
- 2) Study of Encoder/Decoder(e.g. parity).
- 3) Study of flipflops, RS,D, Master, slave.
- 4) Study of Counters (Asynchronous & Synchronous, Up & Down Counters etc.).
- 5) Study of ALU.
- 6) Study of registers (their modes of operation i.e. SISO,SIPO,PISO,PIPO)
- 7) Microprocessor programming (atleast 5 programs to be done)Programs like addition of two 8-bit nos, two 16-bit nos., subtraction, division, multiplication.

Reference Books :

- Computer Architecture and Organization by J.P.Hayes
Tata McGraw Hill Publications New Delhi
- Computer Architecture and Organization By S.G.Zaki
Tata McGraw Hill Publications New Delhi

Additional References :

- Computer System Architecture by M. M. Mano, Prentice Hall of India.
- Computer Organization by Y. I. Shah.

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC**IVth Semester (Diploma in Computer Engineering)**

Sr. No	Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
		Lecture	Pract. or Drg.	Tutorial		Sessional Work	Paper	Term work	Pract. Exam	Total		
1.	Data Structure	4	2	--	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-17	426
2.	Digital Electronics	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-18	326
3.	Fundamentals of Operating System	4	2	--	1, 3 Hrs., 100 Mks.	20	80	25	50 (Oral)	175	CSE-40	426
4.	DBMS	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-20	326
5.	PC Architecture	4	2	--	1, 3 Hrs., 100 Mks.	20	80	25	25 (Oral)	150	CSE-21	426
6.	Industrial Tour	--	--	--		--	--	--	--	--	--	00
Total		18	10	2	5 Paper	--	--	--	--	925		
Total Periods :				30	Total Marks : 925							

Note:

- i) Sessional is to be accessed by Internal Examiner
- ii) Theory & practical is to be accessed by Internal Examiner & External Examiner combined.
- iii) Term work is to be accessed by Internal Examiner & External Examiner as per the ratio.
- iv) There will be three periodical test of 25 Marks for each subject. Best of two periodical test marks will be considered as a sessional of 20 % weightage.
- v) Final term end examination will be of 100 marks having weightage of 80%

DATA STRUCTURE (CSE-17)

(One Paper - 3 Hrs., Theory Marks: 100, Lect.4/Week, Pract. 2/Week,

T/W : 50Marks, Pract. : 50Marks, Credit :6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.	Tutorial		Sessional	Work	Paper	term	work	Pract.		
Data Structure	4	2	--		1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-17	426	

Rationale:

This subject intends to teach the students how to implement the algorithms. After learning this subject the student can able to solve any critical problem through programming.

Objectives:

- To study data structure and their application
- This subject will help the students to use the data structure in Pascal programming
- The data structure is the main construct of any programming language so students should study it.

Theory Contents:

- 1. Introduction to data structure and classification** (Periods-8 hrs. Mks-13)
- 2. Linear data structure & their sequential storage representation storage structure for arrays. Definition & concept & operation application of stack recursion stack machines, Queues simulation priority queue.** (Periods-8hrs. Mks-24)
- 3. Linear data structure and their linked storage representation:** (Periods- 10hrs. Mks-24)
pointer & linked allocation linked lineate lists, operation on liner list using singly linked list,. Doubly linked list, Application of linear linked list, Polynomial manipulation, linked dictionary, multiple precision arithmetic, Associative list.
- 4. Nonlinear data structure** (Periods- 8hrs. Mks-24)
Trees, definition and concept, operation on binary trees, storage representation & manipulation of binary trees, Linked storage representation of binary trees.
- 5. Graphs and their representation** (Periods-10 hrs. Mks-24)
Matrix representation of graphs, list structure, other representation of graphs, Breadth first search & depth first search
- 6. Sorting and Searching** (Periods-10 hrs. Mks-20)
Sorting: Other notations & concept, Selection sort, Merge sorting tree sort partition – exchange sort, radix sort. Address calculation sort. Searching: Sequential searching Binary searching, Search trees, High balance trees, weight balanced trees, trees structure.
- 7. Files Structure** (Periods- 6 hrs. Mks-20)
Definition and concept record organisation , sequential files structure of sequential files, Processing sequential files, small billing system.
- 8. Introduction to data base system:** (Periods- 4hrs. Mks-15)
General concept, Hierarchical network, Relational approaches

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Introduction to data structure and classification	08	13	10	D
2.	Linear data structure and sequential storage representation	08	24	07	D
3.	Linear data structure and their linked storage representation	10	24	20	M
4.	Nonlinear data structure	08	24	18	M
5.	Graphs and their representation	10	24	15	M
6.	Sorting and Searching	10	20	10	E
7.	Files Structure	06	20	10	E
8.	Introduction to data base system	04	15	10	E
Total		64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction to data structure and classification
2. Linear data structure and sequential storage representation
3. Linear data structure and their linked storage representation
4. Nonlinear data structure

Section II

5. Graphs and their representation
6. Sorting and Searching
7. Files Structure
8. Introduction to data base system

Total Theory Hours : 64 Hrs.

Total Practical Hours : 32 Hrs.

List of Practical :

1. A program for inserting an element into an array.
2. A program for deleting an element from an array.
3. A program for pushing an element into an array.
4. A program for popping an element in an array.
5. A program for inserting an element into queue.
6. A program for deleting an element from queue.
7. A program for converting an infix expression to postfix.
8. A program for traversing a linked list.
9. A program for inserting an element into the beginning of list.
10. A program for binary search.
11. A program for selection sort.
12. A program for quick sort.

Reference Books :

An Introduction to data structure with application By – Trembly & Sorenson
 Fundamentals of data structure By – Horowitz & Sahani
 Data Structure by Lip Schutz

Additional References:

Pascal + Data Structure by Dele N. Lilly

DIGITAL ELECTRONICS (CSE-18)

(One Paper- 3 Hrs, Theory Marks: 100, Lect.= 3 hrs/Week, Pract=2/Week,

Tutorial: 1/Week, Credit :6 , Pract.: 50 Marks, TW=50 Marks)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.		Tutorial	Sessional	Work	Paper	Term	work Pract.		
Digital Electronics	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-18	326	

Rationale:

This subject will help the students to learn facts, Concepts, principals and procedures of digital electronics. These techniques can be used for designing sequential and combinational circuits which forms the basis of any electronic device.

Objectives

- The course is designed in such a manner that students will be knowing the basic Boolean algebra along with implementation of the function using logic gates.
- The course covers advanced logic families in & grater depth.
- The course gives a detail introduction to sequential & combinational circuits, which form a basic for hardware subjects.

Theory Contents:**1. Number systems and Code****(Period-8 Hrs, Mks-20)**

Introduction to number systems, binary No. Systems, binary arithmetic (addition, subtraction, multiplication division) Octal No. System, Hexadecimal System, 1's complement & 2's complement method of subtraction signed number Codes: Excess – 3 and grey code. Alphanumeric Codes: Extended BCD Interchange code (EBC-DIC), ASCII code, 12 bit Hollerith Code, Error Detection Codes: Parity, 7 – bit hamming code.

2. Combinational Logic Design**(Period-7 Hrs, Mks-24)**

Boolean Algebra – Concept of AND OR. NOT operators. Evaluation of logic expression, Basic laws of simplification Demorgan's theorems. Mean terms & max term representatives of logical functions K-map representations of logical functions and minimisation using K-map. Don't care conditions, Examples, Binary half & full adder, subtractor, BCD to 7 segment decoder, binary to Grey & Grey to Binary code converter.

3. Logic Families**(Period-6 Hrs, Mks-20)**

TTL, ECL, ITL MOS, CMOS, etc., Review or logic analysis of basic circuits in these families, open collector and tri state logic, Input & O/P parameters. Noise margin, Fan-out and Fan-in, speed, power deviation.

4. MSI Circuits**(Period-7 Hrs, Mks-24)**

Multiplexers and their use in combinational logic design, cascading of demultiplexers, introduction to general purpose 74 satires Multiplexers IC's Demultiplexers or Decoders and their use in combinational logic design, cascading of demultiplexers, introduction to general purpose 74 series Demultiplexers, binary and BCD address digital comparators. BCD to seven segment decoder/drives. Study of ALU 74181.

5. Flip-Flops**(Period-6 Hrs,Mks-24)**

A 1-bit memory cell, clocked SR, JK, MSJK, D Type Flip Flop, T type Flip Flop. Applications of Flip Flop-counter, registers, memory

6. Sequential Logic Design

(Period-5 Hrs,Mks-20)

Introduction to Registers Shift registers, universal registers, Application to registers from various shift operation, Ring counter, Johnson counter

7. Study of Timer (555)

(Period-4 Hrs,Mks-16)

Study of timer(555) and it's applications, Schmitt trigger and various modes

8. Semiconductor Memories

(Period-5Hrs,Mks-16)

Introduction, Memory organisation and operation, Introduction to different types of memories as ROM, EPROM, RAM (static & dynamic)

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Number systems and Code	08	20	13	E
2.	Combinational Logic Design	07	24	15	M
3.	Logic Families	06	20	13	M
4.	MSI Circuits	07	24	15	M
5.	Flip-Flops	06	24	15	M
6.	Sequential Logic Design	05	20	13	D
7.	Study of Timer (555)	04	16	08	E
8.	Semiconductor Memories	05	16	08	D
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Number systems and Code
2. Combinational Logic Design
3. Logic Families
4. MSI Circuits

Section II

5. Flip-Flops
6. Sequential Logic Design
7. Study of Timer (555)
8. Semiconductor Memories

Total Theory Hours: 48 Hrs.

Total Practicals Hours: 32hrs

List of practicals

1. Study of logic gates & verification of Demorgan's Theorems.
2. Demultiplexers Decoders, multiplexer (digital)
3. Study of Astable monostable bistable Multivibrators using logic gates.
4. SR,JK, T & D flip flop in logic gates
5. Ripple counter using JK flip flops.
6. Decade counter 7490
7. Synchronous counter using JK flip flops
8. Shift register using D flip flops
9. Monoshot IC's like 74121, 74123, 74221
10. Presentable shift right, shift left registers
11. Counter with multiplexed display example 740926, 925,927
12. Up down counter
13. Mod N Counter using JK flip flop

14. Full adder – subtractors using IC 7483
15. Study of BCD adder
16. Study of BCD to 7 segment decoder, BCD to decimal
17. Unidirectional buffer IC 74LS244, Bidirectional 74LS245 buffers.
18. Buffer latches – 74LS373, 74LS374, 8212
19. Decimal to BCD encoder
20. Analog Demultiplexer and Decoders
21. Analog to digital converter (any one type)
22. Digital to analog converter (any one type)
23. 7 to DPM.
24. Study of 8116 RAM.

Reference books:

Digital Principles – Malvino & Leach

Digital computer fundamental – T.C. Bartee

Digital electronics – R.P. Jain

Additional References:

TTI CMOS data handbook, Reference manual for application circuit.

FUNDAMENTALS OF OPERATING SYSTEMS (CSE-40)

(One paper-3hrs, Theory=100 Marks, T.W.=25Marks, oral:50 Marks,
Lecture: 4/Week, Pract. : 2/Week, Credit: 6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract. Exam	Total		
Fundamentals of Operating System	4	2	--		1, 3 Hrs., 100 Mks.	20	80	25	50 (Oral)	175	CSE-40	426	

Rationale:

The subject operation system intends to teach the students design and data structures used to develop an operating system. The students will also learn the various services of an operating system, organized in various layers to perform different functions. These basic concepts can be used for a proper understanding of single user and multi-user operating systems.

Objectives:

Student will be able to learn about

- 1) Memory management
- 2) File management
- 3) Distributed system
- 4) Multiprocessor system
- 5) Process management

Theory contents:

- 1. Processes** **(Periods-10hrs.,Mks-20)**
The process concept, systems programmer's view of processes, the operating system view of processes, Operating system services for process management, Scheduling algorithms, Performance evaluation.
- 2. Interprocess Communication and Synchronization** **(Periods-10 hrs.,Mks-24).**
The need for inter process synchronization, mutual exclusion, semaphores, Hardware support for mutual exclusion, Queuing implementation of semaphores, Classical problems in concurrent programming, Critical region and conditional critical region, monitors, messages, deadlocks.
- 3. Memory Management** **(Periods-12hrs.,Mks-25)**
3.1 Contiguous allocation
Single process monitor, Partitioned memory allocation stack, Partitioned memory allocation – Dynamic, segmentation.
3.2 Non-contiguous allocation
Paging, virtual memory (allocation policies and page replacement policies).
- 4. File Management** **(Periods-8 Hrs.,Mks-25)** Command language user's view of the file system disk organization, disk controller and

driver, operating system's view of file management, disk caches and Unix Buffer cache, a generalization of file services.

5.

6. Security and Protection
Hrs.,Mks-25)

(Periods-8

Security threats and goals penetration attempts, security policies and mechanisms authentication, protection and access control, format models of protection, cryptography worms and viruses.

7. Multi processor Systems
Hrs.,Mks-25)

(Periods-8

Motivation and classification, multi processor interconnection, types of multi processor operating system, multi processor OS functions and requirements introduction to parallel computing, multi processor synchronization

8. Distributed Operating Systems: algorithms
Hrs.,Mks-20)

(Periods-8

Rationale for distributed systems, computer networks algorithms for distributed processing coing with failures

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Processes	10	20	16%	M
2.	Interprocess Communication and Synchronization	10	24	16%	M
3.	Memory Management	12	25	15%	M
4.	File Management	08	25	12%	E
5.	Security and Protection	08	25	16%	E
6.	Multi processor Systems	08	25	15%	E
7.	Distributed Operating Systems: algorithms	08	20	10%	E
Total		64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Processes
2. Interprocess Communication and Synchronization
3. Memory Management
4. File Management(First Half Portion)

Section II

4. File Management(Remaining Half Portion)
5. Security and Protection
6. Multi processor Systems
7. Distributed Operating Systems: algorithms

Total Theory Hours = 64 hrs

Total Practicals Hours = 32 hrs

List of Practicals:

- 1) Program for implementing DOS command 'TYPE' in c
- 2) Program for implementing DOS command 'COPY' in c
- 3) Program for Static partitioning – Memory Management
- 4) Program for Dynamic partitioning – Memory Management
- 5) Program for page replacement strategy.

- 6) Program for first come first served scheduling
- 8) Program for shortest job first scheduling
- 9) Program for round robin scheduling
- 10) Program for implementation of dead lock avoidance mechanism.

Reference Books :

“Operating systems – Concepts and Design” Milan Milenkovic, McGraw-Hill international Edition – computer Science series 1992

“An introduction to operating Systems” Harvey M. Deitel, Addison- Welley Publishing Company 1984

“Operating System Concepts” James L Peterson, Abram Silberschatz, Addison – Wesley Publishing Company 1989,

Additional References:

“Operating system” by Achyut Godbole.

“Modern Operating Systems” Andrew S. Tanenbaum, Prentice-hall of India private ltd. 1995.

DATA BASE MANAGEMENT SYSTEM (CSE-20)

(One paper-3 hrs, Theory : 100 Marks., Lecture : 3/Week, Pract. : 2/Week,

Tutorial : 1/Week, T.W. : 50Marks, Pract. : 50Marks , Credit : 6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.	Tutorial		Sessional	Work	Paper	term work	Pract.	Exam		
DBMS	3	2	1		1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-20	326	

Rationale :

The aim of this subject is to get broad understanding of the basic concepts of database system in general and relational database system in particular. The students will have theoretical foundation required for working with different types of relational database products, such as SQL.

Objectives :

The student will be able to:

- Learn the concept of database
- Familiarize the different data models.
- Create applications using available database packages.

Theory Contents :

- Data independence, data models, Network Model, DBTG proposal (Periods-05 hrs. Mks-18)
- Data definitions and Data Manipulation languages (Periods-04 hrs. Mks-18)
- Hierarchical and Relational models (Periods-07 hrs. Mks-26)
- Storage Organisation for relations (Periods-07 hrs. Mks-24)
- Relational query languages, query processor and optimiser (Periods-10 hrs. Mks-28)
- Functional dependencies, normal forms, multivalued Dependencies (Periods-08 hrs. Mks-24)
- Decomposition, integrity, protection, security concurrency, Recovery (Periods-07 hrs. Mks-26)

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Data independence, data models, Network Model, DBTG proposal	05	18	06	E
2.	Data definitions and Data Manipulation languages	04	18	06	D
3.	Hierarchical and Relational models	07	26	18	M
4.	Storage Organisation for relations	07	24	15	D
5.	Relational query languages, query processor and optimiser	10	28	20	M

6.	Functional dependencies, normal forms, multivalued Dependencies	08	24	15	M
7.	Decomposition, integrity, protection, security concurrency, Recovery	07	26	20	E
	Total	48	164	100%	#
(# M=Most Essential, E=Essential, D=Desirable)					

Section I

1. Data independence, data models, Network Model, DBTG proposal
2. Data definitions and Data Manipulation languages
3. Hierarchical and Relational models
4. Storage Organisation for relations

Section II

5. Relational query languages, query processor and optimiser
6. Functional dependencies, normal forms, multivalued Dependencies
7. Decomposition, integrity, protection, security concurrency, Recovery

Total Theory Hours = 48 hrs.

Total practical Hours = 32 hrs

List of practicals :

1. Building a database
2. Checking various query commands available.
3. Sorting/Indexing databases-Update of databases
4. Program with general procedures for :
 - a. The maintenance of databases
 - b. Processing of databases.

Reference Books :

1. Principles of Database Management, by James Martin
2. An Introduction to Database systems by date C.J. Volumes I & II, Addison-Wesley, 1981, 1983.
3. Understanding Dbase III by Simpson, A BPN Publications, Delhi
4. Data Base system Engineering by Whittington R.P., Calvender Press
5. Database Systems Management and Design by Pratt. P. Boyd and Frasser Publ. Comp. 1987.
6. Database Processing: Fundamentals, Design, Implementation by Kroenke, D.M. 2nd Edn., Galgotia Publ. Pvt. Ltd.

Additional References:

1. Database Design by Wiederhold, (McGraw Hill Book Comp.)
2. Dbase III Plus made systematic by Shah Y.I., Jeevan Deep Prakashan.

PC ARCHITECTURE (CSE-21)

(One Paper : 3 Hrs., Thory: 100 Mks., Lec:4/week, Prac:2/week, Oral: 25, Credit :6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract. Exam		
PC Architecture	4	2	--		1, 3 Hrs., 100 Mks.	20	80	25	25	150	CSE-21	426

Rationale:

The study after studying this subject will be able to understand the architecture of the computer system. They will understand hardware development, processor and control design of computer system. This will develop the basic insight in the hardware technology, technology design and thereby develop the better knowledge for the maintenance and repairing of the computer system.

Objectives :

- To Introduce the students about Computer hardware
- Student can be able to understand the architecture of the PC by studying this subject.

Theory Contents :**1. PC Hardware Overview****(Periods-6 hrs. Mks-40)**

Hardware BIOS_DOS interaction, the PC-Family, RISC and CISC systems, inside the system box, SMPS, mother board, memory, virtual memory, DRAM SRAM, concept of extended and expanded memory, I/O cards, FDD, HDD, speaker, reset switch, keyboard lock, connectors and cables

2. Hardware Components**(Periods-5 hrs. Mks-32)**

Intel 8088, BIU, EU, 8088 Pinout definitions, max-mode, min-mode, physical address generation, bus, cycle Memory Segmentation

3. IBM PC Architecture**(Periods-38 hrs. Mks-60)**

- System configuration
- IBM PC motherboard
- RAM details, design considerations
- Motherboard hardware.
- Check generation
- Bus controls & I/O slot details
- DMA controls
- Interrupt control
- Programmable components
- 8255, 8253, 8257, 8237, 8284, 8288
- Various types of motherboards
- 80286, 80386 SX/DX motherboards
- Normal & Advance Setup for AT386
- Various types of IC modules, SIP package, DIP package, AMD Package, SIM memory modules, speaker, interface to motherboard for fault finding, protection from static charge & decoupling capacitors.
- Keyboard controller 8048 based design
- Keyboard testing methods, different types of keys
- Disk drive controller hardware details

- r. 360 KB, 1.2 MP, 1.44 MB
- s. Monitor Controller
- t. CCA 6845 based design details, video RAM testing.

4. Air conditioning requirements (Temperature & Humidity) (Periods-15 hrs. Mks-32)

Need for dust proofing, different computer, power requirements of computer room, specification & different types of power supplies, overload protection devices, simple principles of PS and its advantages over normal power supply, earthing & isolation techniques & specification, distribution on boards, fire detection and prevention.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	PC Hardware Overview	06	40	25	M
2.	Hardware Components	05	32	20	E
3.	IBM PC Architecture	38	60	35	M
4.	Air conditioning requirements	15	32	20	D
Total		64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

- 1. PC Hardware Overview
- 2. Hardware Components

Section II

- 3. IBM PC Architecture
 - 4. Air conditioning requirements
- Total Theory Hours = 64 hrs.**
Total Practical Hours =32 hrs.

List of Practicals :

- 1. To make Aware students different components of the mother board.

Laboratory work/workshop/drawing sheets

- 1. Study of IBM PC architecture
- 2. Assembling and disassembling
- 3. Study of trouble shooting equipments.
- 2. At least 8 live problems must be studied

Reference Books :

IBM PC Trouble Shooting & Repair Guide by Robert C. Branner.

Additonal References :

IBM PC & Clones by Govind Rajalu

Industrial Tour

(Paper:--, Theory: --, Lecture :--, Pract. : --, T.W.:---, Pract.:--, Credit :00)

Teaching And Examination Scheme: Nil

Under Multipoint Entry Credit (MPEC) System Curriculum Design IVth Semester of Full Time Diploma In Computer Engineering/ Information Technology (50% coverage of syllabus)

Educational Visit/ Industrial Tour –curriculum objectives

Members of curriculum committee advised for non sandwiched pattern courses students are to be given live industry environment exposure. [Optional Non-Credit Component].The tour period/ duration up to seven days. The various learning areas through industrial educational tour with wide prospectus covers technical institutions , professional industries , IT sector , service industries, research institutions manufacturing / production plants in fulfilling major thrust areas

Objectives: Students are able to learn

A. Generic Skill [DGS Sub. code:- CSE34 / IT10]

1. Leadership Qualities, Professional Communication Skills
2. Teamwork
3. File Management
4. Self Centered responsibility
5. Internal Organization Hierarchy
6. Time/ Task Management
7. Presentation Skill, Self Development

B. Technical Skill

1. Industry work Culture
2. Performance, Process of performing the job
3. Functioning of Employee responsibility
4. Discipline
5. Trends of Projects
6. Growth of Industry Requirement
7. Career Planning
8. Testing of Acquired Skills
9. Learning Practical Skills
10. Gain confidence
11. Watch latest IT industry practices
12. Dissemination of Information to the students
13. Develop Broad vision
14. Groomed to industries expectation
15. Knowledge sharing
16. Security and Safety Measures at Industry.

Processes: Visit as per planning

- 1) Identifying Areas
- 2) Academic calendar
- 3) Student/ Parent Undertaking
- 4) Approaching and contacting companies

- 5) Permission from companies
- 6) 50% Syllabus coverage
- 7) Monitoring students in Batches
- 8) Accommodation of Students/ Staff
- 9) Briefing of students
- 10) Schedules to parents
- 11) Rules and Regulations, safety instructions
- 12) Visiting Factories/ Industries- Noting of Key factors
- 13) Appraisal and interaction by factory/Industry executives

Student Report:

- 1) Report submission by individual student
- 2) Compiled report by CR/ SC
- 3) Presentation by CR on learning outcomes
- 4) Learning outcomes towards Staff/ Faculty
- 5) Student Feedback

Review, Updation, Reimplementation of System

SHRI BHAGUBHAI MAFATLAL POLYTECHNIC**Vth Semester (Diploma in Computer Engineering)**

Sr. No	Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.	
		Lecture	Pract. or Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract. Exam			Total
1.	Communication System	4	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50 (Oral)	200	CSE-22	427	
2.	Microprocessor – I	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-23	326	
3.	Web Programming & Java	4	2	--	1, 3 Hrs., 100 Mks.	20	80	25	50 (Oral)	175	CSE-42	426	
4.	Networking & Security	3	2	1	1, 3 Hrs., 100 Mks.	20	80	25	50 (Oral)	175	CSE-25	326	
5.	Computer Graphics	3	2	1	1, 3 Hrs., 100 Mks.	20	80	25	50	175	CSE-26	326	
6.	LINUX Administration	3	2	1	1, 3 Hrs., 100 Mks.	20	80	25	50	175	CSE-43	326	
Total		20	12	5	6 Paper	--	--	--	--	1100			
Total Periods : 37						Total Marks : 1100							

1 Period = 1 Hour

Note:

- i) Sessional is to be accessed by Internal Examiner
- ii) Theory & practical is to be accessed by Internal Examiner & External Examiner combined.
- iii) Term work is to be accessed by Internal Examiner & External Examiner as per the ratio.
- iv) There will be three periodical test of 25 Marks for each subject. Best of two periodical test marks will be considered as a sessional of 20 % weightage.
- v) Final term end examination will be of 100 marks having weightage of 80%

COMMUNICATION SYSTEM (CSE-22)

(One paper-3 Hrs, Theory : 100Marks, Lecture : 4/Week, Pract. : 2/Week,

Tutorial : 1/Week, T.W. : 50Marks, Oral : 50Marks, Credit : 7)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.	
	Lecture	Pract. or	Drg.		Tutorial	Sessional	Work	Paper	Term	work			Pract.
Communication System	4	2	1	1, 3 Hrs., 100 Mks.	20	80	50		50		200	CSE-22	427

Rationale:

The subject Communication system intends to teach the students transmission and reception of the signals using modulation techniques, Multiplexing schemes, broad band communication, and antennas.

Objectives

To understand :

1. Transmission and reception of basic communication system
2. Procedures of wireless, satellite communication system.
3. The modern communication techniques.

Theory Contents :**1. Introduction to Modulation****(Periods-18 hrs. Mks-30)**

- Need for Modulation
- Modulation methods – Amplitude modulation, Frequency modulation, Single side band technique, (Transmitters and Receivers), comparative performance of Amplitude Modulation and Frequency Modulation, Introduction to Pulse Modulation – Pulse Time Modulation, Pulse Width Modulation, Pulse Position Modulation, Pulse Code Modulation

2. Elements of Television System**(Periods-15 hrs. Mks-25)**

Scanning process, Bandwidth requirements, vestigial side band Technique, Monochrome Transmission and Receiver, Colour T.V. system

3. Multiplexing Schemes**(Periods-2 hrs. Mks-16)**

Types of Multiplexing – Time Division Multiplexing and frequency “Division Multiplexing

4. Information Theory and Noise**(Periods-4 hrs. Mks-15)**

Shannon Hartley's Theorem, Channel capacity, Rate of Information, Entropy, channel efficiency, Types of Noise and their effect on communication signal.

1. Phase locked loop its application : PLL 565

5. Propagation**(Periods-4 hrs. Mks-20)**

Fundamentals of Electromagnetic Waves, Propagation of waves – Ground(surface) wave propagation, sky waves propagation, space wave propagation, space wave propagation.

I. Antennas**(Periods-6 hrs. Mks-18)**

Radiation Mechanism, Antenna Gain, Antenna resistance, Bandwidth beam width, Directional High frequency Antenna, Dipole Antenna, Yagi-Uda Antenna, Folded Dipole Antenna.

II. Introduction to Data Communication**(Periods- 8 hrs. Mks-15)**

Phase shift keying (PSK), Frequency shift keying(Fsk) MODEM and its application.

III. Broadband Communication System**(Periods-7 hrs. Mks-25)**

Satellite, Microwave, Cable T.V., Fibber-Optic Communication system.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Introduction to Modulation	18	30	20	M
2.	Elements of Television System	15	25	15	M
3.	Multiplexing Schemes	02	16	10	D
4.	Information Theory and Noise	04	15	07	D
5.	Propagation	04	20	15	E
	I. Antennas	06	18	10	E
	II. Introduction to Data Communication	08	15	08	E
	III. Broadband Communication System	07	25	15	E
	Total	64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction to Modulation
2. Elements of Television System
3. Multiplexing Schemes
4. Information Theory and Noise

Section II

5. Propagation
 - I. Antennas
 - II. Introduction to Data Communication
 - III. Broadband Communication System

Total Theory Hours = 64 hrs

Total Practical hours : 32 Hrs.

List of Practicals :

1. Study of A.M., F.M. SSB Generation
2. A.M. Transmitter
3. Study of A.M./Fm Radio Receiver – Medium Wave, short Wave
4. Study of T.V. Receivers : Colour T.V., Monochrome T.V. Receiver
5. Study of PLL
6. Study of Fibre optic Communication
7. Study of PCM, PWM
8. Study of PSK, FSK

9. Antenna – Directivity, Gain of different types of Antennas.
10. Study of Transmission line

Reference Books:

Electronic Communication Systems by G.Kennedy.
Principles of Communication System by Taub and Schilling

Additional References :

Monochrome Colour T.V. by R.R. Gulati.
Electronic Communication by Roddy and Coollen.
Communication Systems by B.P. Lathi

MICROPROCESSOR – I (CSE-23)

(One paper:3hrs, Theory:100 Mks, Lect:3/week, Prac : 2/week, tutorial – 1 week

T/W :50Mks, Prac.exam:50Mks, Credit:6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.		Tutorial	Sessional	Work	Paper	term work	Pract.		
Microprocessor – I	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-23	326	

Rationale:

This subject is designed to give clear idea about working principles of 8085 microprocessor. Knowledge acquired by student will be useful for them to write different assembly language program for the 8085 microprocessor.

Objectives:

- To introduce commonly used microprocessor 8085 as the microprocessor forms major component of micro computer system.
- Student will be able to acquire grip over assembly language programming

Theory Contents:

- Architecture of Intel 8085 microprocessor** (Periods- 4 hrs. Mks-24)
- Instruction set of Intel 8085** (Periods- 4 hrs. Mks-24)
- Assembly language programming on 8085 microprocessor** (Periods- 10 hrs. Mks-20)
 - Arithmetic Operations
 - Data Manipulation
 - Code Conversions
 - Delay Subroutines
 - Simple I/O operations
- Addressing modes of 8085, Timing diagrams** (Periods- 4 hrs. Mks-20)
- Interrupt structure of 8085** (Periods- 4 hrs. Mks-20)
- Study of Peripheral devices** (Periods- 10 hrs. Mks-24)
 - 8155
 - 8255
 - 8253
 - ADC 0808
- Design of small systems** (Periods- 2 hrs. Mks-16)
- Study of application programmes** (Periods- 10 hrs. Mks-16)
 - Basic I/O interfacing
 - Monitor program for microprocessor kit
 - Traffic light control
 - Elementary stepper motor operations
 - Hardware Digital Clock

Sr.
No.
M / E / D

Main Topics

No. of
Contact Hrs.

Marks

Weightage
%

1.	Architecture of Intel 8085 microprocessor	04	24	16%
M				
2.	Instruction set of Intel 8085	04	24	15%
E				
3.	Assembly language programming	10	20	15%
E				
	on 8085 microprocessor			
4.	Addressing modes of 8085, Timing diagrams	04	20	15%
E				
5.	Interrupt structure of 8085	04	20	13%
E				
6.	Study of Peripheral devices	10	24	12%
M				
7.	Design of small systems	02	16	09%
D				
8.	Study of application programmes	10	16	05%
E				

	Total	48	164	100%
#				
(# M=Most Essential, E=Essential, D=Desirable)				

Section I

1. Architecture of Intel 8085 microprocessor
2. Instruction set of Intel 8085
3. Assembly language programming on 8085 microprocessor
4. Addressing modes of 8085, Timing diagrams

Section II

5. Interrupt structure of 8085
6. Study of Peripheral devices
7. Design of small systems
8. Study of application programmes

Total Theory Hours = 48 hrs

Total Practical Hours = 32 hrs

List of Practicals:

- Execution of assembly language programs on microprocessor kit
- Sum of N single byte numbers.
- Sum of N two byte numbers.
- Multiplication and division of two single byte numbers.
- Scan the given series of numbers for smallest/largest number.
- Sort the given series of numbers in ascending/descending order.
- Code conversions
- Block move.
- Study of 8155
- Study of 8255
- Study of 8253
- Application programs using above peripheral devices e.g.
 - Traffic control
 - Stepper motor control
 - Monitor program for microprocessor kit
 - Hardware digital clock.

Reference Books:

Microprocessor Architecture, programming & applications with 8085/8080A by Ramesh S.Gaonkar.
8085 Assembly language programming by

Additional references :

Data Sheets and application notes by Intel
8085-A Assembly Language programming and applications by Mrs. S.P. Awate.

WEB PROGRAMMING & JAVA (CSE-42)

(One Paper – 3 hrs, Theory: - 100 Marks, Lecture: 4/Week, Pract. : 2/Week,
Credit : 6, T/W : 25Marks, Oral: 50 Marks, Credits: 6)

Teaching and Examination Scheme:

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract. Exam	Total		
Web Programming & Java	4	2	-	1,3 Hrs., 100 Mks.	20	80	25	50 (Oral)	175	CSE – 42	426	

Rational :

This course is designed to provide overview Java Language and Web Programming languages. Java enhances OO concepts. It supports secured and portable internet applications. The knowledge of programming languages HTML, Scripting Languages, Server side programming and client side programming is essential to develop Web based applications.

Objectives:

The students will be able to:

1. Design and implement the concepts of object oriented programming.
2. Create packages, interfaces and use them in web based applications/ applets.
3. Design & implement AWT and Applets
4. Write HTML pages, scripts and active pages.

Theory Contents:**1. Introduction to Java 1.5 Programming:****(Periods- 25hrs Marks: 64)**

Basic Java language, classes, methods, constructors, overloading, overriding, inheritance, exception handling, multithreaded programming.

2. Package and Interface:**(Periods- 07hrs Marks: 18)**

Package, access protection, importing packages, interface, multiple inheritances, using Java interfaces, Java I/O classes and interfaces, byte stream, character stream, file handling, networking basics, N/w package, Inet Address, TCP/IP Server sockets, Datagram, Server and Client.

3. AWT and Applets:**(Periods- 16hrs Marks: 41)**

Abstract Window toolkit, AWT Classes, Event handling, Delegation Event model, Event Classes, source of Events, event listener interface, windows fundamentals, creating a frame window, working with frame window, working with graphics, Introduction to AWT controls, inserting user interfaces like buttons, checkbox, list, scrollbar, text field & text areas, layout managers.
Applet class architecture, skeleton, repeat method, inserting image and audio clips on the applet.

4. HTML and DHTML:**(Periods- 10hrs Marks: 24)**

Web Server, browser, HTTP connections, HTML, fonts, cascaded style sheets (CSS), frames, tables, lists, hyperlinks, mail to protocol, file transfer protocol, introduction to DHTML.

5. Scripting Languages**(Periods- 06hrs Marks: 16)**

Forms, validation, memory, VB script: Data types control structure, functions, arrays, string manipulation, Java script: simple programs, Data types control structure, functions, arrays, string manipulation

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Introduction to Java 1.5 Programming	25	64	40	M
2.	Package and Interface	07	18	10	E
3.	AWT and Applets	16	41	25	M

4.	HTML and DHTML	10	24	15	E
5.	Scripting Languages	06	16	10	E
	Total	64	164	100%	#
	(# M=Most Essential, E=Essential, D=Desirable)				

Section I

1. Introduction to Java 1.5 Programming
2. Package and Interface

Section II

3. AWT and Applets
4. HTML and DHTML
5. Scripting Languages

Total Theory Hours =: 64 hrs.

Total Practical Hours = 32 hrs

List of Practicals :

1. Write a Java Program to define a class, describe its constructor, overload the constructors and instantiate its object
2. Write a Java Program to define a class, define instance methods and overload them and use them for dynamic method invocation.
3. Write a Java Program to implement single & multi-level inheritance by applying various access controls to its data members and methods.
4. Write a Java program to implement the concept of importing classes from user defined package and creating packages.
5. Write a program using Applet
- to display a message in the Applet.
-for configuring Applets by passing parameters.
6. Write programs for using Graphics class
- to display basic shapes and fill them.
- draw different items using basic shapes
- set background and foreground colours.
7. Write a Java program to demonstrate Sockets
8. Write a Java program to demonstrate URL connection.
9. Creating web pages :
Creating a personal web , create web page using front page, connect web pages, create a list of items on a web page.
10. Enhancing web page :
Insert Graphics in web pages, link web pages using images, represent data in tabular format, split the screen into separate windows.
11. Create the web page :
Which will manipulate the data using visual script / java script
12. Validation of user

Reference Books :

1. C Thomas WU – An Introduction to Object Oriented Programming - Tata McGraw Hill
2. Patrick Naughton- – The Complete Reference- Tata McGraw Hill
3. Douglas Comer – The Internet Book – Prentice Hall
4. Alexis Leon and mathews Leon – Internet for Everyone – Leon Tech world
5. Douglas Comer – The Internet Book – Prentice Hall
6. HTML Black book

Additional References :

1. Alexis Leon & Mathes Leon, Internet in a Nustshell, Vikas publications.
2. C Xavier – world wide web design with HTML

Web Sites:

1. <http://www.sun.java.com>
2. <http://www.osborne.com>
3. <http://www.sun.java.com> (For downloading JDK for Practical)
4. <http://www.3wc.com>
5. <http://www.3wschools.com>

NETWORKING & SECURITY (CSE-25)

(One paper- 3 hrs, Theory : 100Mks, Lecture : 3/Week, Pract.: 2/Week,
Tutorial : 1/Week, Credit : 6, T/W : 25Mks, Oral : 50 Mks)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract. Exam	Total		
Networking & Security	3	2	1	1, 3 Hrs., 100 Mks.	20	80	25	50 (Oral)	175	CSE-25	326	

Rationale:

The objectives of this subject are to inculcate practical skills in the students relating to network installation, administration and management. The focus is on the practical aspects of networking of Windows NT and internet information server operating systems.

Objectives:**The student will be able to:**

- Learn the concepts of computers networks (LAN , WAN)
- 2 Understand OSI reference model and TCP / IP reference model
- Understand Security issues in computer networks.
- Do installation of NT server, Novell Server , and Proxy Server.

Theory Contents:

- 1) **Overview of OSI Model:** (Periods-14 hrs, Marks: 35)
Physical layers, Data link layer, Transport layer, presentation layer, session layer, network layer, Application layer.
TCP/IP Protocol Suit : Architecture, Layers
CSMA/CD
- 2) **Wireless & local Loop (WLL)** (Periods-05hrs, Marks: 22)
CDMA Protocol
- 3) **Architecture of Novell Directory Service (NDS)** (Periods-06hrs, Marks: 25)
Active Directory Services (ADS).
- 4) **Remote Network Access** (Periods-06hrs, Marks: 20)
Need of Remote Access
Remote Access Technology
Virtual Private Network (VPN)
VPN Protocol
VPN Clients
- 5) **Printing & Administration of Network** (Periods- 08hrs Marks: 28)
Network printing
Managing shared printer
Documenting a running network
Upgrading Network
Installation

6) Security & Disaster Recovery:**(Periods- 05hrs Marks: 34)****Internal Security**

Account Security

File & Directory permission

External Security

Front door threats, Back door threats.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Overview of OSI Model	14	35	21 %	E
2.	Wireless & local Loop (WLL)	05	22	15 %	E
3.	Architecture of Novell Directory Service	06	25	16 %	E
4.	Remote Network Access	06	20	10 %	D
5.	Printing & Administration of Network	08	28	18 %	M
6.	Security & Disaster Recovery	05	34	20 %	E
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Overview of OSI Model
2. Wireless & local Loop (WLL)
3. Architecture of Novell Directory Service

Section II

4. Remote Network Access
5. Printing & Administration of Network
6. Security & Disaster Recovery

Total Theory Hours : 48 hrs.**Total Practical Hours = 32 hrs****List of Practical :**

1. Study of cables , connectors & hubs
2. Server installation
3. Connecting workstation to server (adding and removing workstation)
4. Frequency division multiplexing & Time Division multiplexing
5. Setting rights and giving permissions. (NT)
6. Installation of Novell server
7. Setting rights and giving permission (Novell)
8. Installation of proxy server
9. Sharing of output devices (printer)
10. Trouble – shooting
11. Introduction & Internet
12. Study of LAN Card.

Reference Books:

1. Computer Networks, by A.S. Tanenbaum (Prentice – Hall, India (2nd Edition)
2. Data and Computer Communications by William Stallings.
(Prentice – Hall, India (4th edition)

Additional References:

1. Telecommunication, switching systems & Networks By T. Viswanathan (Prentice Hall, India)
2. Data Communications by W.L. Schweber (McGrow – Hill)
3. Data Communication & Distributed Networks “ by U Black (Prentice – Hall, India).

COMPUTER GRAPHICS (CSE-26)

(One paper – 3hrs, Theory: 100 Mks, Lecture: 3/Week, Pract. : 2/Week,

Tutorial: 1/Week, T/W: 25 Marks, Pract. : 50 Marks, Credit: 6)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract.	Exam		
Computer Graphics	3	2	1	1, 3 Hrs., 100 Mks.	20	80	25	50	175	CSE-26	326	

Rationale:

This subject intends to teach the students the basic graphics primitives, based on turbo C++ compiler, graphics utilities. The advent of animation industry has brought graphics into focus as never before.

Objective:

- (c) This course is designed to make the students familiar with basic graphics primitives.
- (d) Students can implement these primitives on the screen using turbo C++ compiler.
- (e) Implementation of these primitives will help the students in using the graphic utilities and libraries in their project development work.
- (f) By studying graphics students can solve design problems.

Theory Contents :**1. Introduction****(Periods – 03, Marks – 15)**

The origins of computer graphics, how the interactive graphic display works, new display devices, General purpose graphics software, The user interface, the display of solid objects

2. Derivation of basic graphic primitives**(Periods – 06, Marks – 20)**

Coordinate system sine, Circle, Ellipse, algorithm explanations & implementation of the following: Pixel blotting, line drawing, Circle & Ellipse drawing.

3. Two dimensional transformation**(Periods – 05, Marks – 14)**

Transformation principles, Concatenation, Matrix representation

4. Clipping & Windowing**(Periods –09, Marks – 20)**

Alien clipping algorithm, Midpoint subdivision, clipping other graphic entities, Polygon clipping Viewing transformations, the windowing transformations

5. Introduction to advance graphics topics**(Periods – 07, Marks – 30)**

Segments, Allasing & anti aliasing, Hidden line, surfaces, Beefier & spine curves, shading.

Video editing: Capturing Video & Audio, 'Titel'ing, Mixing & premier.

6. Raster graphics fundamentals**(Periods – 06, Marks – 20)**

Introduction , Generating a raster image, The frame buffer, display, Representing a raster image, scan converting, Line drawing, Displaying characters Speed of scan conversion Natural images

7. Raster display hardware**(Periods – 03, Marks – 20)**

Raster display devices, The frame buffers, The random access frame buffers

8. Display processors**(Periods – 09, Marks –25)**

The simple refresh line drawing display, random scan storage tube display, High performance display, the unbuffered high performance display, the buffered high performance display.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Introduction	03	15	05%	D
2.	Derivation of basic graphic primitives	06	20	22%	M
3.	Two dimensional transformation	05	14	08%	E
4.	Clipping & Windowing	09	20	25%	M
5.	Introduction to advance graphics topics	07	30	08%	E
6.	Raster graphics fundamentals	06	20	22%	M
7.	Raster display hardware	03	20	06%	E
8.	Display processors	09	25	04%	D
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction
2. Derivation of basic graphic primitives
3. Two dimensional transformation
4. Clipping & Windowing

Section II

5. Introduction to advance graphics topics
6. Raster graphics fundamentals
7. Raster display hardware
8. Display processors

Total Theory Hours : 48 Hrs

Total Practical Hours : 32 Hrs.

List of Experiments:

Requirements:-

Minimum requirement is an IBM PC XY or AT with C Compiler. Assignments for the Graphics Laboratory

1. Pixel Drawing
2. Line drawing
3. Circle or Ellipse Drawing
4. Transformation
5. Polygon filling
6. Polygon Clipping
7. Segments

Reference Books:

Computer Graphics a programming approach by Steven Harrington
Computer Graphics by David Rogers.

Additional References :

Interactive Computer Graphics by Numan
Computer Graphics by A.P.Godse.

LINUX ADMINISTRATION (CSE-43)

(One Paper: 3 Hrs., Theory: 100 Mks., Lec:3/week, Tu.:1/week, Prac:2/week,
Practical: 50, TW: 25, Credit: 6)

Teaching And Examination Scheme:

Subject	Scheme of Instruction s and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Practical	Drg. Tutorial		Sessional	Work	Paper	Term work	Pract. Exam		
LINUX ADMINISTRATION	3	2	1	1, 3 Hrs., 100 Mks.	20	80	25	50	175	CSE-43	326

Rationale:

This course is designed to provide overview of Linux Administration. Linux Operating System is widely used in industry, it is reliable, secure and flexible. Most of the Web applications are developed and deployed on Linux Operated PCs.

Objectives:

The students will be able to:

5. Install Linux Operating System.
6. Create users and super users, assigns access permissions.
7. Configure LAN and IP addresses.
8. Install CUPS and LPD for printing.

Theory Contents:**1) Installation and Hardware Configuration****(Period 6 Hrs, Marks 18)**

Creating an Installation Diskette, Booting Linux Installation Program

Partitioning Hard Drive(s), Setting up Swap Space, Choosing Partitions to Format, Choosing Desired Packages to Install, Hardware Configuration, Multi-boot with Other Operating Systems, Downloading and Installing Red Hat Updates

2) General System Administration Issues**(Period 8 Hrs, Marks 26)**

Root Account, Creating User Accounts, Changing User Passwords , Disabling User Accounts, Removing User Accounts, Linux Password & Shadow File Formats, System Shutdown and Restart

3) Managing package with RPM**(Period 11 Hrs, Marks 40)**

Upgrading Linux and Other Applications, Using the Red Hat Package Manager (RPM), Installing or Upgrading Without RPM, Strategies for Keeping an Up-to-date System, Linux Kernel Upgrades , Upgrading a Red Hat Stock Kernel, Building a Custom Kernel, Moving to the Linux 2.2.x Kernels, Configuring the Apache Web Server

4) Setting Up a Linux network**(Period 9 Hrs Marks 32)**

TCP/IP, configuring with ipconfig, arp, The hostname commands, network configuration files,

5) Working with DNS and DHCP**(Period 7 Hrs, Marks 24)**

Configuring a DNS server, using DNS client, Setting up a DHCP server, Basic configuration,

6) Printing with CUPS and LPD**(Period 7 Hrs, Marks 24)**

Printing system overview, CUPS: Building and installation, managing printers, Line Printer Daemon protocol, Commands, Usage

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Installation and Hardware Configuration	06	18	10	E

2. General System Administration Issues	08	26	15	D
3. Managing package with RPM	11	40	25	M
4. Setting Up a Linux network	09	32	20	M
5. Working with DNS and DHCP	07	24	15	E
6. Printing with CUPS and LPD	07	24	15	D
	Total	48	164	100%
(# M=Most Essential,	E=Essential,	D=Desirable)		#

Section I

1. Installation and Hardware Configuration
2. General System Administration Issues
3. Managing package with RPM

Section II

4. Setting Up a Linux network
5. Working with DNS and DHCP
6. Working with DNS and DHCP

Total Theory Hours = 48 hrs.

Total Practical Hours =32 hrs.

List of Practicals:

1. Installation of Red Hat Linux
2. Create an user , super user and various operations on user account
3. Install a RPM package and upgrade the package
4. Configure a web server
5. Configure a LAN in Linux
6. Configure DNS server
7. Install and manage printer

Reference Books:

1. Christopher Negus - Red Hat Linux 9 Bible - John Wiley & Sons
2. Michael Jang - Mastering Red Hat Linux 9 - BPB Publications

Additional References:

1. Ellen Siever, Aaron Weber, Stephen Figgins - Linux in a Nutshell, Fourth Edition - O'Reilly & Associates

Web Sites:

1. <http://www.linux.org>
2. <http://www.cups.org>

Shri Vile Parle Kelavani Mandal's
SHRI BHAGUBHAI MAFATLAL POLYTECHNIC
VIth Semester (Diploma in Computer Engineering)

Sr. No	Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
		Lecture	Pract. or Drg.	Tutorial		Sessional Work	Paper	Term work	Pract. Exam	Total		
1.	Microprocessor – II	4	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-27	427
2.	PC Maintenance and Instruments	4	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50 (Oral)	200	CSE-44	427
3.	System Analysis & Design	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-30	326
4.	Entrepreneurship Development	5	--	1	1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-32	606
5.	Advanced Web Technology	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-45	326
6.	System Programming	3	2	1	1, 3 Hrs., 100 Mks.	20	80	25	50	175	CSE-29	326
7.	Embedded System	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-46	326
8.	Instrumentation & Control	3	2	1	1, 3 Hrs., 100 Mks.	20	80	25	50 (Oral)	175	CSE-33	326
9.	Project	--	9	--		--	--	100	100 (Oral)	200	CSE-31	099
Total		28	23	8	8 Papers	--	--	--	--	1650		
Total Periods : 59						Total Marks : 1650						

1 Period = 1 Hour

Note:

- i) Sessional is to be accessed by Internal Examiner
- ii) Theory & practical is to be accessed by Internal Examiner & External Examiner combined.
- iii) Term work is to be accessed by Internal Examiner & External Examiner as per the ratio.
- iv) There will be three periodical test of 25 Marks for each subject. Best of two periodical test marks will be considered as a sessional of 20 % weightage.
- v) Final term end examination will be of 100 marks having weightage of 80%

MICROPROCESSOR-II (CSE-27)

(One paper: 3hrs., Theory : 100 Mks, T.W.= 50Marks, Pr.= 50 Marks, Tutorial – 1 Week

Lecture 4/Week , Practical 2/Week , Credit : 7)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Practical	Drg.		Tutorial	Sessional	Work Paper	Term work	Pract.		
Microprocessor – II	4	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-27	427

Rationale:

This subject introduces 8051 microcontroller to the students. The students will learn the basic architecture of 8051 and develop the skill to write assembly language programming.

Objectives:

- To make student knowledgeable about the peripheral devices and Interrupt
- Student will be able to know the application of microprocessor

Theory Contents:

- Study of following peripheral Devices with** (Periods-40hrs., Mks-82)
Pin functions
Block diagram
Timing diagram
Programming & Application of
 - Programmable Interrupt controller 8259
 - Programmable Communication interface 8251
 - Programmable Key Board Interface 8279
 - Programmable D.M.A. Controller 8237
 - Programmable C.R.T. Controller 6845
 - Programmable F.D.C. Controller 8272
 - Bus Controller 8288
 - Clock Generator 8284.
- Single chip microcontroller 8051 with** (Periods-14hrs., Mks-45)
Block diagram
Port structure
Interrupt structure
Timer
Instruction set & Programming
- Use of microprocessor for AC/DC power control & applications like** (Periods-10hrs., Mks-37)
 - Speed control of D.C. motor A.C. Motor
 - Temperature Controller
 - Elevator Controller
 - Washing m/c control
 - Microwave oven control

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Study of peripheral Devices	40	82	50	M
2.	Single chip microcontroller 8051	14	45	30	E
3.	Use of microprocessor for AC/DC power control & applications	10	37	20	D
Total		64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Study of peripheral Devices

Section II

2. Single chip microcontroller 8051
3. Use of microprocessor for AC/DC power control & applications

Total Theory Hours = 64 hrs

Total Practical Hours =32hrs

Term Work

- (1) Study of 8259
 - (2) Study of 8251
 - (3) Study of 8279
 - (4) Study of 8237
 - (5) Study of 6845
 - (6) Study of 8272
 - (7) Study of 8288
 - (8) Study of 8284
 - (9) Study of 8051 with its programming concepts.
- Application programmes for all above I.Cs, with appropriate kit may be written

List of Practicals :

1. Introduction to microcontroller kit.
2. Study of interfacing IC with microprocessor.
3. Program to perform addition with carry & without carry using microcontroller kit 8051.
4. Program to perform subtraction with borrow and without using microcontroller kit
5. Program to perform multiplication & division using 8051 kit.
6. Program to display two digit decimal counter.
7. program to display flash message.

Reference Books :

Data Sheets & application notes by Intel.
Microprocessor, Interfacing, programming & Hardware by Douglas V. Hall.

Additional References :

Microprocessor with applications in process control by Ashon
Microprocessor, Architecture, Programming & applications by Gaonkar.

PC MAINTAINANCE & INSTRUMENTS (CSE-44)

(One Paper : 3 Hrs., Theory : 80 Mks, Lect/ Week – 4, Prac: 2/Week, Tutorial – 01 Week,
Oral – 50 Mks, T.W. : 50 Mks, Credit : 7)

Teaching And Examination Scheme:

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.	Tutorial		Sessional	Work	Paper	term work	Pract. Exam		
PC Maintenance and Instruments	4	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	(Oral)	CSE-44	427

Rationale:

The students after studying this subject will be able to understand the maintenance and servicing of computer system. They will understand hardware development, processor and control design of computer system. This will develop the basic insight in the student about the changes in the hardware technology, technology design and thereby develop the better knowledge for the maintenance and repairing of the computer system.

Objectives:

The students will be able to:

- To know how to maintain the various units of computer.
- To study various fault finding procedures & trouble shooting procedures & also various faults.
- To make the students familiar with various faults inside the PC.

Theory Contents:**1. General maintenance of PC****(Periods-11hrs., Mks-40)**

- Different types of maintenance, preventive & remedial maintenance, importance of prevent maintenance, intermittent & hard-on (Persistent) faults, customer provided information & it's synthesis.
- Use of diagnostic software monitors & test condition generators measurement of signal flow & selection of test points.
- Understanding of logic diagrams, symptoms of failures, identification of electromechanical & logic faults, typical the logic diagrams.
- Practicals based on study of various fault finding & diagnosis Techniques used in the maintenance of computer included in subject.

2. Measuring concept & Basic of do indicating instruments**(Periods-15 hrs., Mks-25)**

Significance of measurement, Methods of measurement, Galvanometer, PMMC, Dc ammeter, Dc Voltmeter, Alternating current indicating instruments, Oscilloscope (Functional study of oscilloscope, Study of various types of oscilloscope, Sampling oscilloscope, Storage oscilloscope)

3. Study of signal generator, Logic analyser, Spectrum analyser, Emulators**(Periods-10 hrs. Mks-25)****4. Troubleshooting Techniques****(Periods-10hrs., Mks-22)**

Introduction, classical steps to successful troubleshooting, audit and video error codes, testing components, soldering and desoldering techniques, symptom, observation, layman checks, symptom analysis, fault diagnosis, fault rectification, proper documentation of faults.

5. Preliminary Service Checks**(Periods-08hrs.,Mks-18)**

Assembling and disassembling hints, no power, no display, mother board problems, self-test error code displayed, method 1- disk speed program, method-2 tuning lamp, disk drive problems, index sensor adjustment KBD problems, general printer problems.

6. Servicing of Peripherals**(Periods-10 hrs., Mks-34)**

- Servicing Keyboard – Checking key signals on CPU-Trouble Shooting the keyboard

- (II) Disk drives – Service problems with Diskette and Disk Drive-Trouble Shooting Disk Drives-Alignment and Adjustments-Checking individual Circuits and Mechanism.
- (III) Servicing of Printers - Printer Types (Dot Matrix and Daisy Wheel) – Self test – Trouble shooting based on Symptoms, identifying detective subsystems (Carriage Movement, Head Movement, Platen Drive, Head Printer, CPU Interfacing) and rectification.
- (IV) Servicing Monitors-Identification of Problems with general Symptoms – Completely dead – Contrast, Brightness defects – Retrace Visibility – Vertical hold defect – Cartage on Monitors – Checking CRT drive board.
- (V) Servicing power supply-Linear Power Supply-Switched Mode Power Supply-Identification of Power Supply Problems based on output voltage on load and electrical noise.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	General maintenance of PC	11	40	20	M
2.	Measuring concept	15	25	18	M
3.	Study of signal generator, Logic analyser, Spectrum analyser, Emulators	10	25	18	E
4.	Troubleshooting Techniques	10	22	15	E
5.	Preliminary Service Checks	08	18	09	D
6.	Servicing of Peripherals	10	34	20	M
Total		64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. General maintenance of PC
2. Mother Board Circuits
3. Interfacing of Supporting Chips

Section II

4. Troubleshooting Techniques
5. Preliminary Service Checks
6. Servicing of Peripherals

Total Theory Hours = 64 hrs

Total Practicals Hours = 32 hrs.

List of Practicals:

1. Study of IBM PC-8088.
2. Study of Motherboard problem diagnosis
3. Study of post
4. Study of different computer fault & troubleshooting tools.
5. Study of FDC problems.
6. Study of display adapter problem.
7. Study of Dot Matrix printer problem.
8. Study of monitor problem.

Reference Books :

- Upgrading & repairing PC's by Scott Mneller (QUE publication)
- IBM PC CLONES by Govindrajalu (Tata McGRAW HILL)
- Inside the IBM PC by Peter Norton(Prentice Hall of India)
- IBM PC / XT technical reference manual
- Electronic fault diagnosis, IIIrd edition by G.C. Loveday longman Scientific & Technical

Additional References :

- Microprocessor Data Books, Intel
- TTI, Data Books, National Semiconductor
- Using your had disk by Roherb D. Ainsbury (QUE publication)

SYSTEM ANALYSIS AND DESIGN (CSE-30)

(One Paper –3 Hrs., Theory : 100 , Lecture :3/Week, Pract. :2/Week, Tutorial – 1/W,
Prac exam: 50 Marks, T.W.: 50 Marks, Credit: 6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.	Tutorial		Sessional	Work	Paper	Term work	Pract.	Exam		
System Analysis & Design	3	2	1	1, 3 Hrs., 100 Mks.	20	80	50	50	200	CSE-30	326		

Rationale:

In this age of information technology computer system, is playing an important role for automation. Computers systems are used as an effective communication and decision making tool for process and product automation in a business, industrial and educational environment.

Objectives:

The student will be able to

- (a) Implement stepwise and systematic methodology approach for developing a software system design considering all software engineering principles.
- (b) Understand the drawbacks of ad-hoc system development.
- (c) Achieve the managerial skills necessary to execute a project within various technical and environmental constraints.

Theory Contents:**1. The Information System Environment****(Periods- 06 hrs Marks:16)**

System Concept : Definition
 Characteristics of a system : organisation Interaction
 Interdependence, integration, Control objective
 Elements of a System : Outputs & Inputs
 Processor (s) Control, Feedback, Environment, Boundaries & Interface
 Types of Systems : Physical or Abstract systems
 Open or Closed systems. Man made information systems.

2. Systems Development Overview**(Periods- 04hrs Marks:16)**

Introduction : The Systems's Life Cycle
 New approaches to design
 Resources for new systems
 The practice of systems analysis and Design
 Processing alternatives

3. Role of the systems Analyst**(Periods- 04hrs Marks:16)**

The Role of the analyst : Use Design, Steps to follow

4. Traditional tools for analysis & Design**(Periods- 06hrs Marks:16)**

Data collection, Analysis and Design tools

5. Software Project Management**(Period-10 hrs Marks:31)**

Planning software project, work Breakdown Structure, Integrating Software design and project planning,

Software Project teams. Project monitoring and controls.

- 6. Preliminary Survey & Feasibility study contents** (Periods- 05hrs Marks:18)
The Decision-making Body
- 7. Systems Design Specifications** (Periods- 05hrs Marks:16)
Study output; output, Considerations, Input, files, Processing, Coding, Manual Procedures, Error, work Plan
- 8. Documentation** (Periods- 04hrs Marks:20)
Design documentation user Documentation for Training, operations Documentation, User Reference Documentation
- 9. Testing and Installation; Testing User Consideration** (Periods- 04hrs Marks:15)
The Aftermath, review of the Analysis Role
(It is expected to explain the procedure of system Analysis and design of following commercial system)
Accounts Inventory Control
Pay Roll
Sales & Purchases order system

Sr. No. / D	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E
1.	The Information System Environment	06	16	11%	M
2.	Systems Development Overview	04	16	09%	E
3.	Role of the systems Analyst	04	16	09%	E
4.	Traditional tools for analysis & Design	06	16	11%	M
5.	Software Project Management	10	31	20%	E
6.	Preliminary Survey & Feasibility study contents	05	18	09%	E
7.	Systems Design Specifications	05	16	10%	E
8.	Documentation	04	20	12%	E
9.	Testing and Installation; Testing User Consideration	04	15	09%	E
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. The Information System Environment
2. Systems Development Overview
3. Role of the systems Analyst
4. Traditional tools for analysis & Design
5. Software Project Management

Section II

6. Preliminary Survey & Feasibility study contents
7. Systems Design Specifications
8. Documentation
9. Testing and Installation Testing User Consideration

Total Theory Hours = 48 hrs.

Total Practicals Hours =32 hrs

List of Practicals:

- 1) Draw DFD for Railway Reservation system
- 2) Draw E-R diagram for Railway Reservation system
- 3) Program for Payroll system
- 4) Generate Simple Calculator.
- 5) Program for Inventory system

- 6) Program for Banking system
- 7) Program for Student information system
- 8) Program for Railway Reservation system
- 9) Program for Library system

Reference Books:

The Analysis, Design and Implementation of Information systems by Henry C. Lucas. Jr. (Morgan – Hill Book Company)

Systems analysis & Design by Elias m Avad (Galgotia Publications Pvt. Ltd.)

Additional References :

Introducing Systems Analysis & Design, Vol. 1 & 2 prepared by NCC (National Centre for Computing) U.K.G.L. Simons (Chief Editor) Published BY Galgotia Publications Pvt. Ltd.

Reference Website:

<http://www.rspa.com>

ENTREPRENEURSHIP DEVELOPMENT (CSE-32)

(One Paper-03 Hrs, Marks-100, Lecture 5/ Week , Credit-6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial			Sessional	Work Paper	term work	Pract. Exam	Total			
Entrepreneurship Development	5	--	1		1, 3 Hrs., 100 Mks.	20	80	--	--	100	CSE-32	606	

Rationale:

The entrepreneurship development part of the subject consists of topics related to the development of entrepreneurship skills and other details such as selection of product lines, site selection, financial aspects, personnel management, quality control and creative thinking. The subject includes the case studies in the related field.

Objectives:

The students will be able to:

1. Understand human science subjects intended to make aware about Entrepreneurship development
2. The basic concepts, principles and procedures related to the Entrepreneurship.
3. To expose the real life problems by case study and visits to the successful entrepreneurs.

Theory Contents:

UNIT – I : INTRODUCTION

Chapter – 1 Introduction (Periods-20hrs Marks:40)

UNIT – II : Information gathering for identification of opportunity

Chapter – 2: The Concept of (Periods- 03hrs Marks:08)

- 2.1. Entrepreneurship
- 2.2. Entre
- 2.3. preneur
- 2.4. Opportunity
- 2.5. Innovations.
- 2.6. Characteristics of Entrepreneur

Chapter – 3 : The Information Sources for Business Opportunity (Periods- 04hrs Marks:10)

- 3.1 The unexpected success failure
- 3.2 The incongruity
- 3.3 Innovations based on Process need
- 3.4 Change in Industrial structure
- 3.5 Demographics
- 3.6 Changes in perception mood and means.
- 3.7 New Knowledge scientific and non scientific
- 3.8 Discussion for sources.

Chapter – 4 ; Information Gathering Techniques (Periods-02hrs Marks:04)

Chapter – 5 : Identification of Product or Services for Getting business (Periods- 02hrs Marks:04)

PRACTICAL CONTENTS

Term work: Short reports on the information sources gathered form the newsletters, magazines or other literature.

UNIT – III : **Product and Services**

Chapter – 6 : Specification (Periods- 01hrs Marks:02)

PRACTICAL CONTENTS

Report on any one product/service, inclusive of its use, manufacturing qualities, trade names, etc.

Chapter – 7 : Industries to be surveyed (Periods- 01hrs Marks:02)

Chapter – 8 : Principles of market Survey (Periods- 01hrs Marks:02)

Chapter – 9 : Analysis of Survey data & Product Service design (Periods- 02hrs Marks:04)

PRACTICAL CONTENTS

Collection of data from at least five industries, report on data analysis

UNIT – IV : Project formulation for establishing own business or starting service.

Chapter – 10: System concept & Project format based on Job design for Manufacturing Product of Creating service capabilities (Periods- 06hrs Marks:12)

10.1. System concept

10.2. Project formats

10.3. Job design

Chapter – 11: The Procedure of Estimation of Resources Required for Establishing (Periods- 06hrs Marks:12)

The Enterprise of Starting Service Business

11.1. Space.

11.2. Equipment

11.3. Human Resources

11.4. Financial Resources

Chapter – 12: The Procedures of Project Report Writing for Getting approval from Financial Agencies for Starting Enterprise or Service. (Periods- 02hrs Marks:04)

12.1. Project report Writing

12.2. Procedure for submitting project report to the firm.

PRACTICAL CONTENTS

Preparation Of proforma project report and format of detail project report

UNIT – V : Acquisition of the resource required for starting enterprise or service business

Chapter –13: The concept of Quality Resources, Preparation of Specification and Identification of specific need of Resources (Periods- 05hrs Marks:10)

PRACTICAL CONTENTS

Term work:

Preparation of specifications for resources (sample specification) like land, building, machinery and manpower.

Chapter – 14 : Approach for Resources (Periods- 02hrs Marks:04)

PRACTICAL CONTENTS

Collection of list of suppliers of building materials/construction machineries

Chapter – 15: Making Payments of Resources Received (Periods- 02hrs Marks:04)

UNIT – VI : Establishing and running the enterprise

Chapter – 16: The Concept of management of Enterprise (Periods- 03hrs Marks:06)

Chapter – 17: Production and Sale of Product/Passing the service Business (Periods- 02hrs Marks:04)

UNIT – VII : Budgeting and accounting the expenditure for running the enterprise

Chapter – 18 : Concept of Budgeting/accounting of Expenditure (Periods- 02hrs Marks:04)

PRACTICAL CONTENTS

Preparation of budget and balance sheet for small industry.(Industry to be selected from local area)

Chapter – 19 : Budget preparation (Periods- 03hrs Marks:06)

Chapter – 20 : Procedure of Accounting Expenditure (Periods- 02hrs Marks:04)

Chapter – 21 : Preparation of Balance Sheet (Periods- 03hrs Marks:06)

UNIT – VIII : Evaluation & Quality control

Chapter – 22 : Concept of Evaluation & Quality control (Periods- 02hrs Marks:04)

Chapter – 23 : Principles of Evaluation & Quality Control (Periods- 02hrs Marks:04)

Chapter – 24 : Procedure of Evaluation & Quality Control (Periods- 02hrs Marks:04)

17. Production and Sale of Product
18. Concept of Budgeting/accounting of Expenditure
19. Budget preparation
20. Procedure of Accounting Expenditure
21. Preparation of Balance Sheet
22. Concept of Evaluation & Quality control
23. Principles of Evaluation & Quality Control
24. Procedure of Evaluation & Quality Control

Total Theory Hours = 80 hrs.

Reference Books :

- 1) Dynamics of Entrepreneurial Development & Management (4th edition) by Shri Vasant Desai
- 2) Small scale Industries & Entrepreneurship (7th edition) by Shri Vasant Desai
- 3) Entrepreneurship Development (2nd edition) by S. S. Khanka

ADVANCED WEB TECHNOLOGIES (CSE - 45)

(One Paper : 3 Hrs., Theory : 80 Mks, Lect/ Week – 3, Prac: 2/Week, Tutorial – 01 Week,
Practical – 50 Mks, T.W. : 50 Mks, Credit : 6)

Teaching and Examination Scheme:

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination							Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial			Sessional	Work	Paper	Term	work	Pract.	Exam		
Advanced Web Technologies	3	2	1		1, 3hrs, 100	20	80	50	50	200	CSE-45	326		

Rationale:

Advanced Web Technologies is based on dot net & struts technology, which is a frame work, which supports many languages so that application designed in one language (like C++, COBOL, JAVA, etc) can be connected/interfaced with this frame work hence it is more flexible and advanced.

Objective:

The student will be able to:

1. Use GUI tools of .net framework
2. Use basic and advance .net controls.
3. Interface back-end and front-end.
4. Build applications integrated with .net Framework.
5. Transfer code form VB to VB.net
6. Implement MVC

Theory Contents:**1. Introduction (05)****(Periods-2hrs, Mks-**

Why dot Net, Introduction to Microsoft .Net Framework, Building blocks in .Net, Drawback of previous languages, Understand what is .Net, VB.Net, VB.Net overview, Difference between VB and VB.Net, Introduction to .Net, Types of application architecture, .Net initiative, .Net framework, components of .Net framework, Advantages, requirement of .Net.

2. Introduction and implementation (05)**(Periods-2hrs, Mks-**

Introduction to VB.Net, Features, VB.Net IDE, Data Types, Loops, Control structures, Cases, Operators, Creating forms, Procedures and functions, Form controls, Implementation of OOP, Creation of class and objects, Inheritance, Constructors, Exception handling, Component based programming, Working with Private assembly, shared assembly, Using COM components developed in VB or other language, Synchronization of Threads, Migrating from VB 6.0 to VB.Net, Updating the applications developed in VB to VB.net

3. Introduction to ADO.Net and data manipulation (12)**(Periods-4 hrs, Mks-**

Introduction to ADO.Net, What is database?, Writing XML file, ADO.Net architecture, Creating connection, Dataset and Data reader, Types of Data adapter and ADO controls, Reading data into dataset and data adapter, Binding data to controls, Data table and Data row, Accessing and manipulating data, Selecting data, Insertion, deletion, updation, sorting, How to fill dataset with multiple tables, Multi-threading, Working with multithreading.

4. Introduction to ASP.Net**(Periods-4 hrs, Mks-****12)**

Difference between ASP and ASP.Net, Introduction to IIS, What is web application? Why it is used? ASP.Net IDE, Creation of web forms, Using web form controls.

5. ASP.Net objects and components**(Periods-8 hrs, Mks-****20)**

Response, Server, Application. Session, ASP.Net scope, state, view state, post back and configuration, Object creation: Scripting, Drive, folder, file, How to use objects? Server components: Ad rotator, Content linker, Browser capabilities, Use and creation of global .asa file, How to use Application object, Events Methods and collection Example. How to use session object: enabling and disabling of session, Event, properties, methods, collection. Example.

6. ADO.Net**(Periods-6 hrs, Mks-****15)**

ADO.Net in ASP.Net, Connection, Dataset and data reader, Data table and Data row, Web.config introduction, Binding data with data grid, Accessing and manipulating data, ADO.Net: Server control templates and Data binding techniques, Understand data access in Net using ADO.Net, Understand various Server Control Templates available for Data Binding like Repeater, Data List and Data Grid Controls.

7. ASP transactions and e-mail**(Periods- 6 hrs, Mks-****15)**

Transactions, Transaction db design, CDONTS object, Email sending web page creation.

8. Java Servlets and JavaServer Pages Overview**(Periods 6 hrs, Mks-****15)**

Servlets Basic, JSP Basics, Tag Extensions Introduction

9. Introduction to Struts**(Periods 4 hrs, Mks-****10)**

Motivations, the MVC and Service-to-Worker Design Patterns, Framework Overview

10. Controller components**(Periods 4 hrs, Mks-****10)**

Struts Action Servlet, The Request Processor, Working with Actions, Mapping Requests, Managing Errors and Exception handling, Plugin classes

11. Model components**(Periods 4 hrs, Mks-****10)**

JavaBeans Overview, HTML Forms and ActionForms

12. View components**(Periods 2 hrs, Mks-****05)**

Forms Validation

13. Expression Language**(Periods 6 hrs, Mks-****15)**

EL Overview, Attribute values, Template text and Implicit objects, General Syntax, Expression Language operators, Variables and Functions, Expression Language API.

14. JSTL**(Periods 6 hrs, Mks-****15)**

JSTL introduction and goals, Expression language (EL), overview, JSTL actions, General purpose actions, Conditional actions, Iterator actions, Internationalization (i18n) actions, Formatting actions

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage	# M / E / D	%
1.	Introduction	02	02	05	02	E
2.	Introduction & implementation	02	02	05	04	E
3.	Introduction to ADO.net & data manipulation	04	04	12	06	D
4.	Introduction to ASP.Net	04	04	12	08	D
5.	ASP.Net objects and components	08	08	20	14	M
6.	ADO.Net	06	06	15	08	E

7. ASP transactions and e-mail	06	15	08	D
8. Java Servlets and JavaServer Pages Overview	06	15	08	M
9. Introduction to Struts	04	10	06	M
10. Controller components	04	10	08	E
11. Model components	04	10	08	E
12. View components	02	05	02	D
13. Expression Language	06	15	08	D
14. JSTL	06	15	10	E
Total	64	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Introduction
2. Introduction & implementation
3. Introduction to ADO.net & data manipulation
4. Introduction to ASP.Net
5. ASP.Net objects and components
6. ADO.Net
7. ASP transactions and e-mail

Section II

8. Java Servlets and JavaServer Pages Overview
9. Introduction to Struts
10. Controller components
11. Model components
12. View components
13. Expression Language
14. JSTL

Total Theory Hrs. = 64 hrs

Total Practical Hrs. = 32 hrs.

List of Practical

All appropriate practical mentioned in syllabus

Reference Books:

1. Prog. In VB.Net by – Anita & Bradely (TMH)
2. ASP.net T by - Dave Mercer (TMH)
3. .net Framework by - Anthony Jones (TMH)
4. Designing Application with Microsoft VB.net by - Robert LandLizer (TMH)
5. Programming Jakarta Struts by – Chuck Cavaness (O'Reilly)

Additional Reference Books:

1. Expert Spring MVC & Web Flow (Expert) by Seth Ladd, Darren Davison
2. Design Patterns: Elements of Reusable Object-Oriented Software by Erich Gamma, Richard Helm (Addison-Wesley Professional Computing Series)

SYSTEM PROGRAMMING (CSE-29)

(One Paper - 3 Hrs., Theory : 100 Marks, Lect : 3/Week, Prac : 2/Week,
Tutorial: 1/W, Credit: 6, T.W.: 25Marks, Practical : 50 Marks.)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week			No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or	Drg.		Tutorial	Sessional	Work	Paper	Term work Pract.	Exam		
System Programming	3	2		1	1, 3 Hrs., 100 Mks.	20	80	25	50	175	CSE-29	326

Rationale:

This course is intended to give an insight to the software required to utilise the hardware resources. It gives an important migration path to the students from Data Structures to finally using Data Structure for Software and Applications.

Objectives:

The subject will

- 1) used to utilised the hardware resources.
- 2) an important migration path to the students from Data Structures to finally using Data Structure for Software and Applications.

Theory Contents :

1. Component of a programming system :

(Periods-06hrs.,Mks-28)

Assemblers, Loaders, macros, Compilers, Formal system, Evolution of operation system, operating system functions and facilities

2. General machine structure

(Periods-10 hrs. Mks-34)

For a typical Von-nauman, machine such as IBM 360/370 formats (RX, RR, SS, SI) and types of data and instruction, Instructions in Load, Store, Add, Subtract, Compare, Multiply, divide and shift groups for IBM 360/370, Machine language and Assembly language programmes, Assembler directives and psudo-kopns.

3. Assembler

(Periods-10hrs. Mks-29)

General design procedures, The detail design procedures of a two pass Assembler.

Data Structures:

Searching methods : Linear search and binary search, sorting methods : Interchange sort (bubble sort), shell sort, bucket sort, Radix Exchange sort, Address calculation sort, Hash or random entry searching

Macro processors : Macro instruction, features of macro facility and implementation with a two pass assembler.

4. Loaders

(Periods-08 hrs. Mks-30)

“Compile-and Go” loaders, General loader scheme, Absolute loaders, Relocating loaders, Design of an absolute loaders.

Other loader scheme : Binder linkage editor overlay structure, Dynamic loading, Dynamic linking.

5. Higher level Language

(Periods-06 hrs. Mks-18)

Importance of HLL, Features of HLL, Extensive data types and instructions, storage Allocation, Accessing flexibility, Functional modularity and asynchronous operation.

6. Compilers

(Periods-08 hrs. Mks-25)

General model of a compiler phases of a compiler, Lexical phase, syntax phase Interpretation phase optimisation, storage assignment, and Code generation assembly phase.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Component of a programming	06	28	15	E

	system :				
2.	General machine structure	10	34	25	M
3.	Assembler	10	29	25	M
4.	Loaders	08	30	13	E
5.	Higher level Language	06	18	09	D
6.	Compilers	08	25	13	E
	Total	48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Component of a programming system
2. General machine structure
3. Assembler

Section II

4. Loaders
5. Higher level Language
6. Compilers

Total Theory Hrs.= 48 hrs

Total Practical Hrs.= 32 hrs.

List of Experiments:

To design assembler using 'C' lang.

Reference Books :

System programming by John. J Donovan (McGraw Hill)

Introduction to system software by D.M. Dhamdhare.

Additional References:

Principals of Compiler Construction by Aho Ullman.

Operating System by John J Donovan & Mandrik

EMBEDDED SYSTEMS (CSE - 46)

(One Paper : 3 Hrs., Theory : 100 Mks, Lect/ Week – 3, Prac: 2/Week, Tutorial – 01 Week,
Practical – 50 Mks, T.W. : 50 Mks, Credit : 6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination						Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial			Sessional	Work	Paper	Term work	Pract.	Exam		
Embedded Systems	3	2	1		1, 3hrs, 100	20	80	50	50	200	CSE-46	326	

Rationale:

The study of embedded systems is essential part of Computer Science. It deals with computer hardware with software embedded in it. This subject will enable student to develop logical thinking and use of “Firmware”. It is practical oriented subject having theoretical prerequisites of Microprocessor, Digital Techniques, Data Structures and Computer Architecture. Students will be able to develop Real Time Systems, Device drivers, use interrupt service mechanism, program timing and counting devices and develop embedded C-Programs for Microcontroller.

Objective:

The student will be able to:

1. Access embedded systems hardware units like processor, I/O device, On-chip and Off-chip device, Power supply etc.
2. Interface various devices using ports.
3. Write embedded program.
4. Develop programmable interrupt controller.
5. Perform software analysis, design, implementation, testing, debugging for embedded systems.

Theory Contents:**1. 8051- Microcontrollers****(Periods-2 hrs, Mks-06)**

Overview of 8051 family, Architecture, Memory organization, Functional pin, Ports & circuit, Addressing mode, Instruction Set

2. Hardware overview**(Periods-4 hrs, Mks-12)**

Study of interrupt structure, Port structure & Programming, Study of SBUF, TCON, TMOD, SMOD, SCON Register, Timer/Counter & Serial Communication Programming

3. Serial Communication & Parallel communication**(Periods-4 hrs, Mks-16)**

Serial Communication – RS-232, I2C, CAN, Parallel Communication – ISA, PCI, PCI-X Advance I/P O/P buses, Study of RS-232 Pinout, USB 2.0 specification, architectural overview & data flow model.

4. Embedded System**(Periods-6 hrs, Mks-20)**

Introduction, Processor in the system, Different Hardware Units, Software Embedded into System, Exemplary Embedded system, System –On-Chip (SOC) & VLSI system

5. Memory organization**(Periods-10 hrs, Mks-34)**

Structure unit in processor, Processor selection, Memory devices & Selection, Allocation of memory, DMA, Interfacing processor & I/P O/P device

6. Device Driver & Interrupts Servicing Mechanism (Periods-12 hrs, Mks-40)

Device Drivers, Parallel port device driver, Serial port device driver, Internal Programmable timing devices, Interrupts handling Mechanism, Context switching

7. RTOS & Interprocess Communication (Periods-12 hrs, Mks-40)

Concepts of RTOS, Requirement, Need, Specification of RTOS in Embedded systems, Multitasking, Task synchronization & Mutual Exclusion, Starvation, Deadlock, Multiple processes, Problem of sharing data by multiple task and routines, Interprocess communication & embedded Linux.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	8051- Microcontrollers	02	06	04	M
2.	Hardware overview	04	12	08	E
3.	Serial Communication & Parallel communication	04	14	08	E
4.	Embedded System	06	18	10	M
5.	Memory organization	10	34	20	E
6.	Device Driver & Interrupts Servicing Mechanism	10	40	25	E
7.	RTOS & Interprocess Communication	12	40	25	M
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. 8051- Microcontrollers
2. Hardware overview
3. Serial Communication & Parallel communication
4. Embedded System
5. Memory organization

Section II

6. Device Driver & Interrupts Servicing Mechanism
7. RTOS & Interprocess Communication

Total Theory Hrs.= 48 hrs
Total Practical Hrs. = 32 hrs.

List of Practical

All appropriate practical mentioned in syllabus

Reference Books :

Publisher: Pearson Education

1. An Embedded Software Primer by David E. Simon
2. The 8051 Microcontroller And Embedded Systems
3. Embedded Linux by Craig Hollabaugh

Publisher: Tata Magrow Hill

1. Programming and Customizing the 8051 Microcontroller by Mike Predko

INSTRUMENTATION & CONTROL (CSE-33)

(One Paper: 3hrs, Theory :100 Mks, Lec : 3/Week, Prac : 2/ Week,

T.W. : 25 Mks, Oral :50 Mks, Credit: 6)

Teaching And Examination Scheme :

Subject	Scheme of Instructions and Periods per week				No. of Papers, duration & Marks	Scheme of Examination					Detailed Syllabus Ref. No.	Scheme L.Pr./Cr.
	Lecture	Pract. or Drg.	Tutorial			Sessional Work	Paper	Term work	Pract. Exam	Total		
Instrumentation & Control	3	2	1		1, 3 Hrs., 100 Mks.	20	80	25	50 (Oral)	175	CSE-33	326

Rationale:

The subject Instrumentation & Control intends to teach students functioning of various measuring instruments and parameters of instrumentation and also various control system & their applications.

Objectives:

- (g) To make the students familiar with various measuring instruments.
- (h) Studying various measuring instruments they can be able to measure various parameters of instrumentation.
- (i) The students should be aware how to control system.

Theory Contents :**1. Instrumentation fundamentals, Instrumentation terminology (Periods- 02hrs)****Marks:06)**

Error, Accuracy, Precision, sensitivity, Reliability, Sources of Error in Instruments.

2. Transducer and primary sensors (Periods- 06hrs)**Marks:20)**

(a) Transducers in measurement, Transducer actuating mechanism, types of transducers, voltage and current generating transducers piezoelectric, photo electric, thermoelectric, magneto electric, variable parameter analog transducers, Frequency generating transducers, Transducer selection factors.

(b) Applications of the above transducers for measurements of displacement, speed, acceleration, vibration, strain pressure, level, temperature, flow, PH. And conductivity.

3. Amplifiers and signal conditioning (Periods- 06hrs)**Marks:25)**

Input modification, balanced bridges inputs, instrumentation amplifiers, chopper modulators. Solid state modulators and demodulators. Analog and digital measurements. A/D and D/A conversion. Isolation and current loop transmitters.

4. Indicating and recording devices (Periods- 05hrs)**Marks:20)**

Analog indicators, oscillograph and Graphic recorders, Numerical and digital indicators, Data acquisition systems, printers.

5. Control System (Periods- 04hrs)**Marks:23)**

Open loop control system and closed loop control system. Elementary forms of control system. Block diagram representation of system. Transfer function of the system, effects of feedback on control system.

6. Introductory ideas of Laplace transforms and its use in solving differential equations. (Periods- 08hrs)**Marks:25)**

Description of time domain behaviour of control system. Steady state and transient response. Time domain specifications. Characteristic equation of the system Roots of the equation and system response. Test signals, Steady state error analysis problems. Type of the system. Regulator as type zero system.

7. Effect of gain on the system performance (Periods- 04hrs
Marks:12)

Effect of derivative control & integral control. Compensation networks – lag, lead, Effect of Tachometer rate feedback control.

8. Description of frequency domain behaviour of (control systems.) (Periods- 04hrs
Marks:10)

Frequency domain specification Bode diagram.

9. Stability (Periods- 05hrs
Marks:08)

Stability of the system – absolute stability, relative stability, Routh’s criteria, Nyquist criteria – problems

10. Study of Servo Components (Periods- 04hrs
Marks:15)

Potentiometers, A.C. and D.C. servo motors, servo amplifiers, synchros, Characteristics of POT., tachogenerator, stepper motors, A.C. and D.C. position servo systems, details, use and characteristics.

Sr. No.	Main Topics	No. of Contact Hrs.	Marks	Weightage %	# M / E / D
1.	Instrumentation fundamentals, Instrumentation terminology	02	06	03	D
2.	Transducer and primary sensors	06	20	12	E
3.	Amplifiers and signal conditioning	06	25	15	M
4.	Indicating and recording devices	05	20	12	E
5.	Control System	04	23	13	M
6.	Introductory ideas of Laplace transforms & its use	08	25	15	M
7.	Effect of gain on system performance	04	12	08	E
8.	frequency domain behaviour of (control systems)	04	10	07	E
9.	Stability	05	08	06	D
10.	Study of Servo Components	04	15	09	D
Total		48	164	100%	#

(# M=Most Essential, E=Essential, D=Desirable)

Section I

1. Instrumentation fundamentals, Instrumentation terminology
2. Transducer and primary sensors
3. Amplifiers and signal conditioning
4. Indicating and recording devices

Section II

5. Control System
6. Introductory ideas of Laplace transforms & its use
7. Effect of gain on system performance
8. frequency domain behaviour of (control systems)
9. Stability
10. Study of Servo Components

Total Theory Hours= 48 hrs.

Total Practical Hours = 32 hrs

List of Practicals :

- 1) Measurement of displacement
- 2) Measurement of Speed
- 3) Measurement of pressure
- 4) Analog to digital converter

- 5) Digital to analog converter
- 6) Diode chopper modulator
- 7) Instrumentation Amplifier
- 8) Differential amplifier
- 9) Synchro pair as an error detector
- 10) Potentiometer characteristic
- 11) Compensatory net work ---- Lag, lead
- 12) Compensatory Net work – Lead, lag
- 13) Stepper Motor

Reference Books:

Instrumentation for Engineering measurements by Cerni and Foster
A Course in electrical and electronic measurement instrumentation by A.K. Sawhney.
Instrumentation by Malvino.
Electronic instrumentation by Prinskey.
Fundamentals of industrial instrumentation by Fribance
Electronic Instrumentation (TMH) by H.S. Kalsi.
Additional References :
Control system engineering by Nagrath and Gopal
Automatic control system by B.C. Kuo.
Servomechanism fundamentals and experiments by Philco
Electrical Control Engineering by Poole and Jackson Volume I & II.