MODEL CURRICULUM

FOR

POST SSC PROGRAMME

IN

DIPLOMA IN INFORMATION TECHNOLOGY 2011

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

7TH FLOOR, CHANDRALOK BUILDING, JANPATH

NEW DELHI – 110 001

FOREWORD

It is with great pleasure and honour that I write a forward for the Model scheme of instruction and syllabi for the Post SSC Engineering Diploma programmes prepared by the All India Board of Technician Education with **Prof. Ashok A. Ghatol** as its Chairman and other members. All India Council for Technical Education has the onerous responsibility for uniform development and qualitative growth of the Technical Education system and preparation of syllabus to maintain uniform standards throughout the county. In pursuance to clause 10 (2) of the AICTE Act 1987 AICTE has the objective of bringing about uniformity in the curriculum of Engineering. In that direction, the efforts of All India Board of Technician Education has been quite commendable and praiseworthy. A painstaking effort was made by the Chairman, members of the Board and various working groups composed of experts from leading institutions in framing of the Instruction and Syllabus. The Board was ably assisted by the official of the academics bureau in successfully organizing the meetings making available necessary documents and follow up action in the minutes of the meetings.

Chairman

All India Council for Technical Education

	ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME: ELECTRONICS/MECHANICAL/CIVIL/COMPUTER/ELECTRICAL/CHEMICAL ENGG. GROUPS

COURSE CODE :
EJ/EN/EX/EV/IC/IE/IS/MU/DE/ME/PG/PT/AE/CE/CS/CR/CO/CM/IF/EE/EP/CH/CT/PS/CD/EDEI/
CV/MH/FE/IU/MI

DURATION OF COURSE : 6 SEMESTERS

SEMESTER: FIRST   **SCHEME : C**

BRANCH: Common for all branches   **YEAR:I**   **SEMISTER: I**

SR.NO.	SUBJECT	PERIODS			EVALUATION SCHEME						Credits
	THEORY	L	TU	PR	SESSIONSAL EXAM			ESE	PR #	TW @	
					TA	CT	Total				
1	Basic Physics	2	-	2	10	20	30	70	50	-	3
2	Basic Chemistry	2	-	2	10	20	30	70	50	-	3
3	Basic Mathematics	4	1	-	10	20	30	70	-	-	5
4	English	2	-	2	10	20	30	70	-	25	3
5	Engineering Graphics	2	-	4	-	-	-	-	-	50	4
6	Computer Fundamentals	1	-	4	-	-	-	-	50	25	3
7	Basic Workshop Practice (Group wise)	-	-	3	-	-	-	-	50	25	2
	Total	13	1	17	40	80	120	280	200	125	23

STUDENT CONTACT HOURS PER WEEK: **31 HRS**
THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH
- External Assessment   @ - Internal Assessment   ESE - End Semester Exam.

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, TU - Tutorial, PR - Practical
TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.
Total Marks : 725

Minimum passing under any head is 40%, i.e. 40% passing for Sessional, ESE, Oral, and TW Separately.
Assessment of Practical, Oral & term work to be done as per the prevailing norms of curriculum implementation & assessment.

Name of the Course : ELECTRONICS/MECHANICAL/CIVIL/COMPUTER/ELECTRICAL/CHEMICAL ENGG. GROUPS	
Course code: EJ/EN/EX/EV/IC/IE/IS/MU/DE/ME/PG/PT/AE/CE/ CS/CR/CO/CM/IF/EE/EP/CH/CT/PS/CD/EDEI/ CV/MH/FE/IU/MI	**Semester : FIRST**
Duration : 6 SEMESTERS	**Maximum Marks : 120**
Teaching Scheme C	**Examination Scheme**
Theory : 13 hrs/week	Mid Semester Exam: 20 Marks
Tutorial: 1 hrs/week	Assignment & Quiz: 10 Marks
Practical : 17 hrs/week	End Semester Exam: 70 Marks
Credit :	
Aim :-Nil	
Objective :-Nil	
Pre-Requisite :-Nil	
Contents:- Nil	Hrs/week
Text Books: Nil	
Reference books : Nil	
Suggested List of Laboratory Experiments : Nil	
Suggested List of Assignments/Tutorial : Nil	

Name of the Course : All Branches of Diploma in Engineering/ Technology.				
(Basic Physics)				
Course code: EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ ME/PG/PT/AE/CE/CS/CR/IF/EE/EP/CH/CT/PS/ CD/ED/EI/CV/MH/FE/IU				Semester : First
Duration :				Maximum Marks : 150
Teaching Scheme				Examination Scheme
Theory : 2 hrs/week				Mid Semester Exam: 2 0 Marks
Tutorial: -- hrs/week				Assignment & Quiz: 10 Marks
Practical : 2 hrs/week				End Semester Exam: 70 Marks
Credit :3				

Aim :-				
S.No				
1.	Establish scientific department of the highest caliber where teaching and education are totally integrated with state-of-the-art research and to develop new science through research			
2.	The goal of physics is to formulate comprehensive principles that bring together and explain the world around us.			
3.	To establish the awareness about the power of Physics as a tool in the practicality of the life.			

Objective :-				
S.No	Student will be able to:			
1.	• Measure given dimensions by using appropriate instruments accurately. • Select proper measuring instrument on the basis of range, least count & precision required for measurement. • Select proper material for intended purpose by studying properties of materials.			
2.	• Identify good & bad conductors of heat. • Analyze relation among pressure, volume and temperature of gas & to interpret the results • Identify the effect of interference between light waves.			
3.	• Identify properties of laser light and photo electric effect for engineering applications. • Identify, analyze, discriminate and interpret logical sequence of field problems with the study of physics.			

Pre-Requisite :-				
S.No				
1.	Basic Mathematics knowledge to solve the problems.			
2.	Knowledge of basic concepts sciences such as physics, chemistry and mathematics			
3.	Visualization and analytical approach towards the subject is necessary.			

Contents (Theory)			Hrs/week	Marks
Unit -1 **UNITS AND MEASUREMENTS**	1.1	Need of Measurement in engineering and science, unit of a physical quantity, requirements of standard unit, systems of units-CGS,MKS and SI, classification of physical quantities-	03	06

	Fundamental and Derived with their units		
	1.2 Accuracy, Precision of instruments, Errors in measurement, Estimation of errors-Absolute error, Relative error and percentage error, significant figures. (Simple Problems)		
	1.3 Basic Measuring instruments-Vernier Caliper, Micrometer screw gauge, inner & outer caliper thermometer, spherometer, ammeter, voltmeter with their least count, range, accuracy and precision.		
	Standard reference surfaces used in engineering measurements-surface plate, angle plate, V- block, Engineer's square.		
Unit -2 **GENERAL PROPERTIES OF MATTER**	**2.1 Elasticity :** Deforming force, Restoring force, Elastic and plastic body, Stress and strain with their types, Hooke's law, Stress strain diagram, Young's modulus, Bulk modulus, Modulus of rigidity and relation between them(no derivation), (simple problems). (Simple problems) Stress strain diagrams of H.T. Steel, Cast iron, Aluminium and Concrete, Ultimate and breaking stress, Factor of safety.	**03**	**06**
	2.2 Surface Tension: Forces—cohesive and adhesive, , angle of contact, shape of liquid surface in a capillary tube, capillary action with examples, relation between surface tension , capillary rise and radius of capillary (no derivation)(simple problem),effect of impurity and temperature on surface tension.	**02**	**04**
	2.3 Viscosity : Velocity gradient, Newton's law of viscosity, coefficient of viscosity ,streamline and turbulent flow, critical velocity, Reynold's number,(simple problems), Stokes law and terminal velocity(no derivation) ,buoyant (up thrust) force, effect of temperature & adulteration on viscosity of liquid.	**02**	**04**
Unit – 3 **HEAT**	**3.1 Transmission of heat and expansion of solids** Three modes of transmission of heat-conduction, convection and radiation, good and bad conductor of heat with examples, law of thermal conductivity, coefficient of thermal conductivity (simple problems), expansion of solids-linear, aerial and cubical and relation between them.	**02**	**06**
	3.2 Gas laws and specific heats of gases Boyle's law, Charle's law, Gay Lussac's law, absolute temperature, Kelvin scale of temperature, general gas equation(no derivation)(simple problems),molar or universal gas constant, universal gas equation, standard or normal temperature and pressure (N.T.P.), specific heat of gases, relation between two specific heat (simple problems), thermodynamic variables, first law of thermodynamics (statement & equation only), isothermal, isobaric, isochoric & adiabatic processes (difference among these processes and equations of state) (simple problems).	**04**	**08**
Unit – 4 **LIGHT**	**4.1 Properties of light** Reflection and, refraction, Snell's law, physical significance of refractive index (simple problems), Total internal reflection, dispersion, diffraction and polarization of light (only introduction)	**03**	**06**

	4.2 **Wave theory of light & Interference**		
	Newton's corpuscles theory of light, Huygen's wave theory, wave front, Types of wave front-spherical, cylindrical and plane Huygen's principle of propagation of wave front, Principle of superposition of waves, Interference of light, constructive and destructive interference, Young's experiment. Analytical treatment of interference, conditions for stationary interference pattern.	**04**	**08**
	4.3 **Laser**		
	Light amplification by stimulated emission of radiation, properties of laser, spontaneous and stimulated emission, population inversion, pumping methods, He-Ne laser-construction & working, recording and reconstructing of hologram by using He-Ne laser.	**04**	**08**
Unit – 5 **MODERN PHYSICS**	*5.1 Photo electricity*	**03**	**08**
	Plank's hypothesis, properties of photons, photo electric effect, laws and characteristics of photoelectric effect, Einstein's photoelectric equation,(simple problems), construction and working of photoelectric cell, applications of photoelectric cell		
	5.2 **X-rays**		
	Production of X-rays, types of X-ray spectra-continuous and characteristics, X-ray wavelength (simple problems), properties of X-rays, applications of X-rays-engineering, medicine and scientific research work.	**03**	**06**
	Total	**33**	**70**

Practical :-

S.No	Skills to be developed
1.	**1) Intellectual skills-** ▪ Proper selection of measuring instruments on the basis of range, least count, precision and accuracy required for measurement. ▪ Analyze properties of matter & their use for the selection of material. ▪ To verify the principles, laws, using given instruments under different conditions. ▪ To read and interpret the graph. ▪ To interpret the results from observations and calculations. ▪ To use these results for parallel problems.
2.	**2) Motor skills-** ▪ Proper handling of instruments. ▪ Measuring physical quantities accurately. ▪ To observe the phenomenon and to list the observations in proper tabular form. ▪ To adopt proper procedure while performing the experiment. ▪ To plot the graphs.

Text Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
Kittel c	Introduction to solid state physics		Wiley and sons
Engineering Physics	Avadhanulu, Kshirsagar		S Chand Publications

Reference books :			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
V. Rajendran	Physics-I		Tata McGraw- Hill raw- Hill publication, New Delhi
Arthur Beiser	Applied physics		Tata McGraw- Hill raw- Hill publication, New Delhi
by R.K.Gaur and S.L.Gupta	Engineering Physics		Dhanpat Rai Publication, New Delhi.
Resnick and Halliday.	Physics		--

Suggested List of Laboratory Experiments :

S.No	Laboratory Experiments(Any ten experiments to be performed)
1	1. Use of vernier calipers for the measurement of dimensions of given object.
2	2. Use of micrometer screw gauge for the measurement of dimensions of given object
3	3. Determine the Young's modulus of material of wire using Searle's apparatus.
4	4. To observe rise in water level through capillaries of different bores.
5	5. Determine coefficient of viscosity of given oil using Stoke's Method.
6	6. Verification of Boyle's law.
7	7. Measurement of unknown temperature using thermocouple.
8	8. Determine the coefficient of linear expansion of given material of rod using Pullinger's apparatus.
9	9. To observe the divergence of laser light with respect to distance.
10	10. Plot characteristics of photoelectric cell (Photoelectric current verses intensity of light and voltage applied).

Suggested List of Assignments/Tutorial :

S.No	
1	Numerical Based assignment on wave theory and interference.
2	Question bank on laser and properties of matter.
3	Assignments on gas laws n specific heat of gases.

Name of the Course : All Branches of Diploma in Engineering and Technology (Basic Chemistry).	
Course code: EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE / ME/PG/PT/AE/ CE/CS/CR/ CO/CM/IF/EE/EP/ CH /CT/PS/CD/ ED/EI/CV/MH/FE/IU	**Semester : First**
Duration :	**Maximum Marks :150**
Teaching Scheme	**Examination Scheme**
Theory : 2 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10 Marks
Practical : 2 Hrs/week	End Semester Exam: 70 Marks
Credit : 3	

Aim :-

S.No	
1.	To apply the knowledge of chemical and physical properties and processes in engineering fields.
2.	The content of this subject provides knowledge of engineering materials.

Objective :-

S.No	
1.	• To draw the atomic structure of different elements. • To represent the formation of molecules schematically.
2.	• To describe the mechanism of electrolysis. • To identify the properties of metals & alloys related to engineering applications.
3.	• To identify the properties of non metallic materials, related to engineering applications. • To compare the effects of pollutants on environments & to suggest preventive measures & safety.

Pre-Requisite :-

S.No	
1.	Basic terms and formulae of Chemistry should be known.

Contents	Hrs/ week	Marks
Unit -1	**Atomic Structure** Definition of Atom, Fundamental Particles of Atom – their Mass, Charge, Location, Definition of Atomic no, Atomic Mass no., Isotopes & Isobars, & their distinction with suitable examples, Bohr's Theory, Definition, Shape & Distinction between Orbits & Orbitals, Hund's Rule, Filling Up of the Orbitals by Aufbau's Principles (till Atomic no. 30), Pauli's exclusion principle Valency – Definition, types (Electrovalency & Covalency), Distinction, Octet Rule, Duplet Rule, Formation of Electrovalent & Covalent Compounds e.g. Nacl, $CaCl_2$, MgO, $AlCl_3$, CO_2, H_2O, Cl_2, NH_3, C_2H_4, N_2, C_2H_2.	05	12

Unit -2	**Electrochemistry** Atom, Ion, Definition Ionisation & Electrolytic Dissociation, Arrhenius Theory of Ionisation, Significance of the Terms Involved in Electrolysis. Such as Conductors, Insulators or Dielectrics, Electrolyte, Non Electrolyte, Electrolysis, Electrolytic Cell, Electrodes, Current Density, Temperature, Mechanism of Electrolysis – Primary & Secondary Reactions at Cathode & Anode, Electrochemical Series for Cations & Anions, Electrolysis of $CuSO_4$ Solution by using Cu Electrode & Platinum Electrode, Electrolysis of NaOH solution & fused NaCl, Faraday's first & second law of Electrolysis & Numericals, Electrochemical Cells & Batteries, Definition, Types (Primary & Secondary Cells), e.g. Construction, Working & Applications of Dry Cell / Laclanche Cell & Lead – Acid Storage Cell, Applications of Electrolysis such as Electroplating & Electro refining, Electrometallurgy & electrotyping Conductivity of Electrolyte – Ohms Law, Definition & Units of Specific Conductivity, Equivalent Conductivity, specific resistance	06	14
Unit -3	**Metals & Alloys** **Metals** Occurrence of Metals, Definition Metallurgy, Mineral, Ore, Gangue, Flux & Slag, Mechanical Properties, Processing of Ore, Stages of Extraction of Metals from its Ores in Detail i.e. Concentration, Reduction, refining. Physical Properties & Applications of some commonly used metals such as Fe, Cu, Al, Cr, Ni, Sn, Pb, Zn, Co, Ag, W. **Mks:10** **Alloys** Definition of Alloy, Purposes of Making alloy Preparation Methods, Classification of Alloys such as Ferrous & Non Ferrous, examples. Composition, Properties & Applications of Alnico, Duralumin, Dutch Metal, German Silver / Nickel Silver, Gun Metal, Monel metal, Wood's Metal, Babbitt Metal. **Mks: 08**	08	16
Unit -4	**Non Metallic Materials** **Plastics** Definition of Plastic, Formation of Plastic by Addition & Condensation Polymerisation by giving e.g. of Polyethylene & Backelite plastic Respectively, Types of Plastic, Thermosoftening & Thermosetting Plastic, with Definition, Distinction & e.g., Compounding of Plastics – Resins, Fillers, Plasticizers, Acceleraters, Pigments, Engineering Applications of Plastic based on their Properties. **Mks: 04** **Rubber** Natural Rubber: Its Processing, Drawbacks of Natural Rubber, Vulcanisation of Rubber with Chemical Reaction. Synthetic Rubber: Definition, & e.g., Distinction Between Natural & Synthetic Rubber. **Mks: 04** **Thermal Insulating Materials**	04	10

	Definition, Characteristics & Applications of Glass Wool, Thermocole, Asbestos, Cork. **Mks: 04**			
Unit – 5	**Environmental Effects (Awareness Level)** Introduction, Definition, Causes of Pollution, Types of Pollution, Such as Air & Water Pollution. **Mks: 04**			
	Air Pollution Definition, Types of Air Pollutions their Sources & Effects, Such as Gases, Particulates, Deforestation, Radio Active Gases, Control of Air Pollution, Air Pollution Due to Internal Combustion Engine & Its Control Methods, Causes & Effects of Ozone Depletion & Green House Effects. **Mks: 08**		09	18
	Water Pollution Definition, Causes & Methods of Preventing Water Pollution, Types of Waste such as Domestic Waste, Industrial Waste, their Physical & Biological Characteristics, BOD, COD, Biomedical Waste & E – Waste, their Origin, Effects & Control Measures. Preventive Environmental Management (PEM) Activities. **Mks: 08**			
	Total		**32**	**70**

Practical :-	
S.No	
1.	**Intellectual Skills:** 1. Analyze given solution 2. Interpret the results
2.	**Motor Skills :** 1. Observe Chemical Reactions 2. Measure the quantities Accurately 3. Handle the apparatus carefully
3.	**List of Experiments:**

01 – 07 Qualitative Analysis of **Seven Solutions,** Containing One Basic & One Acidic Radical Listed below

Basic Radicals:

Pb^{+2}, Cu^{+2}, Al^{+3}, Fe^{+2}, Fe^{+3}, Cr^{+3}, Zn^{+2}, Ni^{+2}, Ca^{+2}, Ba^{+2}, Mg^{+2}, K^+, NH_4^+.

Acidic Radicals:

Cl^-, Br^-, I^-, CO_3^{-2}, SO_4^{-2}, NO_3^-.

06 To Determine E.C.E. of Cu by Using $CuSO_4$ Solution & Copper Electrode

07 To Determine the % of Fe in the Given Ferrous Alloy by $KMnO_4$ Method.

	08	To Prepare a Chart Showing Application of Metals like Fe, Cu, Al, Cr, Ni, Sn, Pb, Co.
	09	To Prepare Phenol Formaldehyde Resin (Bakelite)
	10	To Determine Carbon Monoxide Content in Emission from Petrol Vehicle.
	11	To Determine Dissolved Oxygen in a Water Sample.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S. S. Dara	Environmental Chemistry & Pollution Control		S. Chand Publication
-----------------------	Engineering Chemistry		Wiley India Edition
Jain & Jain	Engineering Chemistry		Dhanpat Rai and Sons

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Jain & Jain	Engineering Chemistry		Dhanpat Rai and Sons
S. S. Dara	Engineering Chemistry		S. Chand Publication
B. K. Sharma	Industrial Chemistry		Goel Publication
S. S. Dara	Environmental Chemistry & Pollution Control		S. Chand Publication

Suggested List of Laboratory Experiments :

S.No	
1	Preparation of any addition or condensation polymer.
2	Determination of pH for different solutions by using pH meter.

Suggested List of Assignments/Tutorial :

S.No	
1	Numericals based on Electrochemistry.
2	Assignments on Chemical bonding, Electrochemistry, Metals and Alloys, Non-metallic Engineering Materials

Name of the Course : **All Branches of Diploma in Engineering and Technology (Basic Mathematics)**	
Course code: EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ME/PG/PT/AE/ CE/CS/CR/CO/CM/IF/EE/EP/CH/CT/PS/CD/ED/EI/CV /MH/FE/IU	**Semester : First**
Duration :	**Maximum Marks :100**
Teaching Scheme	**Examination Scheme**
Theory : 4 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: 1 Hrs/week	Assignment & Quiz: 10 Marks
Practical : --	End Semester Exam: 70 Marks
Credit : 5	

Aim :-

S.No	
1.	To establish the awareness about the power of Mathematics as a tool in the practicality of the life.
2.	To give a vision for understanding and identifying the analytical problems, giving the mathematical model and to have practical applications of the concepts
3.	To enhance the logical, reasonable and applicative aptitude.

Objective :- This subject helps the students to develop logical thinking, which is useful in comprehending the principles of all other subjects. Analytical and systematic approach towards any problem is developed through learning of this subject. Mathematics being a versatile subject can be used at every stage of human life.

S.No	
1.	To appreciate the inter-disciplinary advantages of Mathematics.
2.	To enhance the concept of feasibility and systematic approach towards problem solving.

Pre-Requisite :-

S.No	
1.	Knowledge of basic Mathematical Concepts.
2.	Basic terms and formulae of Mathematics should be known.
3.	Aptitude towards learning and exploring the applications of the learnt concepts will be helpful.
4.	Visualization and analytical approach towards the subject is necessary.

Contents (Name of Topics)		Hrs/week	
Unit -1 Chapter No.	**ALGEBRA**	**01**	
	1.1 REVISION 1.1.1 Laws of Indices 1.1.2 Formula of factorization and expansion ((a^2-b^2), $(a+b)^2$ etc.) 1.1.3 Laws of logarithm with definition of Natural and		**--**

	Common logarithm.		

	1.2 PARTIAL FRACTION
	          Definition of polynomial fraction proper & improper
	fractions and definition of partial fractions.
	   1.2.2 To Resolve proper fraction into partial fraction with
	      denominator containing non repeated linear factors,
	      repeated linear factors and irreducible non repeated
	      quadratic factors.
	   1.2.3 To resolve improper fraction into partial fraction.
		04	**07**

	1.3 DETERMINANT AND MATRICES.
	   Determinant ---------------------------- 4 Marks
	            Definition and expansion of determinants of order
	      2 and 3.
	   1.3.2 Cramer's rule to solve simultaneous equations in
	      2 and 3 unknowns.
	   Matrices-------------------------------- 11Marks
	            Definition of a matrix of order m X n and types of
	      matrices.
	   1.3.4 Algebra of matrices such as equality, addition,
	      Subtraction, scalar multiplication and multiplication.
	            Transpose of a matrix.
	   1.3.6 Minor, cofactor of an element of a matrix, adjoint of
	      matrix and inverse of matrix by adjoint method.
	            Solution of simultaneous equations containing 2 and 3
	      unknowns by matrix inversion method.
		12	**15**

	1.4 BINOMIAL THEOREM
	   1.4.1 Definition of factorial notation, definition of permutation and
	      combinations with formula.
	   1.4.2 Binomial theorem for positive index.
	   1.4.3 General term.
	   1.4.4 Binomial theorem for negative index.
	   1.4.5 Approximate value (only formula)
		04	**03**

Unit -2	**TRIGONOMETRY.**		

	2.1 REVISION
	   2.1.1 Measurement of an angle (degree and radian). Relation
	      between degree and radian.
	   2.1.2 Trig ratios of 0^0, 30^0, 45^0 etc.
	   2.1.3 Fundamental identities.
		02	**03**

	2.2 TRIGONOMETRIC RATIOS OF ALLIED,
	   COMPOUND, MULTIPLE & SUBMULTIPLE ANGLES
	    (Questions based on numerical computations, which can
	      also be done by calculators, need not be asked particularly
	       for allied angles).
		08	**07**

	2.3 FACTORIZATION AND DEFACTORIZATION **FORMULAE**	**04**	**03**

	2.4 INVERSE TRIGONOMETRIC RATIOS
	   2.4.1 Definition of inverse trigonometric, ratios, Principal values of
	      inverse trigonometric ratios.
		02	**03**

	2.4.2 Relation between inverse trigonometric ratios.		

	2.5 PROPERTIES OF TRIANGLE
	    2.5.1 Sine, Cosine, Projection and tangent rules (without proof)
	    2.5.2 Simple problems.
		02	**03**

Unit -3	**COORDINATE GEOMETRY**		

	3.1 POINT AND DISTANCES
	    3.1.1 Distance formula, Section formula, midpoint, centriod of
	        triangle.
	    3.1.2 Area of triangle and condition of collinearity.
		04	**03**

	3.2 STRAIGHT LINE
	    3.2.1 Slope and intercept of straight line.
	    3.2.2 Equation of straight line in
	        slope point form, slope-intercept form, two-point form,
	        two-intercept form, normal form. General equation of line.
	    3.2.3 Angle between two straight lines condition of parallel and
	        perpendicular lines.
	            Intersection of two lines.
	    3.2.5 Length of perpendicular from a point on the line and
	        perpendicular distance between parallel lines.
		06	**09**

	3.3 CIRCLE
	    3.3.1 Equation of circle in standard form, centre – radius
	        form, diameter form, two – intercept form.
	    3.3.2 General equation of circle, its centre and radius.
		06	**06**

Unit-4	**VECTORS**		
	4.1 Definition of vector, position vector, Algebra of vectors (Equality, addition, subtraction and scalar multiplication) 4.2 Dot (Scalar) product with properties. 4.3 Vector (Cross) product with properties.	**04**	04
	4.4 **Applications** 4.4.1 Workdone and moment of force about a point & line	**04**	04
	TOTAL	64	**70**

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S.P.Deshpande	Basic Mathematics		Pune Vidyarthi Grah
S.P.Deshpande	Engginnering Mathematics		Pune Vidyarthi Grah

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S. P. Deshpande	Mathematics for polytechnic		Pune Vidyarthi Griha
S. L. Loney	Trigonometry		S. Chand Publication
H. S. Hall & S. R. Knight	Higher Algebra		Metric edition, Book Palace, New Delhi
Frc.G. Valles	College Algebra		Charotar Publication

Ayres	Matrices		Schuam series, McGraw hill
B. S. Grewal	Higher Engineering Mathematics		Khanna publications New Dehli
S. S. Sastry	Engineering Mathematics		Prentice Hall of India

Suggested List of Laboratory Experiments : Nil

Suggested List of Assignments/Tutorial :

S.No	Topic on which tutorial is to be conducted
1	Partial fractions
2	Determinants
3	Matrices
4	Solution of simultaneous equation by Matrix inversion method.
5	Binomial theorem
6	Trigonometry- fundamental identities-revision only
7	Trigonometry-allied, compound and multiple angles
8	Trigonometry-factorization and defactorization formulae.
9	Trigonometry-inverse trigonometric ratios.
10	Point and distances
11	Straight line
12	Circle.
13	Vectors
14	Vectors' applications

Note:
Maximum 5 questions are to be given in each tutorial, in which two 2 marks questions (based on basic concept and formulae with one/two step calculations) and three 4 marks questions are expected.

Name of the Course : All Branches of Diploma in Engineering and Technology (English).	
Course code: EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ ME/PG/PT/AE/ CE/CS/CR/CO/CM/IF/ EE/EP/CH /CT/PS/CD/ED/EI/CV/MH/FE/I	**Semester : First**
Duration :	**Maximum Marks :125**
Teaching Scheme	**Examination Scheme**
Theory : 2 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10 Marks
Practical : 2 Hrs/week	End Semester Exam: 70 Marks
Credit : 3	

Aim :-

S.No	
1.	Communication Development of the students who lack confidence in communicating in english.
2.	Developing the Writing, Listening and Speaking skill in the students.
3.	To improve their Personality and Communication Networks.

Objective :-
1. Comprehend the given passage
2. Answer correctly the questions on seen and unseen passages
3. Increase the vocabulary
4. Apply rules of grammar for correct writing

S.No	
1.	Comprehend the given passage
2.	Answer correctly the questions on seen and unseen passages
3.	Increase the vocabulary

Pre-Requisite :-

S.No	
1.	Making the sentences with correct use of parts of Speech.
2.	Sentences with different clauses.
3.	Reading, writing and speaking with proper vocabulary and grammar.

Contents		Hrs/week	
Unit -1	**PART I: TEXT** • Vocabulary - Understanding meaning of new words from text • Comprehension – Responding to the questions from text • Identifying parts of speech	16	30

Unit -2	**PART II -Application of grammar**		
	• Verbs		
	• Tenses	10	20
	Do as directed (active /passive, Direct/indirect, affirmative/negative/assertive, question tag, remove too, use of article, preposition ,conjunctions, interjections, punctuation)		
Unit - 3	**PART III - Paragraph writing**		
	• Definition – Types of paragraphs	02	10
	• How to write a paragraph		
Unit - 4	**PART IV - Vocabulary building**		
	• Word formation		
	• Technical jargon	04	10
	• Use of synonyms /antonyms/Homonyms/paronyms		
	• One word substitute		
	Total	**32**	**70**

Text will consist of 10 articles/Lessons

The term work will consist of 6 assignments:
The assignments should be written in A4 size note books (100 pages ruled)

Practical :-

S.No	Skills to be developed for practical:
1.	**Intellectual Skills**:
	1 Skills of speaking in correct English.
	2 Searching information.
	3 Reporting skills.
2.	**Motor Skills:**
	1 Use of appropriate body language.
	2 Use of mouth organs
3.	**List of Assignments:**
	1 Building of Vocabulary -- (3 Hours) (2 assignments)
	a) 25 words for each assignment from the glossary given in the text book at the end of each chapter
	b) Technical Jargons -- (2 Hours) (1 assignment) Identify 10 technical words from the respective branches. Resource -- (Encyclopedia/Subject Books)
	2 Grammar (4 Hours) 2 assignments.
	a) Insert correct parts of speech in the sentences given by the teachers. (16 sentences--Two each, from the different parts of speech)
	b) Punctuate the sentences given by the teachers. (10 sentences)
	3 Conversational skills: Role plays (8 hours)
	a) Students are going to perform the role on any 6 situations, by the teacher.

	b)	Dialogue writing for the given situations. (2 assignments)
	4	Write Paragraphs on given topics (6 hours) (2 assignments)
	a)	Four types of paragraphs to be written in **two assignments** covering two types in one assignment.
	5	News paper report writing (4hours) (2 assignments)
	a)	Write any two events from the news paper as it is.
	b)	Write any two events on the situations given by the teacher.
	6	Errors in English (4 hours) (2 assignments)
	a)	Find out the errors and rewrite the sentences given by the teacher. (20 sentences)

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
P.C.Wren & H.Martin	High School English Grammar & composition	1st	S.Chand & Company Ltd.
Dr. Sunita Mishra Dr. C. Muralikrishna	Communication skills for Engineers	1st	Pearson2012
M. Gnanamurali	English Grammar at glance	Latest	S. Chand & company Ltd.

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
David Green	Contemporary English grammar, structures and composition		Macmillan
R. C. Jain	English grammar and composition		Macmillan
Rodgers	Thesaurus		Oriental Longman
Oxford	Dictionary		Oxford University
Longman	Dictionary		Oriental Longman
Z. N. Patil et el	English for practical Purposes		Macmillan
Editor – Mukti Sanyal	English at Workplace		Macmillan

Suggested List of Laboratory Experiments :

S.No	
1	Exercise for making the Sentences and their conversions.
2	Exercise for use of Parts of Speech.
3	Use of Vowels, Articles, Verbs.

Suggested List of Assignments/Tutorial :

S.No	
1	Correct use of Tenses
2	Formation of words
3	Compositions and Paragraphs

Name of the Course :	All Branches of Diploma in Engineering and Technology **(Engineering Graphics)**		
Course code: EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE /ME/PG/PT/AE/ CE/CS/CR/ CO/CM/IF/EE/EP/ CH/CT/PS/CD/ED/EI/CV/MH/FE/IU		**Semester :** First	
Duration :		**Maximum Marks : 50**	
Teaching Scheme		**Examination Scheme**	
Theory : 2 hrs/week		Mid Semester Exam: -- Marks	
Tutorial: hrs/week		Assignment & Quiz: 25 Marks	
Practical : 4 hrs/week		End Semester Exam: -- Marks	
Credit :4			

Aim :-	
S.No	
1.	The course is aimed at developing basic graphic skills so as to enable them to use these skills in preparation of engineering drawings, their reading and interpretation
2.	Understand the fundamentals of Engineering Drawing
3.	Read and interpret object drawings.

Objective :- The student should be able to: -	
S.No	
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.

Pre-Requisite :-	
S.No	
1.	Unambiguous and clear visualization.
2.	Sound Pictorial Intelligence.

	Contents	Hrs/week

Unit -1	Drawing Instruments and their uses
	    1.1 Letters and numbers (single stroke vertical)
	    1.2 Convention of lines and their applications.
	    1.3 Scale (reduced, enlarged & full size) plain scale and
	        diagonal scale.
	    1.4 Sheet layout.
	    1.5 Introduction to CAD (Basic draw and modify
	        Command).
	    1.6 Geometrical constructions.
		05

Unit -2	Engineering curves & Loci of Points.
	
	1.2 To draw an ellipse by
	    2.1.1 Directrix and focus method
	    2.1.2 Arcs of circle method.
	    2.1.3 Concentric circles method.
	 2.2 To draw a parabola by:
	    2.2.1 Directrix and focus method
	     2.2.2 Rectangle method
	2.3 To draw a hyperbola by:
	    2.3.1 Directrix and focus method
	    2.3.2 passing through given points with reference to
	       asymptotes
	    2.3.3 Transverse Axis and focus method.
	2.4 To draw involutes of circle & polygon (up to
	  hexagon)
	2.5 To draw a cycloid, 21picycloids, hypocycloid
	2.6 To draw Helix & spiral.
	2.7 Loci of Points:
	2.7.1 Loci of points with given conditions and examples
	     related to simple mechanisms.
		09

Unit – 3	Orthographic projections 3.1 Introduction to Orthographic projections. 3.2 Conversion of pictorial view into Orthographic Views (First Angle Projection Method Only) 3.3 Dimensioning technique as per SP-46	06

Unit – 4	Isometric projection
	4.1 Isometric scale
	4.2 Conversion of orthographic views into isometric
	  View/projection(Simple objects)
	Projection of Straight Lines and Planes.
	  (First Angle Projection Method only)
		05

Unit – 5	5.1 Lines inclined to one reference plane only and limited
	  to both ends in one quadrant.
	5.2 Projection of simple planes of circular, square,
	  rectangular, rhombus, pentagonal, and hexagonal,
	  inclined to one reference plane and perpendicular to
	  the other.
		07

	Total	**32**

Practical :-

List of Practical	Skills to be developed	
	Intellectual skills	**Motor Skills**

1.Introduction to graphics
      - (1 Sheet)
Draw the following using CAD
1.1   Rectangle with given
      dimensions
1.2   Circle with given
      dimensions and hatch
	2. To develop ability to solve
	     problems on geometrical
	     constructions.
		3. To develop ability to draw the
		     geometrical constructions by
		     computer.

1.3 Pentagon with line command 1.4 Hexagon with given dimensions 1. Draw one figure containing circle tangent, arc and dimensioning.		
2. Engineering curves & Loci of points - (1 Sheet) i) Three different curves are to be draw using any one method. ii) Draw locus of point on any one mechanism	1) To develop ability to differentiate between conic and curves. 2) To develop ability to identify the type of locus from the nature of surface and the position of generating circle. 3) Able to interpret the given mechanisms and locus of points.	1. To develop ability to draw different types of curves.
3. Orthographic projections - (Total 2 Sheets) Two objects by first angle projection method – (1 Sheet) Redraw the same sheet using CAD – (1 Sheet)	1) Develop ability to interpret first angle projection method. 2) To interpret and able to solve problem on orthographic projection of given object.	4. Develop ability to draw orthographic projections by first angle projection method
4. Isometric projection - (Total 2 sheets) Two objects one by true scale and another by isometric scale. (simple objects) - (1 sheet) Redraw the same sheet using CAD - (1 sheet)	1) Develop ability to differentiate between isometric view and isometric projections. 2) To differentiate between Isometric scale and true scale.	1. Develop ability to draw isometric views and isometric projections from given orthographic views of an object using computer.
5. **Projections of line and planes.** – (1 Sheet) Two problems on Projection of lines and two problems on Projection of Planes.	1) To develop ability to differentiate between true length and apparent length. 2) To interpret the position lines and plane with reference plane.	1) Able to draw Orthographic Projections of line and planes.

List of Practice Oriented Projects: -
1) To draw layout of visited Industry, College using CAD
2) To draw orthographic projection of given machine element using CAD

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
N. D. Bhatt	Engineering Drawing		Charotar Publishing House
K. Venugopal	Engineering Drawing and Graphics+ AutoCAD		New Age Publication
R. K. Dhawan	Engineering Drawing		S. Chand Co.
P. J. Shah	Engineering Drawing		---

K. R. Mohan	Engineering Graphics		Dhanpat Rai and Publication Co.

B)	Video Cassettes / CD's
1. CD's prepared by MSBTE for Engineering Drawing
C)	IS Code
SP – 46. Engineering Drawing practice for schools and colleges.

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
P.S.Gill	Engineering Drawing		SK Kataria and sons, Delhi
Surjeet Singh	Engineering Drawing		Dhanpat Rai and Co., Delhi
D.A.Jolhe	Engineering Drawing	2008	TATA McGraw Hill

Suggested List of Laboratory Experiments :- Nil

Suggested List of Assignments/Tutorial :

S.No	
1	Assignment problems (Min. 5) on every unit. The problems are expected to be practical applications oriented

Name of the Course : All Branches of Diploma in Engineering and Technology (Computer Fundamentals).		
Course code: EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ ME/PG/PT/AE/CE/CS/CR/CO/CM/IF/ EE/EP/CH/ CT /PS/ CD/ED/EI/CV/MH/FE/IU	**Semester : First**	
Duration :	**Maximum Marks : 75**	
Teaching Scheme	**Examination Scheme**	
Theory : 1 hrs/week	Mid Semester Exam: Marks	
Tutorial: hrs/week	Assignment & Quiz: 20 Marks	
Practical : 4 hrs/week	End Semester Exam: Marks	
Credit :3		

Aim :-

S.No	
1.	To Understand basics of Computer.
2.	To Learn various application software's
3.	To Learn Usage of Computer System in various Domains

Objective :-

S.No	Students will be able to:
1.	Understand a computer system that has hardware and software components, which controls and makes them useful.
2.	Understand the operating system as the interface to the computer system.
3.	Use the basic functions of an operating system.
4.	Set the parameter required for effective use of hardware combined with and application software's
5.	Compare major OS like Linux and MS-Windows
6.	Use file mangers, word processors, spreadsheets, presentation software's and Internet
7.	Have hands on experience on operating system and different application software
8.	Use the Internet to send mail and surf the World Wide Web.

Pre-Requisite :-

S.No	
1.	Basic knowledge of computers
2.	Basic knowledge of internet
3.	Knowledge of database systems

Contents	Hrs/week
Unit -1 **Fundamentals Of Computer**	**3**

	Introduction Components of PC The system Unit Front part of system Unit Back part of system Unit CPU Memory of computer Monitor Mouse, Keyboard, Disk, Printer, Scanner, Modem, Video, Sound cards, Speakers	
Unit -2	**Introduction To Windows 2000/Xp** Working with window Desktop Components of window Menu bar option Starting window Getting familiar with desktop Moving from one window to another Reverting windows to its previous size Opening task bar buttons into a windows Creating shortcut of program Quitting windows	**3**
Unit – 3	**GUI Based Editing, Spreadsheets, Tables & Presentation** Application Using MS Office 2000 & Open Office.Org Menus Opening of menus, Toolbars: standard toolbars, formatting toolbars & closing of menus Quitting Document, Editing & designing your document Spreadsheets Working & Manipulating data with Excel Changing the layout Working with simple graphs & Presentation Working With PowerPoint and Presentation	**3**
Unit – 4	**Introduction To Internet** What is Internet Equipment Required for Internet connection Sending &receiving Emails Browsing the WWW Creating own Email Account Internet chatting	**2**
Unit – 5	**Usage of Computer System in various Domains** Computer application in Offices, books publication, data analysis ,accounting , investment, inventory control, graphics, database management, Instrumentation, Airline and railway ticket reservation, robotics, artificial intelligence, military, banks, design and research work, real-time, point of sale terminals, financial transaction terminals.	**2**
Unit – 6	**Information technology for benefits of community** Impact of computer on society Social responsibilities Applications of IT	**3**

	Impact of IT Ethics and information technology Future with information technology		
		Total Hours	**16**

Practical's	
Sr. No	**List of Practical's**
1.	Working with Windows 2000 desktop ,start icon, taskbar, Recycle Bin, My Computer icon ,The Recycle Bin and deleted files Creating shortcuts on the desktop
2.	The Windows 2000 accessories WordPad – editing an existing document Use of Paint – drawing tools The Calculator, Clock
3.	The Windows Explorer window, concept of drives, folders and files? Folder selection techniques, Switching drives, Folder creation Moving or copying files, Renaming, Deleting files ,and folders
4.	Printing Installing a printer driver Setting up a printer Default and installed printers Controlling print queues Viewing installed fonts
	The clipboard and 'drag and drop' Basic clipboard concepts Linking vs. embedding
5.	Moving through a Word document menu bar and drop down menus toolbars
6.	Entering text into a Word 2000 document, selection techniques Deleting text
7.	Font formatting keyboard shortcuts
8.	* Paragraph formatting Bullets and numbering
9.	* Page formatting What is page formatting? Page margins Page size and orientation Page breaks, Headers and footers
10.	Introducing tables and columns
11.	Printing within Word 2000 Print setup Printing options Print preview
12.	* Development of application using mail merge Mail merging addresses for envelopes Printing an addressed envelope and letter
13.	Creating and using macros in a document
14.	* Creating and opening workbooks Entering data
15.	Navigating in the worksheet Selecting items within Excel 2000 Inserting and deleting cells, rows and column Moving between worksheets, saving worksheet, workbook
16.	Formatting and customizing data
17.	Formulas, functions and named ranges
18.	Creating, manipulating & changing the chart type

19.	Printing, Page setup, Margins Sheet printing options, Printing a worksheet
20.	* Preparing presentations with Microsoft Power Point. Slides and presentations, Opening an existing presentation , Saving a presentation
21.	Using the AutoContent wizard ,Starting the AutoContent wizard Selecting a presentation type within the AutoContent wizard Presentation type Presentation titles, footers and slide number
22.	* Creating a simple text slide Selecting a slide layout Manipulating slide information within normal and outline view Formatting and proofing text Pictures and backgrounds drawing toolbar AutoShapes Using clipart Selecting objects Grouping and un-grouping objects The format painter
23.	* Creating and running a slide show Navigating through a slide show Slide show transitions Slide show timings Animation effects
24.	* Microsoft Internet Explorer 5 & the Internet Connecting to the Internet The Internet Explorer program window The on-line web tutorial Using hyper links Responding to an email link on a web page
25.	Searching the Internet Searching the web via Microsoft Internet Explorer Searching the Internet using Web Crawler Searching the Internet using Yahoo Commonly used search engines
26.	Favorites, security & customizing Explorer Organizing Favorite web sites Customizing options – general, security, contents, connection, programs, advanced
27.	* Using the Address Book Adding a new contact Creating a mailing group Addressing a message Finding an e-mail address
28.	Using electronic mail Starting Outlook Express Using the Outlook Express window Changing the window layout Reading file attachment Taking action on message-deleting, forwarding, replying

29.	* Email & newsgroups Creating and sending emails Attached files Receiving emails Locating and subscribing to newsgroups Posting a message to a newsgroup
30.	Chatting on internet Understating Microsoft chat environment Chat toolbar

Note : Term work will include printout of Exercises of practicals marked with asterisks (*)

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Vikas Gupta	Comdex Computer Course Kit	First	Dreamtech
Henry Lucas	Information Technology for management	7Th	Tata McGraw Hills
B.Ram	Computer Fundamentals Architecture and Organization	Revised 3rd	New Age International Publisher

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
P k Sinha	Computer Fundamental	5th	Wadsworth, Inc
Mubarak Shah	Fundamentals of Computer Vision	1st	Mubarak Shah University of Central Florida
Daniel J. Rosenkrantz	Fundamental Problems in Computing	5th	Springer

Suggested List of Laboratory Experiments :

S.No	
1	Formal way to send Email
2	Information search on a given topic
3	Creating the PPT

Suggested List of Assignments/Tutorial :

S.No	
1	Write up for the information search
2	Write up for seminar topic
3	Assignment on embedding

Name of the Course : Civil Engineering Group (Basic Workshop Practice (Civil)		
Course code: CE/CT/CR		Semester : First
Duration :		Maximum Marks : 75
Teaching Scheme		**Examination Scheme**
Theory : hrs/week		Mid Semester Exam: Marks
Tutorial: hrs/week		Assignment & Quiz: Marks
Practical : 3 hrs/week		End Semester Exam: Marks
Credit :2		

Aim :-	
S.No	
1.	The students are required to identify, operate and control various machines
2.	The students are required to select and use various tools and equipments related to Wood working and smithy processes.

Objective :-	
S.No	At the end of this course, the student will able to
1.	• Know basic workshop processes. • Read and interpret job drawings. • Identify, select and use various marking, measuring, and holding, striking and cutting tools & equipments wood working and sheet metal shops.
2.	• Operate, control different machines and equipments. • Select proper welding rods and fluxes. • Inspect the job for specified dimensions
3.	• Produce jobs as per specified dimensions. • Adopt safety practices while working on various machines.

Pre-Requisite :-	
S.No	
1.	Safety consciousness.
2.	Primary First-aid Knowledge.
3.	Ability to organize and manage their (students) activities and themselves.

Contents		Hrs/week
	Details of Theory Contents	
Unit -1	**CARPENTRY SHOP** 1. Introduction. 2. Various types of woods. 3. Different types of tools, machines and accessories.	03
Unit -2	**WELDING SHOP**	04

	1. Introduction 2. types of welding, ARC welding, Gas welding, Gas Cutting. 3. welding of dissimilar materials, Selection of welding rod material Size of welding rod and work piece. 4. different types of flame. 5. Elementary symbolic representation, 6. Safety precautions in welding safety equipments and its use in welding processes.	
Unit – 3	**FITTING SHOP** 1. Introduction 2. Various marking, measuring, cutting, holding and striking tools. 3. Different fitting operation like chipping, filing, right angle, marking, drilling, tapping etc. 4. Working Principle of Drilling machine, Tapping dies its use. 5. Safety precautions and safety equipments.	04
Unit – 4	**PLUMBING SHOP** 1. Introduction. 2. Various marking, measuring, cutting, holding and striking tools. 3. Different G.I. pipes, PVC pipes, flexible pipes used in practice. 4. G. I. pipes and PVC pipes fittings and accessories, Adhesive solvents-chemical action, Piping layout.	03
Unit – 5	**SHEET METAL SHOP** 1. Introduction 2. Various types of tools, equipments and accessories. 3. Different types of operations in sheet metal shop. 4. Soldering and riveting. 5. Safety precautions.	02
	Total	**16**
Skill to be developed:		
S.No.		
	Intellectual Skills: 1. Ability to read job drawing 2. Ability to identify and select proper material, tools, equipments and machine. 3. Ability to select proper parameters (like cutting speed, feed, depth cut use of lubricants) in machine.	
	Motor Skills: 1. Ability to set tools, work piece, and machines for desired operations. 2. Ability to complete job as per job drawing in allotted time. 3. Ability to use safety equipment and follow safety procedures during operations. 4. Ability to inspect the job for confirming desired dimensions and shape. 5. Ability to acquire hands-on experience	
Notes: 1] The instructor shall give demonstration to the students by preparing a specimen job as per the job drawing. 2] The workshop diary shall be maintained by each student duly signed by instructor of respective shop		

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
• S.K. Hajara Chaudhary	• Workshop Technology	•	• Media Promotors and Publishers,New Delhi
• B.S. Raghuwanshi	• Workshop Technology	•	• Dhanpat Rai and sons, New Delhi
• R K Jain	• Production Technology	•	• Khanna Publishers, New Delhi
• H.S.Bawa	• Workshop Technology	•	• Tata McGraw Hill Publishers, New Delhi
• Kent's	• Mechanical Engineering Hand book	•	• John Wiley and Sons, New York
• Electronics Trade & technology			• Development Corporation.(A Govt. of India undertaking) Akbar Hotel Annex, Chanakyapuri, New Delhi- 110 021

- **Video Cassettes/ CDS**
  Learning Materials Transparencies, CBT Packages developed by N.I.T.T.E.R. Bhopal.

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
K.C.John	Mechanical Workshop Practice	2010	PHI Learning Pvt Ltd.

Suggested List of Laboratory Experiments :

S.No	Details Of Practical Contents
1	**WOOD WORKING SHOP:** • Demonstration of different wood working tools / machines. • Demonstration of different wood working processes, like plaining, marking, chiseling, grooving, turning of wood etc. • One simple job involving any one joint like mortise and tenon dovetail, bridle, half lap etc.
2	**WELDING SHOP** : • Demonstration of different welding tools / machines. • Demonstration on Arc Welding, Gas Welding, gas cutting and rebuilding of broken parts with welding. • One simple job involving butt and lap joint.
3	**FITTING SHOP**: • Demonstration of different fitting tools and drilling machines and power tools • Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc.

	• One simple fitting job involving practice of chipping, filing, drilling, tapping, cutting etc.
4	**PLUMBING SHOP**: • Demonstration of different plumbing tools • Demonstration of different operations in plumbing, observing different pipe joints and pipe accessories. Different samples of PVC pipes and PVC pipe fittings. • One job on simple pipe joint with nipple coupling for standard pipe. Pipe threading using standard die sets.
5	**SHEET METAL SHOP:** • Demonstration of different sheet metal tools / machines. • Demonstration of different sheet metal operations like sheet cutting, bending, edging, end curling, lancing , soldering and riveting. • One simple job involving sheet metal operations and soldering and riveting.

Suggested List of Assignments/Tutorial :	
S.No	
1	Assignment on advancements in various machines.
2	Assignment on non-conventional machining processes.

Name of the Course :	Electrical Engineering/ Electrical Power System (**Basic Workshop Practice (Electrical)**)	
Course code: EE/EP	**Semester : First**	
Duration :	**Maximum Marks : 75**	
Teaching Scheme	**Examination Scheme**	
Theory : hrs/week	Mid Semester Exam: Marks	
Tutorial: hrs/week	Assignment & Quiz: Marks	
Practical : 3 hrs/week	End Semester Exam: Marks	
Credit :2		

Aim :-

S.No	
1.	It is essential to know some basic workshop skills.
2.	students are required to supervisor, maintenance of equipment, where he needs the knowledge of basic workshop skills such as welding, Soldering, Sheet metal working, drilling, tapping etc.

Objective :-

S.No	The student will be able to
1.	• Use the knowledge of sheet metal working and welding for preparing panels, switch boxes etc.
2.	• Use various drills for electrical wiring and installation
3.	• Make joints for various types of wirings such as casing capping, Batten wiring and mounting of accessories

Pre-Requisite :-

S.No	
1.	Safety consciousness.
2.	Primary First-aid Knowledge.
3.	Ability to organize and manage their (students) activities and themselves.

Contents		Hrs/week
Unit -1	**WELDING SHOP** : 1. Introduction 2. types of welding, ARC welding, Gas welding, Gas Cutting. 3. welding of dissimilar materials, Selection of welding rod material Size of welding rod and work piece. 4. Different types of flame. 5. Elementary symbolic representation, 6. Safety precautions in welding safety equipments and its use in welding processes.	
Unit -2	**SHEET METAL SHOP.** 1. Introduction	

	2. Various types of tools, equipments and accessories. 3. Different types of operations in sheet metal shop. 4. Soldering and riveting. 5. Safety precautions.	
Unit - 3	**TURNING SHOP** 1. Introduction 2. Various marking, measuring, cutting, holding and striking tools. 3. Working Principle of Drilling machine, Tapping dies its use. 4. Drilling and Tapping 5. Turning: Plain, taper 6. Threading and Knurling 7. Safety precautions and safety equipments.	
Unit – 4	**PLUMBING SHOP** 1. Introduction. 2. Various marking, measuring, cutting, holding and striking tools. 3. Different types of PVC pipes, flexible pipes used in practice. 4. PVC pipes fittings and accessories, Adhesive solvents- chemical action, 5. Piping layout.	
	Total	
Practical:	Skills to be developed	
	1. Intellectual Skills: a) Ability to read job drawings. b) Ability to identify and select proper material, tools and equipments and machines. c) Ability to select proper parameters (like cutting speed, feed, depth cut use of lubricants) in machine.	
	2. Motor Skills : a) Ability to set tools, work piece, and machines for desired operations. b) Ability to complete job as per job drawing in allotted time. c) Ability to use safety equipment and follow safety procedures during operations. d) Ability to inspect the job for confirming desired dimensions and shape. e) Ability to acquire hands-on experience.	

Sr. No	DETAILS OF PRACTICAL CONTENTS

01	**WELDING SHOP**
	• Any one composite job from involving butt joint lap joint welding process, from the following like Grill, door, window frame, Corner flower stand chair , table frame (square pipe 25 mm) cooler frame (folding type), Kitchan Trolley, Centering Plate, supporting frames
	
	Note:1] One job of standard size (Saleable/marketable article shall be preferred)
	    2] Batch size should be selected depending on volume of work .
	    3] Job allotted should comprise of 6-8 hours of actual working operations.
	    4] Student shall calculate the cost of material and labor required for their job from the drawing.

02	**PLUMBING SHOP** • Demonstration of PVC pipe joint with various fittings. • Exercise for students on preparing actual pipeline layout for PVC pipe. Preparing actual drawing and bill of material.

03	**SHEET METAL SHOP**
	 • One composite job of Water-draining Channel, display boards, Panel Board, Switch Box, Glass Paneling items etc.
	 Note:1]One job of standard size(Saleable/marketable article shall be preferred)
	     2] Batch size should be selected depending on volume of work.
	     3] Job allotted should comprise of 4-6 hours of actual working ions.
	     4] Student shall calculate the cost of material and labor cost required
	         for their job from the drawing.

04	**TURNING SHOP**
	 Note:1] One job related to Plane and Taper turning, threading and knurling
	     2] One job related to Drilling and tapping
	     3] Batch size should be selected depending on volume of work.
	     4] Job allotted should comprise of 6-8 hours of actual working
	     5] Student shall calculate the cost of material and labor cost for their job from the drawing.

05	**Demonstration of power tools and practice of utility items.** • Demonstration of advance power tools, pneumatic tools, electrical wiring tools and accessories. • Tools for Cutting and drilling,

Text Books:			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
K.C.John	Mechanical Workshop Practice	2010	PHI Learning Pvt Ltd.

Reference books :			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
S.K. Hajara Chaudhary	Workshop Technology		Media Promotors and Publishers,New Delhi
B.S. Raghuwanshi	Workshop Technology		Dhanpat Rai and Sons, New Delhi
R K Jain	Production Technology		Khanna Publishers, New Delhi
H.S.Bawa	Workshop Technology		Tata McGraw Hill Publishers,New Delhi
-	Kent's Mechanical Engineering Hand book		John Wiley and Sons, New York

Video Cassettes / CDS
- Learning Materials Transparencies, CBT Packages developed by NITTER Bhopal.

Suggested List of Laboratory Experiments : - Nil

Suggested List of Assignments/Tutorial :	
S.No	
1	Assignment on advancements in various machines.
2	Assignment on non-conventional machining processes.
3	

Name of the Course : Mechanical Engineering (Basic Workshop Practice (Mechanical & Chemical Group))	
Course code: ME/AE/PG/PT/CH/PS	**Semester :** First
Duration :	**Maximum Marks : 75**
Teaching Scheme	**Examination Scheme**
Theory : hrs/week	Mid Semester Exam: Marks
Tutorial: hrs/week	Assignment & Quiz: Marks
Practical : 3 hrs/week	End Semester Exam: Marks
Credit :2	

Rationale:

Mechanical and Chemical diploma technician is expected to know basic workshop practice like Wood working, Sheet metal. The students are required to identify, operate and control various machines. The students are required to select and use various tools and equipments related to Wood working and sheet metal processes.

Aim :-	
S.No	
1.	To helps to develop psychomotor skill and attitude.
2.	The basic knowledge of various processes will be helpful to select the most appropriate process for getting the desired results in terms of getting the raw material converted to finished product as per the requirements.
3.	The student will be familiarized with working principles and operations like forging, rolling, extrusion, press working, lathe, drilling, milling, casting, welding, brazing and soldering etc which are the basic manufacturing processes.
Objective :-	
S.No	The student will able to
1.	• Know basic workshop processes. • Read and interpret job drawing. • Identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.
2.	• Operate, control different machines and equipments. • Inspect the job for specified dimensions
3.	• Produce jobs as per specified dimensions. • Adopt safety practices while working on various machines
Pre-Requisite :-	
S.No	
1.	Safety consciousness.
2.	Primary First-aid Knowledge.
3.	Ability to organize and manage their (students) activities and themselves.

Contents (Details Of Theory Contents)	Hrs/week

Unit -1	**CARPENTRY SHOP**	
	1. Introduction.	
	2. Various types of woods.	
	3. Different types of tools, machines and accessories.	
Unit -2	**WELDING SHOP** :	
	1. Introduction	
	2. types of welding, ARC welding, Gas welding, Gas Cutting.	
	3. welding of dissimilar materials, Selection of welding rod material Size of welding rod and work piece.	
	4. different types of flame.	
	5. Elementary symbolic representation,	
	6. Safety precautions in welding safety equipments and its use in welding processes.	
Unit – 3	**FITTING SHOP**:	
	1. Introduction	
	2. Various marking, measuring, cutting, holding and striking tools.	
	3. Different fitting operation like chipping, filing, right angle, marking, drilling, tapping etc.	
	4. Working Principle of Drilling machine, Tapping dies its use.	
	5. Safety precautions and safety equipments.	
Unit – 4	**PLUMBING SHOP**:	
	1. Introduction.	
	2. Various marking, measuring, cutting, holding and striking tools.	
	3. Different G.I. pipes, PVC pipes, flexible pipes used in practice.	
	4. G. I. pipes and PVC pipes fittings and accessories, Adhesive solvents-chemical action, Piping layout.	
Unit – 5	**SHEET METAL SHOP.**	
	1. Introduction	
	2. Various types of tools, equipments and accessories.	
	3. Different types of operations in sheet metal shop.	
	4. Soldering and riveting.	
	5. Safety precautions.	
	Total	

|		
Skill to be developed:		
	Intellectual Skills:	
	1. Ability to read job drawing	
	2. Ability to identify and select proper material, tools, equipments and machine.	
	3. Ability to select proper parameters (like cutting speed, feed, depth cut use of lubricants) in machine.	
	Motor Skills:	
	1. Ability to set tools, work piece, and machines for desired operations.	
	2. Ability to complete job as per job drawing in allotted time.	

3. Ability to use safety equipment and follow safety procedures during operations.

4. Ability to inspect the job for confirming desired dimensions and shape.

5. Ability to acquire hands-on experience.

Notes: 1] The instructor shall give demonstration to the students by preparing a specimen job as per the job drawing.

2] The workshop diary shall be maintained by each student duly signed by instructor of respective shop

Sr.No.	Details Of Practical Contents
01	**WOOD WORKING SHOP:** • Demonstration of different wood working tools / machines. • Demonstration of different wood working processes, like plaining, marking, chiseling, grooving, turning of wood etc. • One simple job involving any one joint like mortise and tenon dovetail, bridle, half lap etc.
02	**WELDING SHOP** : • Demonstration of different welding tools / machines. • Demonstration on Arc Welding, Gas Welding, gas cutting and rebuilding of broken parts with welding. • One simple job involving butt and lap joint.
03	**FITTING SHOP**: • Demonstration of different fitting tools and drilling machines and power tools. • Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc. • One simple fitting job involving practice of chipping, filing, drilling, tapping, cutting etc.
04	**PLUMBING SHOP**: • Demonstration of different plumbing tools • Demonstration of different operations in plumbing, observing different pipe joints and pipe accessories. Different samples of PVC pipes and PVC pipe fittings. • One job on simple pipe joint with nipple coupling for standard pipe. Pipe threading using standard die sets.
05	**SHEET METAL SHOP:** • Demonstration of different sheet metal tools / machines. • Demonstration of different sheet metal operations like sheet cutting, bending, edging, end curling, lancing, soldering and riveting. • One simple job involving sheet metal operations and soldering and riveting.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S.K. Hajara Chaudhary-	Workshop Technology		-Media Promoters and Publishers, New Delhi
B.S. Raghuwanshi-	Workshop Technology-		Dhanpat Rai and sons, New Delhi

R K Jain-	Production Technology-		Khanna Publishers, New Delhi
H.S.Bawa- -	Workshop Technology		Tata McGraw Hill Publishers,New Delhi
Kent's	Mechanical Engineering Hand book-		John Wiley and Sons, New York

Video Cassettes/ CDS

- Electronics Trade & technology Development Corporation.(A Govt. of India undertaking)
  Akbar Hotel Annex, Chanakyapuri, New Delhi- 110 021
- Learning Materials Transparencies, CBT Packages developed by N.I.T.T.E.R. Bhopal.

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Anderson	Shop Theory		Tata McGraw Hill
Rajeev Upadhayay	Workshop Practice		

Suggested List of Laboratory Experiments : Nil

Suggested List of Assignments/Tutorial :

S.No	
1	Assignment on advancements in various machines.
2	Assignment on non-conventional machining processes.

Name of the Course : Electronics Engineering Group (Basic Workshop Practice (Electronics Group))	
Course code: ET/EJ/EN/EX/IE/IS/IC/DE/MU/EV	Semester : First
Duration :	Maximum Marks : 75
Teaching Scheme	Examination Scheme
Theory : hrs/week	Mid Semester Exam: Marks
Tutorial: hrs/week	Assignment & Quiz: Marks
Practical : 3 hrs/week	End Semester Exam: Marks
Credit :2	

Aim :-

S.No	
1.	It is essential to know some basic workshop skills.
2.	students are required to supervisor, maintenance of equipment, where he needs the knowledge of basic workshop skills such as welding, Soldering, Sheet metal working, drilling, tapping etc.

Rational:-

S.No	
1.	Electronics diploma technician is expected to know basic workshop practice like Wood working, Sheet metal and Fitting.
2.	The students are required to identify, operate and control various machines.
3.	The students are required to select and use various tools and equipments related to Wood working and sheet metal processes

Objective :-

S.No	
1.	Read and interpret the drawing.
2.	Draw sketch for given job.
3.	Use manufacturers Catalog to prepare estimation of material required.
4.	Use specification tables.
5.	Decide Sequence of procedure.

Pre-Requisite :-

S.No	
1.	Safety consciousness.
2.	Primary First-aid Knowledge.
3.	Ability to organize and manage their (students) activities and themselves.

		Contents (Topic)	Hrs/week

Unit -1		**CARPENTRY SHOP**
		    1. Introduction.
		    2. Various types of woods.
		    3. Different types of tools, machines and accessories.	

Unit -2		**FITTING SHOP**:
		    1. Introduction
		    2. Various marking, measuring, cutting, holding and striking tools.
		    3. Different fitting operation like chipping, filing, right angle, marking, drilling, tapping etc.
		    4. Working Principle of Drilling machine, Tapping dies its use.
		    5. Safety precautions and safety equipments.	

Unit – 3		**SHEET METAL SHOP.**
		    1. Introduction
		    2. Various types of tools, equipments and accessories.
		    3. Different types of operations in sheet metal shop.
		    4. Soldering and riveting.
		    5. Safety precautions.	

		Total	

Skills to be developed:

Intellectual Skills:

1. Ability to read job drawing.

2. Ability to identify and select proper material, tools, equipments and machine.

Ability to select proper parameters (like cutting speed, feed, depth cut use of lubricants) in machine.

Motor Skills:

1. Ability to set tools, work piece, and machines for desired operations.

2. Ability to complete job as per job drawing in allotted time.

3. Ability to use safety equipment and follow safety procedures during operations.

4. Ability to inspect the job for confirming desired dimensions and shape.

5. Ability to acquire hands-on experience.

Note: Details of on example job for each shop is given below:

Sr.No.	Details Of Practical Contents
01	**WOOD WORKING SHOP:** • Demonstration of different wood working tools / machines. • Demonstration of different wood working processes, like planning, marking, chiseling, grooving, turning of wood etc. • One simple job of preparing switch board or any other similar job

02	**FITTING SHOP**: • Demonstration of different fitting tools and drilling machines and power tools • Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc. • One simple fitting job involving practice of filing, drilling, tapping, cutting etc. Such as Transistor Heat Sink or any other similar job
03	**SHEET METAL SHOP:** • Demonstration of different sheet metal tools / machines. • Demonstration of different sheet metal operations like sheet cutting, bending, edging, end curling, lancing , soldering and riveting. • One simple job involving sheet metal operations and soldering and 43iveting. Such as Battery Eliminator Box or any other similar job

<center>S..   SHEET METAL WORK : BATTERY ELIMINATOR BOX</center>

CHASSIS
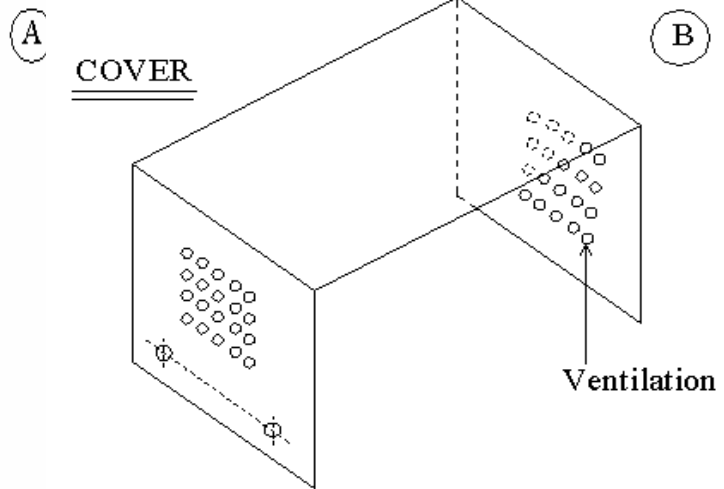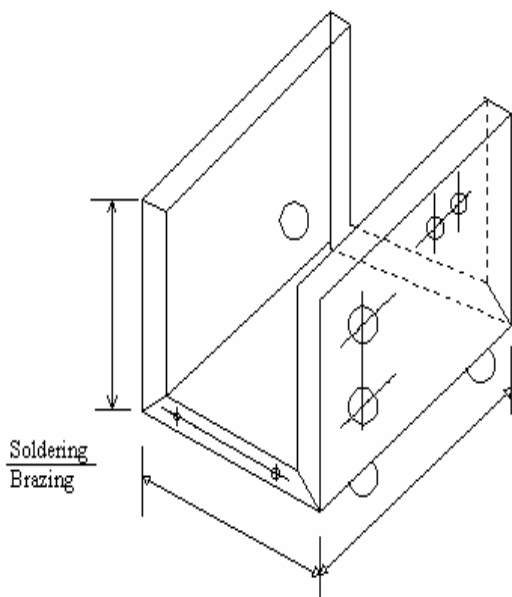
<center>MATERIAL : C R C A sheet 22/24 SWG</center>

* TOOLS & EQUIPMENT: **SEQUENCE OF OPERATIONS :**

1) Steel Rule   1) Development
2) Try square   2) Marking
3) Scriber   3) Checking
4) Spring Divider / Center Punch   4) Cutting
5) Files   5) Debuting
6) Shearing Machine / ship   6) Corner cutting

7) Drilling Machine	7) Drilling
8) Mallet	8) Punching
9) Hammer	9) Bending
10) Chisels	10) Topping
11) Hollow or solid punch	11) Numbering
12) Hand Drill M/c	12) Finishing
13) Drills in various sizes	13) Soldering / Brazing
14) Taps M3 & tap wrench	
15) Bending M/c	
16) Bench vice	
17) Use various stakes	
18) Number Punch	
19) Blow lamp	
20) Soldering iron	

ø 3.2(2 Holes)

M3
2Holes

5

5

50

60

2

4

10
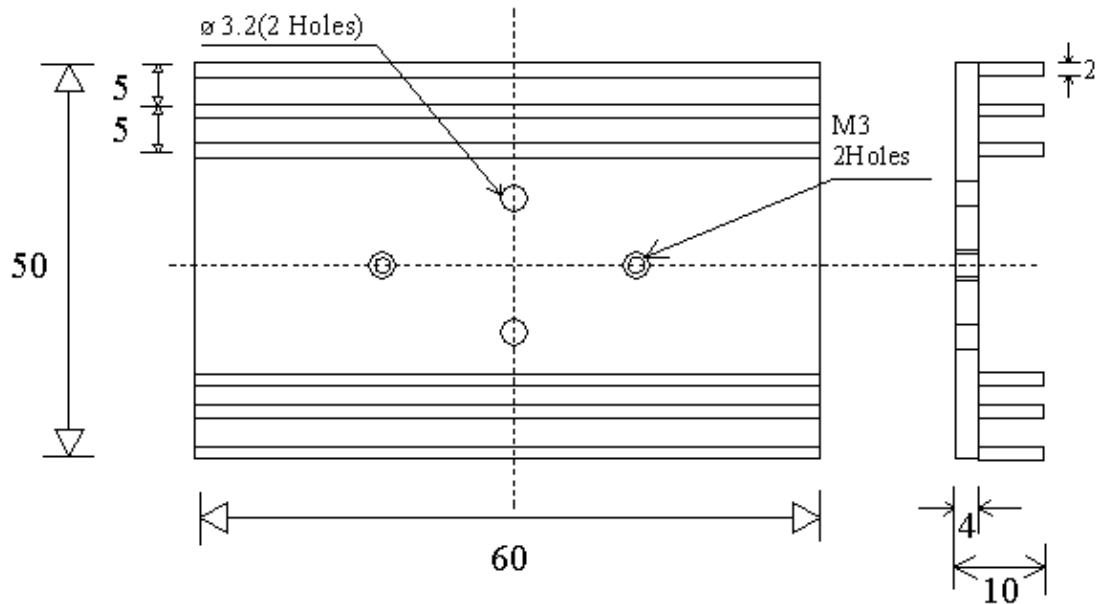
T..   Fitting Work: Transistor Heat Sink

MAT : ALUMINIUM FLAT   SIZE : 50 X 65 X 10 mm

NOTE : ALL DIMENSIONS ARE IN MM
TOLERANCE : ± 0.3 mm

TOOLS & EQUIPMENT

1) Steel Rule / Vernier caliper
2) Try square
3) Scriber
4) Bench Vice
5) Surface plate / with magnet block
6) Files, flat, square, Niddles
7) Marking Gauge
8) Marking Block / Height Gauge
9) Hacksaw frame
10) Center Punch
11) Hammer
12) Chisels Hat
13) Table Drill Machine (Bench)
14) Drills
15) Tap & Tap wrenches
16) Number Punch

SEQUENCE OF OPERATIONS

1) Marking
2) Checking
3) Cutting
4) Square ness fitting (90')
5) Saw cutting
6) Chiseling / chipping
7) Slot filing
8) Drill Marking
9) Drilling
10) Tapping
11) Finishing
12) Numbering

U..   Carpentry Work: Switch Box
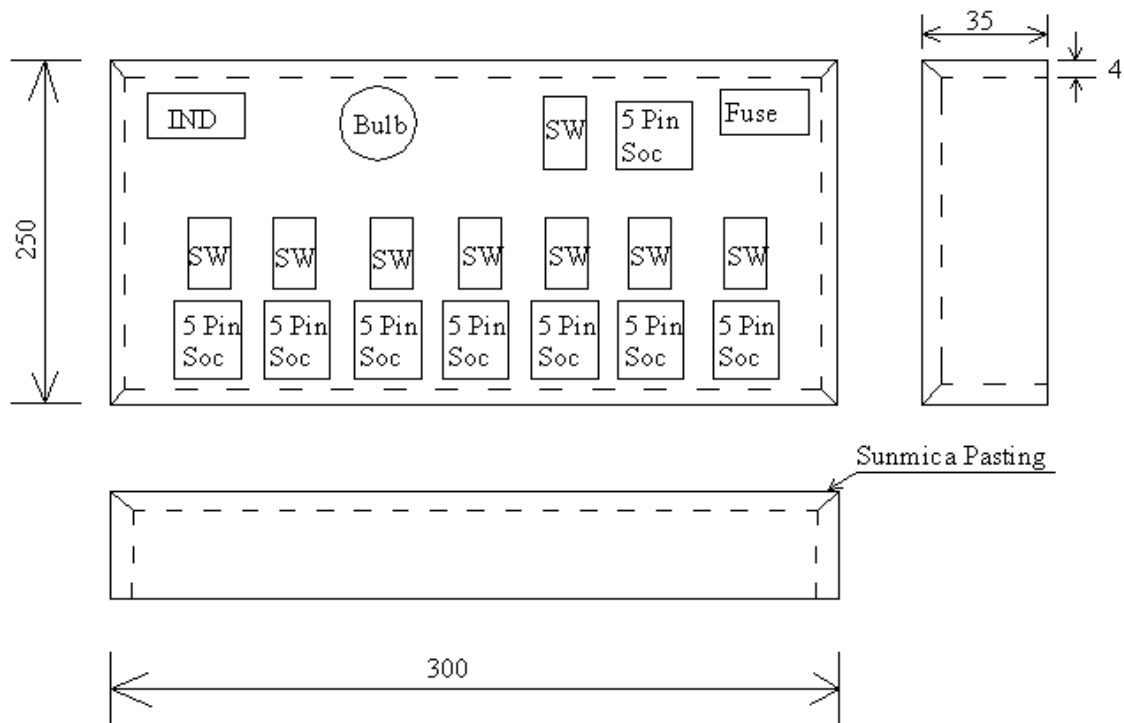
MATERIAL : TEAK WOOD AND SUNMICA, COMMERCIAL PLYWOOD

        SIZE : 1) 40 X 260 X 10 mm   02 Nos.
              2) 40 X 310 X 10 mm   02 Nos.
              3) Sun-mica – 250 X 300 mm X 0.5 mm   01 Nos.
              4) Plywood – 250 X 300 mm X 5 mm   01 Nos.
              5) Fevicol
              6) French Polish

TOOLS & EQUIPMENT	SEQUENCE OF OPERATIONS
1) Steel Rule	1) Measuring
2) Try square	2) Planning
3) Marking Gauge	3) Marking
4) Jack Plane	4) Cutting
5) Hand Saw	5) Chiseling
6) Carpentry Vice	6) Corner joint with nail
7) Wooden Mallet / Hammer	7) Sun mica Pasting (Fevicolor similar adhesive)
8) Firmer Chisel	8) Marking for slot cutting
9) Jig Saw Machine	9) Jig Saw cutting
10) Marfa file	10) Numbering
11) Numbering	11) Polishing

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S.K. Hajara Chaudhary	Workshop Technology		Media Promotors and Publishers, New Delhi
B.S. Raghuwanshi	Workshop Technology		Dhanpat Rai and Sons, New Delhi
R K Jain	Production Technology		Khanna Publishers, New Delhi

Video Cassettes/ CDS
Learning Materials Transparencies, CBT Packages developed by NITTER Bhopal

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
H.S.Bawa	Workshop Technology		Tata McGraw Hill Publishers, New Delhi
--	Kent's Mechanical Engineering Hand book		John Wiley and Sons, New York

Suggested List of Laboratory Experiments : Nil

Suggested List of Assignments/Tutorial :Nil

Name of the Course : Computer Engineering Group (Basic Workshop Practice (Computer))	
Course code: CO/CM/CD/IF	Semester : First
Duration :	Maximum Marks : 75
Teaching Scheme	Examination Scheme
Theory : hrs/week	Mid Semester Exam: Marks
Tutorial: hrs/week	Assignment & Quiz: Marks
Practical : 3 hrs/week	End Semester Exam: Marks
Credit : 2	

Aim :-

S.No	
1.	To understand external peripheral devices and internal devices of computer.
2.	To study system configuration using CMOS setup.
3.	To study connections of different devices with computer

Objective :-

S.No	After studying this subject, the student will be able to -
1.	• Understand basic components of computers. • Connect peripheral devices. • Clean various devices like Keyboard, mouse, printers, motherboard.
2.	• Park and eject the papers over the printer. • Write Data on the CD. • Scan documents and images.
3.	• Understand front panel and back panel connections. • Connection of Pen drives and DVD's

Pre-Requisite :-

S.No	
1.	Introduction of various device of personal computer
2.	Handling of floppies and pen drives
3.	Installation of external devices such as scanner and printer

Contents: Theory (Topic/Subtopic)		Hrs/week
Unit -1	**Introduction to Various External Peripheral Devices** 1.1 Different types of keyboards 1.2 Different types of Mouse 1.3 Different types of Scanners 1.4 Different types of Modems 1.5 Different types of printers 1.6 CD writers, speakers, CD read /write drive 1.7 Microphones, LCD projectors, Pen drives, DVD drive 1.8 Different types of Monitors	

Unit -2	**Introduction to Various Internal Devices** 2.1 Different makes of hard disks 2.2 Different types of network Interface cards 2.3 Different types of cables such as data cables, printer cables ,network cables ,power cables etc. 2.4 Different types of floppy disk 2.5 Motherboard connection 2.6 Graphics Card connection 2.7 Network Interface card connection	
Unit - 3	**Physical Connections of different peripheral Devices** 3.1 Connection of Mouse to different ports 3.2 Connection of keyboards to different ports 3.3 Connection of Monitors 3.4 Connection of Printers 3.5 Different switch settings of printers 3.6 Printer's self test 3.7 Jumper settings of hard disks 3.8 Attaching FDD,HDD and CD drives 3.9 Attaching Pen Drives and DVDs 3.10 Attaching Scanners	
	Total	

ASSIGNMENTS:

1. Observe all the peripheral devices available in the lab. Describe them in detail.
2. Demonstration of system configuration using CMOS setup.
3. Study of different ports such as serial, parallel, PS/2,NIC ports.
4. Assignment on how to write data on CDs
5. Observe different printer settings on different types of printers available in your lab. Write down the function of each switch.
6. Demonstration of printer's self test.
7. Assignment on connection of speakers and microphones.
8. Assignment on different types of cables in your lab.
9. Assignment on cleaning procedures of Mouse, Keyboard and motherboard.
10. Assignment on how to connect scanner and scan document and   pictures on the scanner available in your lab.
11. Assignment on making jumper settings on hard disk.
12. Assignment on different types of cards such as graphics card, LAN card, multimedia cards etc.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Mr. David Stone & Alfred Poor	Troubleshooting Your PC		Prentice Hall India
David Groth	A+ Complete		BPB Publication
Manuals	Reference Manuals of PC troubleshooting and maintenance		--

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher

Balasubramaniam	Computer Installation and servicing		Tata McGraw Hill

Suggested List of Laboratory Experiments :

S.No	
1	Installation of external devices
2	Introduction to computer architecture and maintenance
3	Physical Connections of different peripheral Devices

Suggested List of Assignments/Tutorial :

S.No	
1	Write short notes on devices which are taught in classes
2	Write the steps included in installation of external devices
3	Write down short notes on new inventions and technology

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME: MECHANICAL ENGINEERING

COURSE CODE : ME/PG/AE/PS/MH/FE/MI

DURATION OF COURSE : 6 SEMESTERS

SEMESTER: SECOND   **SCHEME : C**

Sr.No.	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
	THEORY	L	TU	P	SESSIONSAL EXAM			ESE	PR @	Oral #	TW @	
					TA	CT	Total					
1	Communication Skills	1	1	2	10	20	30	70	-	25	25	3
2	Engineering Mathematics	3	1	-	10	20	30	70	-	-	-	3
3	Applied Science (Mechanical & Plastic)	3	-	4	10	20	30	70	50	-	-	5
4	Engineering Mechanics	3	-	2	10	20	30	70	-	-	25	4
5	Workshop Drawing	1	-	4	10	20	30	70	-	-	50	3
6	Workshop Practice	-	-	4	-	-	-	-	-	-	50	2
7	Development of Life - I	1	-	2	-	-	-	-	-	25	25	3
8	Professional Practices- II	-		2					-		50	1
	Total	**12**	**2**	**20**	**50**	**100**	**150**	**350**	**50**	**50**	**225**	**24**

STUDENT CONTACT HOURS PER WEEK: **34 HRS**
HTEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH
\# , External Assessment   @ , Internal Assessment   ESE - End Semester Exam.

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, TU - Tutorial, P - Practical
TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.
Total Marks : 675

Minimum passing for sessional marks is 40%, and for theory subject 40%.
Assessment of Practical, Oral & term work to be done as per the prevailing norms of curriculum implementation & assessment.

Name of the Course :	All Branches of Diploma in Engineering & Technology (**Communication Skills**)	

Course code: CE/CR/CS/ME/EE/EP/EJ/EN/ET/EX/DE/IE/IS/IC/EV/MU/CO/CM/IF/CV/MH/FE/IU/CD/ED /EI	Semester : Second
Duration :	Maximum Marks :150
Teaching Scheme	**Examination Scheme**
Theory : 1 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: 1 Hrs/week	Assignment & Quiz: 10 Marks
Practical : 2 Hrs/week	End Semester Exam: 70 Marks
Credit : 3	

Aim :-

S.No	
1.	Introduction to various Communication skills
2.	To improve Students Personality
3.	To motivate students to work in challenging situation with positive attitude

Objective :-

S.No	The Students will be able to:
1.	Understand and use the basic concepts of communication and principles of effective communication in an organized set up and social context.
2.	Give a positive feedback in various situations, to use appropriate body language & to avoid barriers for effective communication.
3.	Write the various types of letters, reports and office drafting with the appropriate format.

Pre-Requisite :-

S.No	
1.	Making the sentences with correct use of parts of Speech.
2.	use of appropriate body language.
3.	Reading, writing and speaking with proper vocabulary and grammar.

Contents (Theory)		Hrs/ week	Marks
	Name of the Topic		
Unit -1	**Introduction to communication:** 1.1 Definition , communication cycle/ process, 1.2 The elements of communication : sender- message – channel- Receiver –Feedback & Context. 1.3 Definition of communication process. 1.4 Stages in the process : defining the context, knowing the	**02**	**08**

	audience, designing the message, encoding , selecting proper channels, transmitting, receiving, decoding and giving feedback.		
Unit -2	**Types of communication** Formal- Informal, Verbal- Nonverbal, Vertical- horizontal-diagonal	**02**	**08**
Unit - 3	**Principals of effective communication :** 3.1 Definition of effective communication 3.2 Communication barriers & how to overcome them. 3.3 Developing effective messages: Thinking about purpose, knowing the audience, structuring the message, selecting proper channels, minimizing barriers & facilitating feedback.	**02**	**08**
Unit – 4	**Non verbal- graphic communication**: 4.1 Non- verbal codes: A- Kinesecs , B- Proxemics , C – Haptics D-Vocalics , E- Physical appearance. F -Chronemics , G –Artifacts **Marks: 08** 4.2 Aspects of body language **Marks: 06** 4.3 Interpreting visuals & illustrating with visuals like tables, charts & graphs. **Marks: 08**	**04**	**18**
Unit – 5	**Formal written skills :** 5.1 Office Drafting: Circular, Notice , and Memo. **Marks: 06** 5.2 Job Application with resume. **Marks: 08** 5.3 Business correspondence: Enquiry, Order letter, Complaint letter, and Adjustment letter. **Marks: 06** 5.4 Report writing: Accident report, fall in production, Progress / Investigative. **Marks: 08** 5.5 Defining & describing objects & giving Instructions. **Marks: 04**	**06**	**28**
	Total	16	70

Assignments:
1. Communication Cycle (With The Help Of Diagram)
2. Communication Situations (List Of 5 Communication situations stating the type of communication
3. Barriers That Hinder A Particular Communication Situation. (State the type of barrier, and how to overcome them).
4. Developing A Story Or A Paragraph For The Given Topic Sentence.(in a group of 5 – 6 students)
5. Describing Various Equipments.
6. Identifying The Various Sentences With Their Type Of Writing. (e.g. Scientific, legal, colloquial etc.)
7. Business Letters
8. Letters Of Suggestion
9. Comparative Time Table Of 2 Students
10. Description Of Two Different Persons.(seeing the picture)
11. Letter To The Librarian, Principal
12. Report Writing.

NOTE: The above assignments are suggested to be completed in the prescribed work-book.			

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Krushna Mohan, Meera Banerji	Developing Communication Skills		Macmillan
Joyeeta Bhattacharya	Communication Skills		Reliable Series
Jayakaran	Every ones guide to effective writing		Apple publishing

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
1. Stephen Covey,	"7 Habits of highly effective people"		Pearson Publication
2. Daniel Goleman	Working with Emotional Intelligence"		Pearson Publication

Suggested List of Laboratory Experiments :

S.No	
1	Pairing discussion may be used for conducting various activities to improve Communication skills.
2	Student's demonstration.
3	Group Discussion.

Suggested List of Assignments/Tutorial :

S.No	
1	Audio recording.
2	Audio on demand (by students). Video on demand (by students).
3	Material upload (by teacher for up-gradation of teaching material).

Name of the Course : All Branches of Diploma in Engineering and Technology (Engineering Mathematics)	
Course code: CE/ME/IE/EJ/DE/ET/EX/EE/EP/MU/EV/IS/CO/ CM/IF /PG/PT/AE/CV/MH/FE/CD/ED/EI	**Semester : Second**
Duration :	**Maximum Marks :100**
Teaching Scheme	**Examination Scheme**
Theory : 3 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: 1 Hrs/week	Assignment & Quiz: 10 Marks
Practical : --	End Semester Exam: 70 Marks
Credit : 3	

Aim :-

S.No	
1.	To know mathematical calculation.
2.	Introduction to Mathematical calculus.
3.	Acquire sufficient mathematical techniques necessary for daily and practical problems.

Objective :-

S.No	The student will be able to
1.	Acquire knowledge of Mathematical terms, concepts, principles and different methods.
2.	Develop the ability to apply mathematical methods to solve technical problems, to execute management, plans with precision.

Pre-Requisite :-

S.No	
1.	Basic Formulae.
2.	Introduction to the Mathematical concepts.
3.	Definition of Derivatives.

Contents (Theory)	Hrs/week	Marks

Note:
  1. Chapters 1 to 3 are common for all branches.
  2. Chapter 4-For Civil, Electrical, Mechanical and Electronics groups
  3. Chapter 5-For Computer Engineering Group.		

Unit -1 **Function and Limit** **1.1 Function** 1.1.1 Definitions of variable, constant, intervals such as open, closed, semi-open etc. 1.1.2 Definition of Function, value of a function and types of functions,	04	06

	Simple Examples. **1.2 Limits** 1.2.1 Definition of neighborhood, concept and definition limit. 1.2.2 Limits of algebraic, trigonometric, exponential and logarithmic functions with simple examples.	**08**	**12**
Unit -2	**Derivatives** **2.1** Definition of Derivatives, notations. 2.2 Derivatives of Standard Functions 2.3 Rules of Differentiation. (Without proof). Such as Derivatives of Sum or difference, scalar multiplication, Product and quotient. 2.4 Derivatives of composite function (Chain rule) 2.5 Derivatives of inverse and inverse trigonometric functions. 2.6 Derivatives of Implicit Function 2.7 Logarithmic differentiation 2.8 Derivatives of parametric Functions. 2.9 Derivatives of one function w.r.t another function 2.10 Second order Differentiation.	**12**	**18**
Unit – 3	**Statistics And Probability** **3.1 Statistics** 3.1.1 Measures of Central tendency (mean, median, mode) for ungrouped and grouped frequency distribution. 3.1.2 Graphical representation (Histogram and Ogive Curves) to find mode and median 3.1.3 Measures of Dispersion such as range, mean deviation, Standard Deviation, Variance and coefficient of variation. Comparison of two sets of observations.	**10**	**12**
	3.2 Probability 3.2.1 Definition of random experiment, sample space, event, Occurrence of event and types of events (impossible, mutually exclusive, exhaustive, equally likely). 3.2.2 Definition of Probability, addition and multiplication theorems of Probability	**04**	**06**
NOTE: Chapter 4 is for Civil, Electrical, Electronics and Mechanical Groups		
Unit – 4	**4.1 Applications Of Derivative** 4.1.1 Geometrical meaning of Derivative, Equation of tangent and Normal 4.1.2 Rates and Motion 4.1.3 Maxima and minima 4.1.4 Radius of Curvature	**06**	**08**
	4.2 Complex number 4.2.1 Definition of Complex number. Cartesian, polar, Exponential forms of Complex number. 4.2.2 Algebra of Complex number(Equality, addition, Subtraction, Multiplication and Division) 4.2.3 De-Moivre's theorem (without proof) and simple problems. Euler's form of Circular functions, hyperbolic functions and relations between circular &hyperbolic functions	**04**	**08**
	Note: Chapter 5 is for Computer Engineering Group Only		
05	**5.1 Numerical Solution of Algebraic Equations**	**06**	**08**

	5.1.1 Bisection method, Regula-Falsi method and Newton-Raphson method **5.2 Numerical Solution of Simultaneous Equations** 5.2.1 Gauss elimination method 5.2.2 Iterative methods-Gauss Seidal and Jacobi's method		**04**	**08**
		Total	**48**	**70**

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S.P. Deshpande	Mathematics for Polytechnic		Pune Vidyarthi Griha Prakashan, Pune.
Robert T Smith	Calculus :Single Variable		Tata McGraw Hill
Dass H. K.	Advanced Engineering Mathematics		S. Chand Publication, New Delhi
S.C Gupta and Kapoor	Fundamentals of Mathematical Statistics		S. Chand Publications New Delhi.

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
B.S Grewal	Higher Engineering Mathematics		Khanna Publication, New Delhi
P. N. Wartikar	Applied mathematics		Pune Vidyarthi Griha Prakashan, Pune.

Suggested List of Laboratory Experiments :

S.No	
1	Measures of Central tendency.
2	Complex number.
3	Comparison of two sets of observations.

Suggested List of Assignments/Tutorial :

Tutorial Note:
Tutorials are to be used to get enough practice for solving problems. It is suggested that in each tutorial at least five problems to be solved.

Tutorial No.	Topic on which tutorial is to be conducted
1	Function
2	Limits
3	Derivative
4	Derivative
5	Derivative
6	Statistics

7	Statistics
8	Statistics
9	Probability
10	Probability
11	Application of derivative/numerical Solution of algebraic equations
12	Application of derivative/numerical Solution of algebraic equations
13	Complex Numbers/Numerical Solution of Simultaneous Equations
14	Complex Numbers/Numerical Solution of Simultaneous Equations

Name of the Course : Mechanical Engineering Group (Applied Science (Mechanical))			
Course code: ME/PG/PT/AE/MH/FE		Semester : Second	
Duration :		Maximum Marks :	
Teaching Scheme		Examination Scheme	
Theory : hrs/week		Mid Semester Exam: Marks	
Tutorial: hrs/week		Assignment & Quiz: Marks	
Practical : hrs/week		End Semester Exam: Marks	
Credit :			

Aim :-	
S.No	
1.	The goal of physics is to formulate comprehensive principles that bring together and explain the world around us.
2.	To establish the awareness about the power of Physics as a tool in the practicality of the life.. Establish scientific department of the highest caliber where teaching and education are totally integrated

Objective :-	
S.No	The Student will be able to:
1.	1. Differentiate kinetic and kinematics and **S**olve the problems on kinematics and kinetics.
2.	2. Graphically represent rectilinear motion, S.H.M. and use for solving engineering problems.
3.	3. Use N.D.T. in quality assurance and saving of man power, machining, materials,
	4. Use principles of illumination for enhancing work efficiency
	5. Analyze variation of sound intensity with respect to distance.
	6. Identify different factors affecting acoustical planning of buildings
	7. Identify different factors affecting indoor lighting.

Pre-Requisite :-	
S.No	
1.	Knowledge of basic Physics Concepts.
2.	Basic terms and formulae of Mathematics should be known.
3.	Aptitude towards learning and exploring the applications of the learnt concepts will be helpful.

Contents : Theory (Name of The Topic)		Hrs/week	
Unit -1	**1. Kinematics** **1.1 Rectilinear Motion** Equations of Motions-$v=u+at$, $s=ut+1/2at^2$, $V^2=u^2+2as$(only equation), Distance traveled by particle in n^{nt} second, Velocity Time Diagrams-uniform velocity, uniform acceleration and uniform retardation, equations of motion for motion	14	15

Show Desktop.scf	under gravity. **1.2 Angular Motion** Definition of angular displacement, angular velocity, angular acceleration, Relation between angular velocity and linear velocity, Three equations of circular motion (no derivation) angular distance traveled by particle in n^{nt} second (only equation), Definition of S.H.M. and S.H.M. as projection of uniform circular motion on any one diameter, Equation of S.H.M. and Graphical representation of displacement ,velocity, acceleration of particle in S.H.M. for S.H.M. starting from mean position and from extreme position.		

Unit -2	**1. Kinetics**
	2.1 Definitions of momentum, impulse, impulsive force, Statements of Newton's laws of
	  motion and with equations, Applications of laws of motion—Recoil of gun, Motion
	 of two connected bodies by light inextensible string passing over smooth pulley, Motion of lift.
	2.2 Work ,power ,Energy
	    Definition of work, power and energy, equations for P.E. K.E., Work energy principle, Representation of work by using graph, Work done by a torque(no derivation)		

Unit -3	**3. Non –destructive testing of Materials.** **3.1 T**esting methods of materials –Destructive and Nondestructive, Advantages and Limitations of N.D.T., Names of N.D.T. Methods used in industries, Factors on Which selection of N.D.T. dependents, Study of Principle, Set up, Procedure, **3.2** Working, Advantages, limitations, Applications and Application code of following N.D.T. methods –Penetrant method, Magnetic particle method, Radiography, Ultrasonic, Thermography.	**05**	**10**

Unit -4	**Acoustics and Indoor Lighting of Buildings**
	     2. Acoustics
	 Weber and Fetcher's law, limit of intensity and loudness, echo, Reverberation and reverberation time (Sabine's formula) **,**Timbre (quality of sound), Pitch or Frequency of sound. Factors affecting Acoustical planning of auditorium–echo, reverberation, creep, focusing, standing wave, coefficient of absorption, sound insulation, noise pollution
	and the different ways of controlling these factors.
	     3. Indoor lighting
	 Definition of luminous intensity, intensity of illumination with their SI units, Inverse square law and Photometric equation, Bunsen's photometer— ray diagram, working and applications, Need of indoor lighting ,Indoor lighting schemes and Factors
	 Affecting Indoor Lighting.
		05	**10**

	Total	**24**	**35**

Practical	
Skills to be developed**:**	
Intellectual skills:	▪ Proper selection of measuring instruments on the basis of range, least count, precision and accuracy required for measurement.

	- To verify the principles, laws, using given instruments under different conditions. - To read and interpret the graph. - To interpret the results from observations and calculations. - To use these results for parallel problems.
Motor skills:	- Proper handling of instruments. - Measuring physical quantities accurately. - To observe the phenomenon and to list the observations in proper tabular form. - To adopt proper procedure while performing the experiment. List of Practical:

1. To represent simple harmonic motion with the help of vertical oscillation of spring and to determine spring constant (K) (Stiffness Constant)

2. To determine time period of oscillation of compound bar pendulum and calculate acceleration due to   gravity.

3. To determine the velocity of sound by using resonance tube

4. To compare luminous intensities of two luminous bodies by using Bunsen's photometer.

5. To calculate coefficient of absorption for acoustical materials

6. To determine Joule's constant (J) by electric method

7. To determine wavelength of Sodium light by using Newton's rings

8. To Verify Ampere's rule using Oersted's Experiment and find variation of intensity of magnetic field
    with Current and Distance

9. To determine frequency of sound by using sonometer .

10. To calculate refractive index of material of prism using spectrometer device .

11. To determine the divergence of He-Ne laser beam.

Laboratory based Mini Projects:

1.   To detect surface cracks in the working piece by using liquid penetration method (LPT).

2. To determine coefficient of thermal conductivity of good conductor by using Searle's method

3. To determine the moments of inertia (I_α and I_β) of the given irregular body and to determine the rigidity modulus of the material of the given suspension wire by setting up a torsional pendulum.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
V. Rajendran	Physics-I		Tata McGraw- Hill
Arthur Beiser	Applied physics		Tata McGraw- Hill
R.K.Gaur and S.L.Gupta	Engineering Physics		Dhanpatrai
Rensic and Halliday	Physics		--

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Avadhanulu & Kshirsagar	Engg. Physics		S Chand Publications.

Suggested List of Laboratory Experiments :

S.No	
1	To determine the divergence of He-Ne laser beam.
2	To calculate refractive index of material of prism using spectrometer device.
3	To determine wavelength of Sodium light by using Newton's rings

Suggested List of Assignments/Tutorial :

S.No	
1	Problems on work power and energy.
2	Problems on kinematics
3	Assignment on acoustics.

Part B: Applied Chemistry

Rationale:

This syllabus of chemistry for Mechanical / Production / Automobile Students is classified Under the Category of Applied Science. It is intended to teach students the appropriate use of engineering materials, their protection & lubrication processes in different working conditions of machines.

Objective :-

S.No	The Student will be able to:
1.	Suggest the appropriate use of metals, alloys & non metallic materials in engineering.
2.	Applying the Knowledge to Protect Metallic & Non Metallic Surfaces
3.	Select Lubricants for Smooth Running of Machines.

Contents : Theory (**Name of the Topic**)		Hrs/ week	Marks
01	**Electrochemistry** Definition of Electrolyte & Conductor, Difference between Metallic & Electrolytic Conduction, Ionisation, Degree of Ionisation & Factors	**05**	**07**

	Affecting Degree of Ionisation, Conductivity of Electrolytes.		
	Definition of Electrochemical Cell, Battery, Charge, Discharge, Closed Circuit Voltage, Open Circuit Voltage, EMF, Internal Resistance, Separator, Classification of Batteries such as Primary, Secondary & Reserve with Examples.		
	Industrial Application of Electrolysis – Metallic or Protective Factors for Selection of Method of Coating, Process of Electroplating, Electrorefining, Electrometallurgy (Applications of Electroplating), Impregnated Coating or Cementation on Base Metal Steel – Coating Metal Zn (Sheradizing),Cr (Chomozing), Al (Colorizing), Applications, Advantages & Disadvantages.		
02	**Non Metallic Engineering Materials** (Plastic, Rubber, Insulators, Refractories, Composite Material, Ceramics) 1. **Engineering Plastic:** Special Characteristics & Engineering Applications of Polyamides or Nylons, Polycarbonates (Like Lexan, Merlan), Polyurethanes (Like Perlon – U), Silicons, Polyacetals, Teflon, Laminated Plastic, Thermocole, Reinforced Plastic. 2. **Ceramics:** Definition, Properties & Engineering Applications, Types – Structural Ceramics, Facing Material, Refractories, Fine Ceramics, Special Ceramics. 3. **Refractories:** Definition, Properties, Applications & Uses of Fire Clay, Bricks, Silica Bricks. 4. **Composite Materials:** Definition, Properties, Advantages, Applications & Examples.	05	05
03	**Metals & Alloys** **Metals** – Metallurgy of Iron, Terms Involved in Metallurgy, Indian Resources of Fe, Imp Ores, Extraction, Smelting in Blast Furnace, Chemical Reactions in Blast Furnace, Products of Blast Furnace, their Composition, Application, Commercial Forms of Iron, (Pig Iron / Cast Iron, Wrought or Malleable Steel), their Composition, Properties & Applications, Types of Casting (Chilled Casting, Centrifugal Casting & Malleable Casting), Heat Treatment, Heat Treatment of Cast Iron & Steel. **Alloys** – Definition, Types, Ferrous Alloys – Steel, Composition, Properties & Applications of Plain Carbon Steel (Low Carbon, Medium Carbon, High Carbon & Very Hard Steel) & Alloy Steels, (Heat Resisting, Shock Resisting, Magnetic, Stainless, Tool Steel & HSS), Effect of Various Alloying Elements (Cr, W, V, Ni, Mn, Mo, Si) etc. on Steel. Non-Ferrous Alloys – Copper Alloy – Brass, Bronze, Nickel Silver or German Silver, their Composition, Properties & Applications, Aluminium Alloy – Duralumin, Bearing Alloy – Babbitt Metal, Solders – Soft Solder, Brazing Alloy, Tinamann's Solder, Nickel Alloy – Monel Metal, Low Melting Alloys – Woods Metal.	08	10

04	**Corrosion** Definition, Types, Atmospheric or Chemical Corrosion, Mechanism, Factors Affecting Atmospheric, Corrosion & Immersed Corrosion or Electrochemical Corrosion, Mechanism, Protection of Metals by Purification of Metals, Alloy Formation, Cathode Protection, Controlling the External Conditions & Application of Protective Coatings i.e. Galvanising, Tinning, Metal Spraying, Sherardizing, Electroplating, Metal Clodding, Cementation or Diffusion Method, their Definition, Procedure, Uses, Advantages & Disadvantages, Examples of Non Corrosive Materials, Protection of Corrosion by the Use of Organic Coating Like Paint, Lacquer, Enamels, Emulsion Paints, Special Paints, their Properties & Uses. Special Paints – Heat Resistant, Cellulose Paint, Coaltar Paint, Antifouling Paint their constituents & applications.	06	08
05	**Lubricant** Lubricant, Types, Lubrication Mechanism by Fluid Film, Baundary, Extreme Pressure, Physical Characteristics of Lubricants Such as Viscosity, Viscosity Index, Oilness, Volatility, Flash & Fire Point, Cloud & Pour Point, Chemical Characteristics such as Acid Value or Neutralization Number, Emulsification, Saponification Value, Selection of Lubricants for Various Types of Machineries.	03	05
	Total	27	35

Practical:	Skills to be developed:		
Intellectual Skills:	• Select proper equipment and instruments • Interpret results		
Motor Skills:	• Accuracy in measurement • Careful use of equipment		

List of Practical:

01 To determine neutralization point of weak acid and weak base by conductivity meter.

02 To determine end point of titration between dil. H_2SO_4 and $BaCl_2$ using conductivity meter.

03 To verify Faraday's second law of electrolysis.

04 To determine pH of given solution by using pH paper, universal indicator and pH meter.

05 To determine the strength of given hydrochloric acid solution by titrating it against sodium hydroxide solution using pH meter.

06 To determine percentage of copper from brass iodometrically.

07 To find the rate of corrosion of Al strip in acidic and basic medium graphically.

08 To determine thinner content in paint.

09 To determine acid value of given lubricant.

10 To determine viscosity of given oil by using Ostwald's viscometer.

11 To determine saponification value of given lubricant.

Laboratory based mini projects

13 To compare the quality of lubricating oil available in the market by testing their physical / chemical characteristics in the laboratory and decide their scope of application.

14	To find the rate of corrosion of different metals like Al, Fe, Cu, steel etc. and decide their scope of utilization in industry for mechanical purposes.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Jain & Jain	Engineering Chemistry		Dhanpat Rai and Sons
S. S. Dara	Engineering Chemistry		S. Chand Publication
B. K. Sharma	Industrial Chemistry		Goel Publication
S. S. Dara	Environmental Chemistry & Pollution Control		S. Chand Publication

Name of the Course : Civil, Mechanical and Electrical Group (Engineering Mechanics)	
Course code: CE/CS/CR/ME/PT/PG/AE/EE/EP/MH/FE/CV	**Semester : Second**
Duration :	**Maximum Marks :125**
Teaching Scheme	**Examination Scheme**
Theory : 3 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10 Marks
Practical : 2Hrs/week	End Semester Exam: 70 Marks
Credit : 4	

Aim :-

S.No	
1.	To the effect of forces on rigid bodies at rest and in rectilinear or curvilinear motion.
2.	To study the application of Newton's laws of motion for the analysis of rigid bodies.

Objective :-

S.No	The students will able to:
1.	Resolve the forces.
2.	Find the resultant of given force system.
3.	Find the reactions of beam.
4.	Find the center of gravity of composite solids.
5.	Find M.A., V.R., Efficiency and establish law of machine

Pre-Requisite :-

S.No	
1.	Knowledge of Newton's laws of motion.
2.	Basic knowledge of Mathematics like Differentiation and Integration of various functions.

Contents (Theory)		Hrs/week	Marks
Unit -1	**Force** a. **Fundamentals: -** Definitions of mechanics, statics, dynamics. Engineering Mechanics, body, rigid body, mass, weight, length, time, scalar and vector, fundamental units, derived units, S.I. units. b. **Force**: - Definition of a force, unit force, Newton, S.I. unit of a force, representation of a force by vector and by Bow's notation method. Characteristics of a force, effects of a force, principle of transmissibility.	**12**	**15**

	c. **Resolution of a force:** Definition, Method of resolution, Types of component forces, Perpendicular components and Non-perpendicular components. d. **Moment of a force: -** Definition, measurement of moment of a force, S. I. unit, geometrical meaning of moment of a force, classification of moments according to direction of rotation, sign convention, law of moments Varignon's theorem of moment and it's use, couple – definition, S.I. unit, measurement of a couple, properties of couple. e. **Force system: -** Definition, classification of force system according to plane and line of action f. **Composition of Forces**: - Definition, Resultant force, methods of composition of forces, I – Analytical method – (i) Trigonometric method (law of parallelogram of forces) (ii) Algebraic method (method of resolution), II – Graphical method: - Introduction, space diagram, vector diagram, polar diagram, and funicular polygon. Resultant of concurrent, non-concurrent and parallel force system by analytical and graphical method.		
Unit -2	**Equilibrium:** 2.1 Definition, conditions of equilibrium, analytical and graphical conditions of equilibrium for concurrent, non-concurrent and parallel force system, free body and free body diagram. 2.2 Lami's Theorem – statement and explanation, Application of Lami's theorem for solving various engineering problems. 2.3 Equilibrant – Definition, relation between resultant and equilibrant, equilibrant of concurrent and non-concurrent force system. 2.4 Beams – Definition, Types of beams (cantilever, simply supported, overhanging, fixed, continuous), Types of end supports (simple support, hinged , roller), classification of loads, point load, uniformly distributed load. Reactions of a simply supported and over hanging beam by analytical and graphical method.	**10**	**15**
Unit – 3	**Friction:** 3.1 Definition of friction, force of friction, limiting frictional force, coefficient of friction, angle of friction, angle of repose, relation between angle of friction angle of repose and coeff. Of friction. Cone of friction, types of friction, laws of friction, advantages and disadvantages of friction.	**08**	**15**

	3.2 Equilibrium of bodies on level plane –external force applied horizontal and inclined up and down. 3.3 Equilibrium of bodies on inclined plane – external forces is applied parallel to the plane, horizontal and incline to inclined plane. 3.4 Ladder friction, Wedge and block.		
Unit – 4	**Centroid and Centre Of Gravity:** 4.1 **Centroid:** Definition of centroid. Moment of an area about an axis. Centroid of basic geometrical figures such as square, rectangle, triangle, circle, semicircle and quarter circle. Centroid of composite figure. 4.2 **Center of gravity:** Definition, center of gravity. Of simple solids such as cylinder, sphere, hemisphere, cone, cube, and rectangular block. Centre of gravity of composite solids.	**08**	**10**

Unit – 5	**Simple Machines:**
	    1) Definitions of simple machine, compound machine , load , effort , mechanical advantage , velocity ratio , input on a machine ,output of a
	   machine ,efficiency of a machine , expression for mechanical advantage , velocity ratio and efficiency of a machine. Ideal machine, ideal effort and ideal load, friction in machines, effort lost in friction and frictional load.
	5.2 Law of machine, maximum mechanical advantage and maximum efficiency of a machine, reversibility of a machine, condition for reversibility of a machine, self locking machine.
	
	5.3 Study of simple machines : Simple axle and wheel, differential axle and wheel, Weston's differential pulley block, single purchase crab, double purchase crab, worm and worm wheel, geared pulley block, screw jack, pulleys : First, second and third system of pulleys, gear train, hoist mechanism.
		10	**15**

	Total	**48**	**70**

Contents (Practical)		
Skills to be developed:		
1 Intellectual Skill:	A. Calculate the forces on given structure B. Interpret the results	
2 Motor Skills:	A. Handle the equipment carefully **B.** Draw graph	

The term work consist of any five experiments from Group A,B and graphical solution in Group C

Group A:
2) Verify law of polygon of forces
3) Verify law of moments
4) Verification of Lami's theorem
5) Forces in members of a jib crane.
6) Comparison of coefficient of friction of various pair of surfaces and
7) determination of angle of repose
8) Equilibrium of parallel forces – simply supported beam reactions.
9) Experimental location of center of gravity of plane plate of uniform thickness.

Group B: To find MA, VR, Efficiency, Ideal Effort, Effort lost in friction for various loads and establish law of machine and calculate maximum efficiency.

Also check the reversibility of a machine (Any five):
1) Differential axle and wheel
2) Weston's differential pulley block
3) Geared pulley block
4) Single purchase crab
5) Double purchase crab
6) Worm and worm wheel
7) Two sheave and three sheave pulley block
8) Screw jack.

Group C: A 2 Size drawing sheets containing graphical solutions for –
1) Concurrent force system   : Two problems
2) Parallel force system   : Two problems
3) Reactions of a beam   : Two problems

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Beer – Johnson	Engineering Mechanics		Tata McGraw Hill, Delhi
Basu	Engineering Mechanics		Tata McGraw Hill, Delhi
Joseph F. Shelley	Vector Mechanics for Engineers Vol. I & II		Tata McGraw Hill, Delhi

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Beer – Johnson	Engineering Mechanics		Tata McGraw Hill, Delhi

Suggested List of Laboratory Experiments :

S.No	
1	Verify law of polygon of forces
2	Verify law of moments
3	A 2 Size drawing sheets containing graphical solutions for –Concurrent force system : Two problems

Suggested List of Assignments/Tutorial :

S.No	
1	Verification of Lami's theorem
2	determination of angle of repose
3	Equilibrium of parallel forces – simply supported beam reactions

Name of the Course : Mechanical Engineering Group (Workshop Practice)									
Course code: ME/PT/AE/MH/FE				Semester : Second					
Duration :				Maximum Marks :					
Teaching Scheme				Examination Scheme					
Theory : hrs/week				Mid Semester Exam: Marks					
Tutorial: hrs/week				Assignment & Quiz: Marks					
Practical : hrs/week				End Semester Exam: Marks					
Credit :									

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme						
TH	TU	PR	PAPER HRS	TH	TEST	PR	OR	TW	TOTAL
--	--	04	--	--	--	--	--	50@	50

Rationale:

    Mechanical diploma technician is expected to know basic workshop practice like, Gas Welding gas cutting. Fitting, Drilling, Tapping, plumbing and hot working processes. The students are required to identify operate and control various machines. The students are required to select and use various tools and equipments for welding, fitting, tapping drilling, plumbing and forging operations.

Aim :-Nil

Objective :-

S.No	The student will able to:
1.	• Know basic workshop processes. • Read and interpret job drawings. • Identify, select and use various marking, measuring, and holding, striking and cutting tools & equipments wood working and sheet metal shops.
2.	• Operate, control different machines and equipments. • Select proper welding rods and fluxes. • Inspect the job for specified dimensions • Produce jobs as per specified dimensions.
3.	• Adopt safety practices while working on various machines. • Measurement skills. • Fitting skills.

Notes: 1]   The instructor shall give demonstration to the students by preparing a specimen job as per the job drawing.

      2]   The workshop diary shall be maintained by each student duly signed by instructor of respective shop

CONTENTS: Subject practical content as shown in the table below:

Skill to be developed:

Intellectual Skills:
1. Ability to read job drawings.
2. Ability to identify and select proper material, tools and equipments and machines.
3. Ability to select proper parameters (like cutting speed, feed, depth cut use of lubricants) in machine.

Motor Skills:

1. Ability to set tools, work piece, and machines for desired operations.
2. Ability to complete job as per job drawing in allotted time.
3. Ability to use safety equipment and follow safety procedures during operations.
4. Ability to inspect the job for confirming desired dimensions and shape.
5. Ability to acquire hands-on experience

Pre-Requisite :-Nil

	Details of Practical Contents	Hrs/week

Unit -1	**CARPENTERY SHOP:**
	• Any one composite job from the following involving different joint, turning and planning, surface finishing by emery paper, varnishing etc. like square stool, tea table, center table, chaurang, table lamp bed sofa-set, book rack. Cabinet, notice board, shows cases, tables chairs etc.
	
	Note:1] One job of standard size (Saleable article shall be preferred)
	  2] Batch size should be selected depending on volume of work.
	  3] Job allotted should comprise of 6-8 hours of actual working
	  4] Student shall calculate the cost of material and labor cost for their job from the drawing.	

Unit -2	**WELDING SHOP**
	• Any one composite job from involving butt joint lap joint welding process, from the following like Grill, door, window frame, waste paper basket, Chappel stand, Corner flower stand chair , table frame (square pipe 25 mm) cooler frame (folding type)
	
	Note: 1] One job of standard size (Saleable/marketable article shall be preferred)
	  2] Batch size should be selected depending on volume of work .
	  3] Job allotted should comprise of 6-8 hours of actual working operations.
	  4] Student shall calculate the cost of material and labor required for their job from the drawing.	

Unit - 3	**SMITHY SHOP** • Demonstration of different forging tools and Power Hammer. • Demonstration of different forging processes, likes shaping, caulking fullering, setting down operations etc. • One job like hook peg, flat chisel or any hardware item. • **Note**: 1]One job of standard size (Saleable/marketable article shall	

	be preferred) 2] Job allotted should comprise of 4-6 hours of actual working operations. 3] Student shall calculate the cost of material and labor required for their job from the drawing.		
Unit - 4	**_PLUMBING SHOP_** • Demonstration of PVC pipe joint with various fittings. • Exercise for students on preparing actual pipeline layout for G.I. Pipe or PVC pipe. Preparing actual drawing and bill of material. Note:1] One job of standard size (Saleable/marketable article shall be preferred) 2] Batch size should be selected depending on volume of work. 3] Job allotted should comprise of 6-8 hours of actual working 4] Student shall calculate the cost of material and labor cost for their job from the drawing.		
Unit – 5	**_SHEET METAL SHOP_** • One composite job from the following: Letter box, Trunk, Grain Container, Water-heater Container, Bucket, Waste Paper Basket, Cooler Tray, Water-draining Channel, etc. (including soldering and riveting) Note: 1] One job of standard size (Saleable/marketable article shall be preferred) 2] Batch size should be selected depending on volume of work. 3] Job allotted should comprise of 4-6 hours of actual working ions. 4] Student shall calculate the cost of material and labor cost required for their job from the drawing.		
Unit – 6	**Demonstration of power tools and practice of utility items.** • Demonstration of advance power tools, pneumatic tools, electrical wiring tools and accessories. • Making of electrical switchboard with 2 sockets and piano buttons and with electrical wiring. • Any other item as per the requirement of college/Deptt./ **(Note: Utility item are not to be assessed**		
		Total	64

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S.K. Hajara Chaudhary	Workshop Technology		Media Promotors and Publishers,New Delhi
B.S. Raghuwanshi	Workshop Technology		Dhanpat Rai and Sons, New Delhi
R K Jain	Production Technology		Khanna Publishers, New Delhi

H.S.Bawa	Workshop Technology		Tata McGraw Hill Publishers,New Delhi
--	Kent's Mechanical Engineering Hand book		John Wiley and Sons, New York

Video Cassettes / CDS
- Learning Materials Transparencies, CBT Packages developed by NITTER Bhopal.

Reference books :Nil

Suggested List of Laboratory Experiments : Nil

Suggested List of Assignments/Tutorial : Nil

Name of the Course : Mechanical Engineering Group (Professional Practices-II)		
Course code: ME/PG/PT/AE/ MH/FE	Semester : Second	
Duration :	Maximum Marks :	
Teaching Scheme	Examination Scheme	
Theory : hrs/week	Mid Semester Exam: Marks	
Tutorial: hrs/week	Assignment & Quiz: Marks	
Practical : hrs/week	End Semester Exam: Marks	
Credit :		

Aim :-Nil

Objective :-

S.No	The Student will be able to:
1.	Acquire information from different sources. Prepare notes for given topic.
2.	Present given topic in a seminar. Interact with peers to share thoughts.
3.	Prepare a report on industrial visit, expert lecture.

Pre-Requisite :-Nil

Contents: Nil	Hrs/week

Text Books: Nil

Reference books : Nil

Suggested List of Laboratory Experiments : Nil

Suggested List of Assignments/Tutorial : Nil

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME: INFORMATION TECHNOLOGY

COURSE CODE : CO/CM/IF/ CD

DURATION OF COURSE : 6 SEMESTERS

SEMESTER: THIRD SEMESTER   **SCHEME : C**

Sr.No.	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
	THEORY	L	TU	P	SESSIONSAL EXAM			ESE	PR	Oral #	TW @	
					TA	CT	Total					
1	Applied Mathematics	03	--	--	10	20	30	70	--	--	--	3
2	Object Oriented Programming	04	--	04	10	20	30	70	50	--	25	6
3	Digital Techniques	03	--	02	10	20	30	70	--	--	25	4
4	Relational Data Base Management Systems	04	--	04	10	20	30	70	--	25	25	6
5	Visual Basic	--	--	04	--	--	--	--	50	--	--	2
6	Professional Practices-III	--	--	03	--	--	--	--	--	--	50	2
	Total	14	--	17	40	80	120	280	100	25	125	23

STUDENT CONTACT HOURS PER WEEK: **31 HRS**

HTEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH

\# , External Assessment   @ , Internal Assessment   ESE - End Semester Exam.

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, TU - Tutorial, P - Practical

TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.

Total Marks : 650

Minimum passing for sessional marks is 40%, and for theory subject 40%.

Assessment of Practical, Oral & term work to be done as per the prevailing norms of curriculum implementation & assessment.

Name of the Course : Computer Engineering Group (Applied Mathematics)	
Course code: CO/CM/IF/CD	Semester : Third
Duration :	Maximum Marks :100
Teaching Scheme	Examination Scheme
Theory : 03 hrs/week	Mid Semester Exam: 20 Marks
Tutorial: -- hrs/week	Assignment & Quiz: 10 Marks
Practical : -- hrs/week	End Semester Exam: 70 Marks
Credit : 3	

Aim :-	
S.No	
1.	To learn basic concept of Integration and Interpolation.
2.	To learn application of Integration and Numerical of Differentiation & Integration.
3.	To learn basic concept of Discrete Mathematics.

Objective :-	
S.No	The Student will be able to:
1.	Acquire knowledge of Mathematical term, concept, principals, and different methods.
2.	Develop ability to apply Mathematical methods to solve technical
3.	Solve problems, execute management plans with precision.
4.	Acquire sufficient Mathematical techniques necessary for daily and practical problems.
5.	Understand relation between Mathematics and applications in engineering.

Pre-Requisite :-	
S.No	
1.	Basic Concept of Math's
2.	Calculation of Numbers
3.	Introduction to Formula

Chapter	Name of the Topic	Hours	Marks
01	Integration 1.1 Definition of integration as anti-derivative. Integration of standard function. 1.2 Rules of integration (Integrals of sum, difference, scalar multiplication). 1.3 Methods of Integration. 1.3.1 Integration by substitution 1.3.2 Integration of rational functions. 1.3.3 Integration by partial fractions. 1.3.4 Integration by trigonometric transformation. 1.3.5 Integration by parts. 1.4 Definite Integration. 1.4.1 Definition of definite integral. 1.4.2 Properties of definite integral with simple problems.	10	**18**
	1.5 **Applications of definite integrals.** 1.5.1 Area under the curve. 1.5.2 Area between two curves.	04	06
02	Differential Equation 2.1 Definition of differential equation, order and degree of differential equation. Formation of differential equation for function containing single constant. 2.2 Solution of differential equations of first order and first degree such as variable separable type, reducible to Variable separable, Homogeneous, Non-homogeneous, Exact, Linear and Bernoulli's equations. 2.3 **Applications of Differential equations.** **2.3.1 Laws of voltage and current related to EC, RC LRC Circuits.,**	**10**	**12**
03	Interpolation **3.1 Interpolation** 3.1.1 Introduction, Lagrange's interpolation formula. **3.1.2 Difference operator, relation between them. Difference Table.** 3.1.3 Newton's forward and backward difference interpolation formulae. 3.1.4 Concept of extrapolation.	**08**	**10**
	3.2 Numerical Differentiation & Integration. 3.2.1 Newton's forward and backward difference formulae for differentiation $\left(\dfrac{dy}{dx}, \dfrac{d^2 y}{dx^2}\right)$ at any point and at $x = x_0 \ or \ x_n$ **3.2.2 Numerical integration** Trapezoidal rule and Simpson's 1/3 rd rule.	**06**	08

04	**Numerical Solution Of Ordinary Differential Equation** 4.1 Introduction. 4.2 Runge Kutta's 2nd and 4th order methods.	06	**08**

05	**Discrete Mathematics**
	5.1 Relational algebra.
	5.2 Sets, subsets (Venn diagram)
	     Operation on sets, De-Morgan's laws.
	      Principal of inclusion and exclusion with simple problems.
		04	**08**

	Total	48	70

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S. P. Deshpande	Mathematics for polytechnic	2ND EDITION	Pune Vidyarthi Griha Prakashan
Robert T. Smith	Calculus: single variable	3RD EDITION	Tata McGraw Hill
Murray R Spiegel	Advanced Mathematics for Engineers and Scientist	3RD EDITION	McGraw Hill
F. Ayres	Schaum outline of differential and integral calculus	3RD EDITION	Tata McGraw Hill
Frank Ayres	Differential Equation: SI Metric	7TH EDITION	Schaum Outline series.
B. S. Grewal	Higher Engineering Mathematics	9TH EDITION	Khanna Publication,
S. S. Sastry	Introductory Methods of Numerical analysis	4TH EDITION	Prentice Hall Of India
Chapra	Numerical methods for Eng.	4th EDITION	Tata McGraw Hill
M. K. Jain & others	Numerical methods for scientific & engineering computations	5th EDITION	Wiley Eastern
Colman, Busby and Ross	Discrete Mathematical structure	5th EDITION	Prentice Hall of India

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
R. Jesse Phagan	Applied Mathematics	4th edition	Spinger
Mark H. Holmes	Introduction to the Foundations of Applied Mathematics	8th edition	

Suggested List of Laboratory Experiments :

S.No	
1	Hydrodynamic synchronization of nonlinear oscillators at low Reynolds number
2	Physical processes on the surfaces of Mars, the Earth, the Moon, and asteroids, mostly processes that involve H_2O.

3	The Lifetime of Ice on Main Belt Asteroids

Suggested List of Assignments/Tutorial :

S.No	
1	Kinematics
2	Projectiles
3	Forces

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S. P. Deshpande	Mathematics for polytechnic	2ND EDITION	Pune Vidyarthi Griha Prakashan
Robert T. Smith	Calculus: single variable	3RD EDITION	Tata McGraw Hill
Murray R Spiegel	Advanced Mathematics for Engineers and Scientist	3RD EDITION	McGraw Hill
F. Ayres	Schaum outline of differential and integral calculus	3RD EDITION	Tata McGraw Hill
Frank Ayres	Differential Equation: SI Metric	7TH EDITION	Schaum Outline series.
B. S. Grewal	Higher Engineering Mathematics	9TH EDITION	Khanna Publication,
S. S. Sastry	Introductory Methods of Numerical analysis	4TH EDITION	Prentice Hall Of India
Chapra	Numerical methods for Eng.	4th EDITION	Tata McGraw Hill
M. K. Jain & others	Numerical methods for scientific & engineering computations	5th EDITION	Wiley Eastern
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Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
R. Jesse Phagan	Applied Mathematics	4th edition	Spinger
Mark H. Holmes	Introduction to the Foundations of Applied Mathematics	8th edition	

Suggested List of Laboratory Experiments :

S.No	
1	Hydrodynamic synchronization of nonlinear oscillators at low Reynolds number
2	Physical processes on the surfaces of Mars, the Earth, the Moon, and asteroids, mostly processes that involve H2O.
3	The Lifetime of Ice on Main Belt Asteroids

Suggested List of Assignments/Tutorial :	
S.No	
1	Kinematics
2	Projectiles
3	Forces

Name of the Course : Computer Engineering Group (Digital Techniques)			
Course code: CO/CM/IF/CD		Semester : Third	
Duration :		Maximum Marks :125	
Teaching Scheme		Examination Scheme	
Theory : 3 hrs/week		Mid Semester Exam: 20 Marks	
Tutorial: hrs/week		Assignment & Quiz: 10 Marks	
Practical : 2 hrs/week		End Semester Exam: 70 Marks	
Credit :4			

Aim :-

S.No	
1.	To study different logic families.
2.	To introduce different logic gates, their Boolean algebra and combinational logic design using those gates.
3.	To learn how to design sequential logic using flip flop.

Objective :-

S.No	The student will be able to
1.	• Design simple logic circuits.
2.	• Assemble logic circuits.
3.	• Test the logic circuits.
4.	• Observe outputs of logic circuits.
5.	• Troubleshoot digital circuits.

Pre-Requisite :-

S.No	
1.	Basic Electronics Engineering

Contents			Hrs/week
Chapter	**Contents**	**Hours**	**Marks**
1	**Introduction To Digital Techniques** 1.1　Digital circuit. 1.2　Digital signal. 1.3　Use of digital circuit and digital signal. 1.4　Advantages and Disadvantages of Digital circuits. 1.5　Generation of digital signal 1.6　Introduction to digital ICs, Characteristics of digital ICs 1.7　Logic families comparison of TTL, CMOS and ECL logic　　　　Families 　　　(No circuits) (To be covered in Practical) 1.8　Number System - Introduction to Binary, Octal, Decimal, Hexadecimal number system 1.9　Conversion of number systems	08	12

	1.10 1's complement and 2's complement 1.11 Binary arithmetic (addition, subtraction). 1.12 BCD code, BCD arithmetic (addition, subtraction).		
2	**Logic Gates And Boolean Algebra** 2.1 Logical symbol, logical expression and truth table of AND, OR, NOT, NAND, NOR, EX-OR and EX-NOR gates. 2.2 Universal gates – NAND and NOR gates 2.3 Logical circuits of basic gates using universal gates 2.4 Gates using more than two inputs. 2.5 TTL and CMOS logic gate ICs and their pin configurations. (To be covered in Practical) 2.6 Basic laws of Boolean algebra, Duality theorem. 2.7 De Morgan's theorems.	**06**	**10**
3	**Combinational Logic Design / Circuits** 3.1 Simplification of Boolean expression using Boolean algebra. 3.2 Construction of logical circuits forms Boolean expressions. 3.3 Boolean expressions using Sum of products and product of sums forms. 3.4 K-map representation of logical functions. 3.5 Minimization of logical expressions using K-map (2, 3, 4 variables). 3.6 Standardization of SOP & POS equations 3.7 Concept of Adders / Subtractors. 3.8 Truth table, K-map, Simplified logical expression and logical circuit using basic gates and universal gates of : (a) Half adder and full adder. (b) Half subtractor and full subtractor. 3.9 Block diagram, Truth table, Logical expression and logic diagram of Multiplexers (4:1 and 8:1), Multiplexer IC. 3.10 Block diagram and Truth table of Demultiplexer (1:4; 1:8; 1:16), Demultiplexer IC. 3.11 Block diagram and Truth table of Encoders, Priority Encoders ICs and Decoder. 3.12 Block diagram, Truth table, working principle, Applications, pin functions of Decimal to BCD Encoder (IC 74147) and BCD to 7-segment Decoder. Block diagram and function table of Parity generator (IC 74180), Digital comparator IC (7485); Block diagram and pin functions of ALU 74181	**12**	**18**
4	**Flip Flops And Sequential Logic Design** 4.1 One-bit memory cell, clock signal 4.2 Symbol and Logic diagram using NAND gates, working and truth table of R S flip-flop. 4.3 Symbol and Logic diagram using NAND gates, working, truth table and timing diagram of Clocked R S flip flop. 4.4 Triggering: edge triggering and level triggering 4.5 Symbol and Logic diagram using NAND gates, working, truth table and timing diagram of J-K flip flop. 4.6 Block diagram and truth table of Master slave J-K flip flop. 4.7 Symbol, working and truth table of D- flip flop and T-flip flop. 4.8 Applications of flip flops 4.9 Concept, Modulus, Working, truth table, timing diagram of a counter. 4.10 Asynchronous counter (3 bit, 4 bit);	**12**	**18**

	4.11 Design of mod N-counter: working, truth table and timing diagram			
	4.12 3-bit Synchronous counter: working, truth table and timing diagram			
	4.13 Block diagram, Working, Truth Table and waveforms of Shift register: SISO, SIPO, PISO, PIPO (4-bit) and Universal Shift register (4-bit).			
	4.14 Applications of Counters and Registers.			
5	**Memories** 5.1 Classification of memories 5.2 RAM, ROM, PROM, EPROM, E^2PROM. 5.3 Circuit diagram using CMOS transistors and working of Static and dynamic RAM		05	06
6	**A-D And D-A Converters** 6.1 Circuit diagram and working of R-2R Ladder DAC and Weighted resistor DAC. 6.2 DAC specifications 6.3 Block diagram and working of Ramp ADC, Dual slope ADC and Successive approximation ADC. 6.4 ADC specification 6.5 Advantages and Disadvantages of various methods.		05	06
		Total	48	70

Practical:

Skills to be developed:

Intellectual Skills:

1. Interpret the results
2. Verify the tables

List of Practical: (Any TEN) including MINI PROJECT
1) Study of Digital IC datasheets and noting down the characteristics for TTL & CMOS logic families.
2) Verification of truth table of logic gates.
3) Verification of De Morgan's theorem.
4) Construction of Half adder and Full adder.
5) Implementation of Combinational Circuit using Multiplexer.
6) Construction of 7-segment decoder driver.
7) Verification of truth table of Flip flops.
8) Universal Shift Register
9) Decade counter using IC 7490.
10) Design of 3-bit Synchronous counter.
11) A to D Converter.
12) D to A converter.
13) Study of data sheets related to digital ICs like _____.
 A MINI PROJECT (Design, Assemble, Test and Troubleshoot) integrating minimum two digital ICs.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
R.P. Jain	Modern Digital Electronics		Tata McGraw Hill
Malvino Leach	Digital Principles		Tata McGraw Hill
Tokheim	Digital Electronics		Tata McGraw Hill

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
R.P. Jain	Modern Digital Electronics		Tata McGraw Hill
Malvino Leach	Digital Principles		Tata McGraw Hill
Tokheim	Digital Electronics		Tata McGraw Hill
S.P. Bali	2000 solved problems in Digital Electronics – Sigma series		Tata McGraw Hill

Suggested List of Laboratory Experiments :

S.No	
1	**Combinational Logic Design** 1) T.T.L Characteristics (Study and Write up only). 2) Code converters e.g. Excess-3 to BCD and vice versa 3) Multiplexers: Application like Realization of Boolean expression using Multiplexer Demultiplexers: Applications like Realization of ROM using Demultiplexer
2	**Sequential Circuit Design** **1)** Flip flops, Registers and Counters (Study and Write up only). **2)** 4-bit Multiplier / Divider (Study and Write up only). **3)** Ripple counter using flip-flops. **4)** Up-down counter using JK flip-flop.

Suggested List of Assignments/Tutorial :

S.No	
1	Design (truth table, K map) and implement 4 bit Code converter. i. Binary to gray and vice versa. ii. BCD to Excess-3 and vice versa.

Name of the Course : Computer Engineering Group (Object Oriented Programming)	
Course code: CO/CM/IF/CD	**Semester : Third**
Duration :	**Maximum Marks :175**
Teaching Scheme	**Examination Scheme**
Theory : 4 hrs/week	Mid Semester Exam: 20 Marks
Tutorial: -- hrs/week	Assignment & Quiz: 10 Marks
Practical : 4 hrs/week	End Semester Exam: 70 Marks
Credit :6	

Aim :-	
S.No	
1.	The aim of this course is to teach the principles underlying Object Oriented Programming through C++
2.	To increase reusability in programming.
3.	To reduce the costs of developing and adapting software to meet new requirement

Objective :-	
S.No	The Student will be able to:
1.	• Write programs using objects & classes.
2.	• Develop programs to create and destroy the objects
3.	• Use existing operators for different meanings.
4.	• Using reusability concept.
5.	• Implement pointers for arrays, strings & object.
6.	• Describe polymorphism, concepts, it's types, virtual function & write program for same.
7.	• Apply formatted & unformatted console I/O operation & perform file related activities using C++ streams.

Pre-Requisite :-	
S.No	
1.	Basic Concepts of 'C'
2.	Programming Logic

	Contents	Hrs/week	
Unit -1	**Concept of Object Oriented Programming.** **History & features**: It's need & requirement, procedure oriented programming versus object oriented programming, basic concepts object oriented programming, object oriented languages. **Beginning with C++**: Concepts & structure of C++ programming, concepts of structure.	06	06
Unit -2	**Objects & classes**	12	10

	Specifying a class, Defining member functions, Arrays within a class, Creating objects, memory allocation for objects, static data & member function, Arrays of objects, objects as function argument.		
Unit – 3	**Constructors and Destructors**. Concept of Constructor (Default, Parameterized, copy), Overloaded Constructors, Constructor with default argument, Destructors. Function overloading, Operator overloading (overloading unary & binary operators), rules for overloading operators.	**10**	**10**
Unit – 4	**Inheritance** Concepts of inheritance, Derived classes, Member declaration (Protected), Types of inheritance (Single, multilevel, multiple, hierarchical, Hybrid inheritance), Virtual base classes, Abstract classes, Constructors in derived classes, Member classes.	**08**	**10**
Unit – 5	**Pointers in c++** Concepts of pointer (Pointer declaration, pointer operator, address operator, pointer expressions, and pointer arithmetic), Pointers & functions (Call by value, call by reference, pointer to functions, passing function to another function), Pointers in arrays (Searching, insertion & deletion), Pointers to string (Searching, finding length, comparison, concatenation, reverse), Pointers & objects (Pointers to objects, this pointer, and pointer to derived classes).	**12**	**09**
Unit – 6	**Polymorphism** Concepts of polymorphism, types of polymorphism, Overloading & overriding, Virtual function, Static & dynamic binding.	**06**	**10**
Unit – 7	**Basic function of I/O system basics & File Processing** Stream classes, using formatted & unformatted functions, using manipulator to format I/O, Basics of file system, opening & closing a file, reading & writing character from a file (get, put, getline, write), Command line arguments.	**10**	**15**
	Total	**64**	**70**

Practical:

Skills to be developed:

Intellectual skills:

- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
  - Problem definition
  - Analysis
  - Design of logic
  - Coding
  - Testing
  - Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:

- Proper handling of Computer System**.**

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
SauravSahay	Object Oriented Programming with C++	3rd EDITION	Oxford

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Herbert Schilt	C++ The complete reference	4th Edition	Tata McGraw Hill
Balgurusamy	Object oriented programming with C++	4th Edition	Tata McGraw Hill
Lafore Robert	Object oriented programming in Turbo C++.	3rd Edition	Galgotia
Y.Kanetkar	Let's C++	5th Edition	BPB
B. Stroustrup	C++ Programming Language,	3rd Edition	Pearson Education, 1997, ISBN 0 – 201 – 32755 – 4.

1. **Website for mini projects:**

- www.sourcecodesworld.com
- www.softeam.com
- www.cplus.about.com/od/beginnerctutorial

2. **Magazines:**

- ➢ Express computers.
- ➢ C / C++ journal

Demo lectures with power point presentations using LCD projector should be arranged to develop programming concepts of students.

Suggested List of Laboratory Experiments :

S.No	Title of Experiment	No of Practical
1	Programs to input & output data (Simple programs).	01
2	Programs to create object of class	01
3	Programs to create arrays of objects	02
4	Program to access static member variables	01
5	Programs using object as function arguments using friend function.	01
6	Programs to define Class using constructor & destructor.(Default constructor ,Multiple	01

	constructor, Copy constructor, Overloaded constructor)	
7	Program using constructor with default argument	01
8	Program to overload unary & binary operator	02
9	Single inheritance & multilevel using protected member	02
10	Multiple inheritance & virtual base class	02
11	Program for pointers to arrays of integer	02
12	Program for pointers to strings	02
13	Program for pointers to objects	02
14	Program for this pointer.	01
15	Program for (virtual functions) runtime polymorphism	01
16	Programs for overload function	01
17	Format output using manipulators & own manipulator.	02
18	Program for file processing	02

Suggested List of Assignments/Tutorial :

S.No	
1	When to use Interface over abstract class?
2	What is protected access modifier?
3	What is a difference between 'new' & override keyword?

Name of the Course : Computer Engineering Group (Professional Practices-III)	
Course code: CO/CM/IF/CD	**Semester : Third**
Duration :	**Maximum Marks : 50**
Teaching Scheme	**Examination Scheme**
Theory : -- hrs/week	Mid Semester Exam: -- Marks
Tutorial: -- hrs/week	Assignment & Quiz: -- Marks
Practical : 03 hrs/week	End Semester Exam: -- Marks
Credit :2	
Aim :-	
S.No	

1.	Introduce students for current trends in IT industries
2.	Line up students with the help of Industrial experts
3.	Introduce students different IT domain

Objective :-

S.No	Student will be able to:
1.	• Acquire information from different sources.
2.	• Prepare notes for given topic.
3.	• Present given topic in a seminar.
4.	• Interact with peers to share thoughts.
5.	• Prepare a report on industrial visit, expert lecture

Pre-Requisite :-

S.No	
1.	Knowledge of IT industries

Contents	Hrs/week

Activity	Name of the Activity	Hours

01	**Information Search:**
	Collect information from internet/newspaper/periodicals/magazines etc.
	Students (Group of 4 to 5 students) have to search /collect information about the topic through.
	Students will have to submit a report of about 5 -10 pages.
	   i) Advanced Techniques in RDBMS
	   ii) Manufacturers and cost of
	          Computer, Printers
	   iii) Any other suitable topic
		10

02	**List of Mini Projects**
	  1) Implementing DOS commands using command line arguments e.g. copy ,type, copy con.
	  2) Develop games using classes
	      • Piano game: On pressing the key many types of tunes will be produced.
	  3) Hotel reservation. – Using Structure & arrays
	  4) Library management – Using Structure & arrays
	  5) Student data management – Using Structure & arrays
		12

03	**Lectures by Professional / Industrial Expert to be organized from of the following areas (any Two)**
	   i) .Net Technology
	   ii) spoken English
	   iii) Personality Development
	   iv) Current trends in IT
	   v) How to improve positive thinking
	   vi) Any other suitable topic
		6

04	Seminar :
	Any one seminar on the topics suggested below:
	Students (Group of 4 to 5 students) has to search /collect information about the topic through literature survey, visits and discussions with experts/concerned persons:
	Student will have to submit a report of about 5 -10 pages and deliver a seminar for 10 minutes.
	   1. Importance of object oriented Concept in software development
	   2. Comparison of different object oriented programming languages.
	   3. Computer Virus
	   4. Advanced computer peripherals
	      • Specifications
	      • Working principles
	      • Use
	      • Cost
	   5.Read a book "I Can Win" by Shiv Khera and present major points
	  6. Any other suitable topic
		10

05	**Market Survey:** A group of four students is expected to collect five advertises from news	10

	papers showing job opportunities for C++. Visit any one industry and find knowledge required of C++ in industry.		
		Total	**48**

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Harshad Kotecha	Dos Commands In Easy Steps	1st edition	Harshad Kotecha
Silberschatz A., Korth H., Sudarshan	Database System Concepts	4th Edition	Silberschatz A., Korth H., Sudarshan

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Rab P. Coronel C.	Database Systems Design, Implementation and Management	5th edition	Thomson Course Technology

Suggested List of Laboratory Experiments :

S.No	
1	Create a report on any topic.
2	Create a mini project on student database management system
3	Seminar on any topic.

Suggested List of Assignments/Tutorial :

S.No	
1	Write a note on RDBMS.
2	Explain all DOS Commands.
3	Difference between array and structures.

Name of the Course : Computer Engineering Group (Relational Database Management Systems)		
Course code: CO/CM/IF/CD	**Semester : Third**	
Duration :	**Maximum Marks :100**	
Teaching Scheme	**Examination Scheme**	
Theory : 4 hrs/week	Mid Semester Exam: 20 Marks	
Tutorial: -- hrs/week	Assignment & Quiz: 10 Marks	
Practical : 4 hrs/week	End Semester Exam: 70 Marks	
Credit :		
Aim :-		
S.No		
1.	To study and understand the basic concepts of RDBMS.	
2.	To learn SQL and PLSQL in detail.	
3.	To learn how to work with any database.	
Objective :-		
S.No	The student will be able to:	
1.	• Understand the concept of Database system and Client Server Architecture	
2.	• Understand and develop the concepts of Data Modeling, Security and Integrity.	
3.	• Understand and execute different SQL queries and PL / SQL programs	
4.	• Normalize the database using normal forms.	
5.	• Understand the concept of query processing and Transaction processing.	
Pre-Requisite :-		
S.No		
1.	Data Structures	
2.	Discrete Structures	

Chapter	Name of the Topic	Hours	Marks

01	**Database System Concept & Data Modeling**
	1.1 Basic concepts, Advantages of a DBMS over file processing system,
	Data Abstraction, Database Languages, Data Independence.
	1.2 Components of a DBMS and overall structure of a DBMS.
	1.3 Data Models:
	    • Network Model
	    • Hierarchical Model
	    • E-R Model
	1.4 Client Server Architecture
		12	**16**

02	**Relational Data Model and Security and Integrity Specification**
	2.1 Relational Model: Basic concepts, attributes and domains, Keys concept : Candidate and primary key, Integrity constraints: Domain ,Entity Integrity constraints and On delete cascade.
	2.2 Security and Authorization.
	2.3 Query Languages:
	    • Relational Algebra , Relational Calculus
	    • Views.
		10	**10**

03	**SQL and PL-SQL** 3.1 Introduction to SQL queries, Creating ,Inserting ,Updating and deleting tables and using constraints, Set operations & operators, Aggregate functions ,string functions and date ,time functions, Null values, Nested sub queries, Complex queries, Join concepts. 3.2 PL/SQL Introduction, PL/SQL block structure ,variables, SQL statements in PL/SQL, PL/SQL control Structures , Cursors, Triggers, Functions, Packages, procedures. Error handling in PL/ SQL	**18**	**18**
04	**Relational Database Design, Storage and File systems**. 4.1 Purpose of Normalization, Data redundancy and updating anomalies, Functional Dependencies and Decomposition, Process of Normalization using 1NF, 2NF, 3NF, multivalued dependencies and BCNF. 4.2 E-R Model details. 4.3 File Organization, Organization of records in files, Storage of Object Oriented databases, Basic concept of Indexing and Hashing.	**12**	**14**

05	**Query Processing and Transaction Processing**	12	12
	5.1 General strategies for query processing, Equivalence expressions, Selection & join operation.		
	5.2 Concept of transaction, States of transactions, Concurrent Executions, Serializability Recoverability, Transaction Definition in SQL.		
	5.3 Lock based protocols : share & exclusive models, Protocols: • 2 phase locking • Time-Stamp based • Validation based • Multiple granularity		
	5.4 Deadlock handling, • Deadlock prevention, detection & recovery.		
	Total	**64**	**70**

Practical:

Skills to be developed:

Intellectual skills:
1. Develop the fields of data base.
2. Decide proper specifications.
3. Query Processing and transaction processing.

Motor skills:
1. Prepare appropriate data tables
2. Sequential writing of steps

List of Practical:
1) Creating & Executing DDL in SQL.
2) Creating & Executing Integrity constraints in SQL.
3) Creating & Executing DML in SQL.
4) Executing relational, logical and mathematical set operators using SQL.
5) Executing group functions
6) Executing string operators & string functions.
7) Executing Date & Time functions.
8) Executing Data Conversion functions.
9) Executing DCL in SQL.
10) Executing Sequences and synonyms in SQL.
11) Execute 50 SQL queries (operators, functions, clauses, join concepts)
12) Program for declaring and using variables and constant using PL/SQL.
13) Program using if then else in PL/SQL
14) Program using for loop & while loop in PL/SQL.
15) Program using nested loop in PI/SQL.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher

Korth	Database System Concepts		Sudarshan
2006 ISRD Group	Introduction to Database Management Systems		Tata McGrawHill.
Bipin Desai	An Introduction to Database System		Galgotia Publication
C.J Date	An Introduction to Database System		--
Allen	Introduction to Relational Databases and SQL programming		Tata McgrawHill

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Dr.P.S.Deshpande	SQL and PL/SQL for oracle 10g	2nd	dreamtech

Suggested List of Laboratory Experiments :

S.No	
1	VB database connectivity
2	Miniproject-1
3	Miniproject-2

Suggested List of Assignments/Tutorial :

S.No	
1	Create ER diagram for student database.
2	Create ER diagram for Hospital management.
3	Write a note on DDL and DML.

Name of the Course : Computer Engineering Group (Visual Basic)	
Course code: CM/CO/IF/CD	**Semester : Third**
Duration :	**Maximum Marks :50**
Teaching Scheme	**Examination Scheme**
Theory : -- hrs/week	Mid Semester Exam: -- Marks
Tutorial: -- hrs/week	Assignment & Quiz: -- Marks
Practical : 4 hrs/week	End Semester Exam: -- Marks
Credit :2	

Aim :-	
S.No	
1.	To learn basic concepts of VB programming.
2.	To learn how to make database connectivity and database report.
3.	To learn all the controls of VB 6.0 editor.

Objective :-	
S.No	The Student will be able to:
1.	• Use GUI tools of Visual Basic Programming.
2.	• Use basic and advance VB controls.
3.	• Interface back-end and front-end.
4.	• Generate report using Data Report and Crystal Reports.
5.	• Build Visual Basic applications.

Pre-Requisite :-	
S.No	
1.	Computer knowledge
2.	Understanding of Programming logic

Contents	**Hrs/week**

01	**Introduction to Visual Basic Environment** • Concept of VB program. • Class, object, property, methods, events. • Environment of VB. • Concept of project forms etc. • Managing with menus. • Drag and Drop operation. Validating and processing user inputs.
02	**Introduction to Visual Basic** • Data types, Variants. • Variables, Constants. • Arrays – REDIM statement, Array related functions. • Collection, procedure, functions. • Argument passing and return values. • Input box and message box. • Control flow statement. • Loop statement. • Nested control structure. • Exit statement. • Operators – arithmetic, logical, relational, string. • Functions – String, Maths, Date and Time. • Date and time formats. • Design form to demonstrate. • Control loops (do, for, while) • Control statements (if-then, if-then-else, Selection option) - Using text box, Command button, Label, options, combo box, input and message box.
03	**Controls and Events** • Scroll bar. • Slider. • Container – picture box, frame. • Image. • File system controls – drive, file, directory list box. • Timer control. • OLE control. Basic controls like – line, shape, circle, Pset, RGB, Paint picture, load picture.
04	**Module, Class Module MDI, Menu Editor And Graphics** • Concept of module, class module, MDI, DLL's and how to use them. • Creating own menu using menu editor, popup m • **Advanced controls**: Common dialog box, Tree view, List view, rich text box control, windows common controls, status bar, tab control, image list, MS chart. • Concept of class module, module MDI, DLL and how to use **them Using RTF control**
05	**Database, Report Generator** • Concept of database, record, record set, connection DSN and DSN less connection • Data bound controls – text box, combo box, list box, DB grid • DB combo, MS flex grid. • Visual Data Manager.

	• Programming with ADO, DAO, RDO, • Object, connection, record set, parameter, cursor types, • lock types. • Creating report using Data Report. • Creating report using Crystal reports.
06	**INTRODUCTION TO ACTIVE X CONTROLS** • The user control object- initialize Event, Terminate event, Init properties Event, Paint/Resize Event, Observing the Events in the Data controls, • Exploring the Properties of Active X controls- Debugging the Properties, extend Properties, Ambient Properties, creating Designed time only properties, creating a Clock control, Events in Active X control • Using the active X control interface wizard- Adding the wizard to visual basic • Property pages- using the property page wizard, creating property pages without the wizard. • Creating a simple active x control
07	**File Handling in VB** • File commands • file handling functions • Sequential files • Reading information from a file • Adding to an existing file • General sequential files • Sending special characters to sequential files. • Making changes inside a sequential file • The rich text box control & file handling • Random access files • Headers and indexes for random access files. • Binary files • Binary files handling

Practical:

Skills to be developed:

Intellectual skills:
1) Design various types of forms
2) Use image control and scroll bar
3) Selection of windows for different operations

Motor skills:
1. Develop various types of forms

List of Practical:

1. Study of VB environment with following details:
    - Form and their types.
    - Intrinsic components – text box, label, combo, list, heck box, and option button.
    - Design time properties.
    - Different windows and their uses.

2. Design forms to perform mathematical operations like addition, subtraction, multiplication and division using:
   - Text box, labels.
   - Options to be selected using option, check box and combo box.
3. Design forms to use Date, Time, String, Mathematics functions with help of text box, label, radio button, check box, combo box and command button.
4. Using image control and scroll bar, design form to change height, width of image, movement to image. Using picture box and image list, flip the image on click of command button.
5. Design explorer using Directory, drive, file list box and common dialog controls.
6. Design text editor with menu having copy, cut, paste, select, search, replace the text and load and save the file.
7. Design stop watch with faculty of start, stop, reset using timer control, option, label, text box.
8. Practical including Data bound controls like DBgrid, DBcombo, Textbox, Combo, List, MS Flex grid and Database control like ADO, DAO, RDO to perform insertion, deletion, updation, display, Search.
9. Design MDI form including Menu bar, Toolbar, Status bar.
10. Design the interface to perform following operation on the file like create, open, read, write, delete, search.
11. Design the Active X control for login form and transport it to browser.
12. Design the Active X control to perform database operation with get and let property.
13. Design the experiment using RTF box to create file, load, save search and edit the file.
14. Integrate all above practical to form mini project including login form and splash form.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Bradley, Millstaugh	Programming in VB6		Tata McGraw Hill
Nel Jerka	The complete reference – VB6		Tata McGraw Hill
Evangelos Petront Sos	Mastering VB6		BPB
			--

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Content Development group	VB6 Programming VB6 Black book		Tata McGraw Hill

Suggested List of Laboratory Experiments :

S.No	
1	Simple calculator
2	Design notepad.
3	Scientific calculator.

Suggested List of Assignments/Tutorial :	
S.No	
1	List file handling commands in VB.
2	Write note on active controls in VB.
3	Write note on controls and events in VB.

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME: INFORMATION TECHNOLOGY

COURSE CODE : IF

DURATION OF COURSE : 6 SEMESTERS

SEMESTER: FOURTH SEMESTER   **SCHEME : C**

Sr.No.	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
	THEORY	L	TU	P	SESSIONSAL EXAM			ESE	PR	Oral #	TW @	
					TA	CT	Total					
1	Microprocessor & Programming	03	--	02	10	20	30	70	50	--	--	4
2	Computer Networks	03	--	02	10	20	30	70	--	--	25	4
3	Data Structure	03	--	04	10	20	30	70	50	--	25	5
4	Computer Architecture & Maintenance	03	--	02	10	20	30	70	--	25	25	4
5	Management Information Systems	03	--	--	10	20	30	70	--	--	--	3
6	Development of Life Skills- II	01	--	02	--	--	--	--	--	25	25	2
7	Professional Practices- IV	--	--	03	--	--	--	--	--	--	50	2
	Total	**16**	**--**	**16**	**50**	**100**	**150**	**350**	**100**	**75**	**150**	**26**

STUDENT CONTACT HOURS PER WEEK: **32 HRS**
HTEORY AND PRACTICAL PERIODS OF 60
MINUTES EACH
, External Assessment   @ , Internal Assessment   ESE - End Semester
Exam.

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, TU - Tutorial, P - Practical
TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4
marks.
Total Marks : 825
Minimum passing for sessional marks is 40%, and for theory subject
40%.
Assessment of Practical, Oral & term work to be done as per the prevailing norms of curriculum
implementation & assessment.

Name of the Course : Computer Engineering Group (Computer Architecture and Maintenance)	
Course code: CM/CO/IF/CD	Semester : Fourth
Duration :	Maximum Marks :
Teaching Scheme	Examination Scheme
Theory : 3 hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10 Marks
Practical : 2 hrs/week	End Semester Exam: 70 Marks
Credit : 4	

Aim :-	
S.No	
1.	To do the maintenance of the Computer, peripherals and its add-on cards.
2.	To understand basic working of the computer motherboard, peripherals and add-on cards
3.	To select the proper peripheral as per their specification and requirement.

Objective :-	
S.No	The student will be able to:
1.	• Debug and repair the faults in system.
2.	• Assemble the system.
3.	• Load the operating system and device drivers in the system.

Pre-Requisite :-	
S.No	
1.	Computer software and hardware knowledge.
2.	PC configuration and setup, quality requirement
3.	Personal computer hardware troubleshooting

Contents		Hrs/week	Marks
Unit -1	**Motherboard And Its Components:** 1.1 Chipset basic, chipset Architecture: North / South Bridge architecture and Hub architecture. 1.2 Architecture of Intel chipset 915 G & 945 G 1.3 Overview and features of ISA, PCI-X, PCI-X press, AGP, PCMCIA, AGP, Processor BUS (no pin description) PCI versus PCI Express 1.4 Logical memory organization: Conventional memory, Extended memory, Extended memory, upper memory (No memory map) 1.5 Concept of cache memory : Internal cache, External cache (L1, L2, L3 cache) 1.6 Overview and features of SDRAM, DDR, DDR2, DDR3 1.7 Features of Intel processors : Pentium, P2, Celeron, P3, P4, Pentium D and AMD processors : K6, Athlon XP, Athlon 64 1.8 Processor Modes : Real mode, Protected mode, Virtual real mode,	**10**	**10**

	64 bit extension mode (AMD 64, EM 64) 1.9 Bios Basics, main functions 1.10 Motherboard Selection criteria		
Unit -2	**Storage Devices And Its Interfacing:** 2.1 Recording Technique : FM, MFM, RLL Perpendicular magnetic recording 2.2 Hard disk construction and working 2.3 Srevo Techniques : Wedge servo, Embedded servo, dedicated servo 2.4 Terms related to Hard Disk : Track, Sector cylinder, cluster, landing zone, MBR, Zone recording, write precompensation 2.5 Formatting, Low level formatting, High level formatting, partitioning 2.6 FAT basics, Introduction to file system FAT 16, FAT 32, NTFS 2.7 Hard disk drive interface : features of parallel AT attachment (PATA), Serial ATA (SATA), ATA devices jumper selections : Master, slave, cable select, ATA cables 2.8 ATA RAID : RAID 0, RAID 2.9 CDROM drive : Construction, Recording 2.10 DVD : Construction, Recording 2.11 Blu-ray disk specification	**08**	**14**
Unit - 3	**Display Devices & Interfacing:** 3.1 CRT colour monitor : Block diagram and function of each block 3.2 Characteristics of CRT monitor : Dot pitch, Resolution, Video bandwidth, Horizontal scanning frequency, vertical scanning frequency, Interlaced versus non interlaced monitor 3.3 Advantages of CRT display related to LCD display 3.4 LCD monitor : functional block diagram of LCD monitor, working principal, advantages and disadvantages Types : Passive matrix and Active matrix, Important characteristics : Resolution, Refresh rate, Response time 3.5 Basic block diagram of a video accelerator care.	**05**	**08**
Unit - 4	**Input & Output Devices:** Construction and Working 4.1 Keyboard : Types of keyswitches : Membrane, Mechanical, Rubber dome, Capacitive and interface 4.2 Mouse : Mechancial, Optomechanical, optical (New design) 4.3 Scanner : Flat bed, sheetfed, Handheld : Block diagram and specifications, OCR, TWAIN, Resolution, Interpolation 4.4 Modem : Internal and External : Block diagram and specifications 4.5 Printer: Dot matrix, Inkjet, Laser : Block diagram and specifactions.	**08**	**14**
Unit - 5	**Power Supplies** 5.1 Block diagram and working of SMPS. 5.2 Signal description and pinout diagram of AT and ATX connectors 5.3 Power supply characteristics : Rated wattage, Efficiency, Regulation, Ripple, Load regulation, Line reguation 5.4 Power problems : Blackout, Brownout, surges and spikes 5.5 Symptoms of power problems 5.6 Protection devices: circuit breaker, Surge suppressor: working UPS: Block diagram, working, Types, Ratings.	**04**	**06**

Unit – 6	**Interfaces:** 6.1 SCSI, SCSI cables and connectors, SCSI drive configuration. 6.2 USB features 6.3 Rs 232 : (voltages and 9 pin description) 6.4 Centronics (interface diagram, important signals and timing waveform) 6.5 Firewire features	**05**	**08**
Unit - 7	**Pc Troubleshooting, Maintenance and Tools** 7.1 Preventive Maintenance : Active, Passive, periodic maintenance procedure 7.2 Preventive maintenance of peripherals of PCs. 7.3 Fault finding and troubleshooting of the above peripherals 7.4 ESD (Electrostatic discharge), RFI protection, Earthing 7.5 Diagnostic software 7.6 Working of logic probe, logic pulser, current tracer 7.7 Block diagram and working of logic analyzar & CRO 7.8 Virus infection symptoms, precautions to prevent a virus infection	**08**	**10**
	Total	**48**	**70**

PRACTICAL:
Skills to be developed**:**
Intellectual skills:

- Understanding basic hardware of computer
- Fault finding of input/output devices
- Troubleshooting of input/output devices
- Proper connection of input / output devices

Motor skills:

- Proper handling of Computer System hardware**.**

List of Practical:

1. Drawing the motherboard layout of Pentium IV and studying the chipset through data books or Internet.
2. CMOS setup of Pentium.
3. Hard Disk Partitioning.
4. Study of HDD: Identify various components of HDD and write their functions.
5. Study and installation of any one display cards: VGA or SVGA display cards.
6. Installation of Scanner, Printers and Modems.
7. Study of SMPS (ATX)
8. Study of Diagnostic Softwares. (Any one)
9. Fault findings:
      (a) Problems related to monitor.
      (b) Problems related to CPU.
10. Assembling of PC and Installation of Operating System.
11. Configuration of Client and Server PC, Laptop and Network components.
12. RS232C communication between two computers.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Mike Meyers, Scott Jernigan	Managing & Troubleshooting PCs		Tata McGraw Hill
Bigelow	Bigelow's Troubleshooting, Maintaining & Repairing PCs		Tata McGraw Hill
Mark Minasi	The Complete PC Upgrade & Maintenance Guide		BPB Publication
D. Balasubramanian	Computer Installation & Servicing		Tata McGraw Hill
Scott Muller	Upgrading & Repairing PCs		Techmedia

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Stephen J. Bigelow	Bigelow's PC Hardware Desk Reference	Second	McGraw-Hill Osborne Media
Sachin Kadam	Computer Architecture And Maintenance	First	Shroff Pub & Dist. Pvt. Ltd
M David Stone	Troubleshooting Your PC	1 edition	Microsoft Press

Suggested List of Laboratory Experiments :

S.No	
1	Motherboard study and draw motherboard layout of Pentium IV
2	Storage devices and Interfacing
3	CMOS setup of Pentium and power sully study like SMPS.

Suggested List of Assignments/Tutorial :

S.No	
1	Processor with anticipatory instruction scheduling
2	techniques for increasing the number of operations per unit of time
3	Software techniques for reducing data and sequencing risks

Name of the Course : Computer Engineering Group (Computer Networks)	
Course code: CO/CM/IF/CD	Semester : Fourth Semester
Duration :	Maximum Marks : 125
Teaching Scheme	Examination Scheme
Theory : 3 hrs/week	Mid Semester Exam: 20 Marks
Tutorial: ---	Assignment & Quiz: 10 Marks
Practical : 2 hrs/week	End Semester Exam: 70 Marks
Credit : 4	

Aim :-	
S.No	
1.	The chief aim of computer graphics is to display and print realistic-looking images
2.	Understand the principles of 3D computer graphics
3.	Develop programming skills for computer graphics Programming in C

Objective :-	
S.No	Students will be able to:
1.	• Identifying the benefits of network.
2.	• Distinguish between Network classifications.
3.	• Describe different types of Topology.
4.	• Describe different types of Network devices.
5.	• Compare different transmission media.
6.	• Compare OSI and TCP/IP model.
7.	• Configure TCP/IP.

Pre-Requisite :-	
S.No	
1.	Knowledge of C Programming
2.	Basic Data Structures &Mathematics

Contents		Hrs/week	Marks
Unit -1	**Basic Network Concepts:** 1.1 Understanding Network - Human Networks; Computer Networks; Network Plan. 1.2 Identifying the Benefits of Network - Sharing Information; Sharing Resources; Facilitating Centralized Management – Managing Software, Maintaining the Network, Backing Up Data.	**08**	**10**

	1.3 Distinguishing Between Network classifications - Classifying Networks by their Geography – LAN, MAN, WAN; Classifying Networks by their Component Role - Peer to Peer, Server based Network. 1.4 Network Features - File Sharing; Printer Sharing; Application Services; E-Mail; Remote Access.		
Unit -2	**Network Topologies and Networking Devices:** 2.1 Type of Topology - Bus Topology; Ring Topology; Star Topology; Mesh Topology; Tree Topology; Hybrid Topology. 2.2 Network Control Devices -Hubs; Switches; Routers; Bridges; Repeaters; Gateways; Modems	08	14
Unit - 3	**Transmission Media:** 3.1 Guided Media -Twisted Pair -UPT, STP; Coaxial Cable; Optical Fiber - Optical Fiber Structure, Light Source for Fiber, Propagation Mode, Advantages of optical fiber, Disadvantages of optical fiber. 3.2 Un-Guided Media: Wireless Communication – Communication Band; Microwave Communication; Satellite Communication – Access Method; Cellular (Mobile) Telephone – Band in Cellular Telephony, Calls Using Mobile Phones, Transmitting receiving operations; New Developments.	08	14
Unit – 4	**Network Reference Model**: 4.1 OSI Reference Model - Interlayer Communication – Data Encapsulation, Horizontal Communication, Vertical Communication, Encapsulation Terminology; Physical layer; Data link layer; Network layer; Transport layer; Session layer; Presentation layer; Application layer. 4.2 TCP/IP Reference Model – Link; Internet; Transport; Application layer. 4.3 Comparison of the OSI and TCP/IP reference models.	12	14
Unit - 5	**TCP/IP Fundamentals:** 5.1 TCP/IP Protocols - SLIP and PPP; ARP; IP; ICMP; TCP and UDP. 5.2 IP Addressing - IP Address Assignments; IP Address Classes; Subnet Masking; Registered and unregistered Addresses. 5.3 TCP/IP Configuration - Installing the TCP/IP Protocol; Configuring TCP/IP - Configuring Basic TCP/IP Properties, Configuring Advanced TCP/IP Properties	12	18
	Total	48	70
Practical: Skills to be developed:			

2) Intellectual skills
- Understanding of basics concept of network.
- Comparison of different network.
- Installation of protocols.

3) Motor skills
- Proper handling of Computer System hardware**.**

LIST OF PRACTICAL:

1 Draw layout of LAB Network.
2 Use step by step procedure for i.e. File sharing & Printer sharing.
3 Compare different Network Topologies.
4 Compare Network directing devices. i.e. Hub, Switch, Router.
5 Create a Network cable using RJ45 connectors.
6 To locate MAC address of computer
7 Installation of TCP/IP Protocol i.e. NetBEUI Protocol.
8 Implementing a TCP/IP Network configuring

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Introduction to Networking	Richard A. McMohan, Sir		Tata McGraw-Hill Edition
Networking + Certification (Second Edition)	Microsoft Press		--
Complete Reference Networking	Craig Zacker		Tata McGraw-Hill Edition
Data Communication and Networking	Achyut S. Godbole		Tata McGraw-Hill Edition

1. CDs:

Book of **Microsoft Certified Software Engineering** (MCSE) of Microsoft Publication gives CD. Demonstration of this CD for understanding basic concept.

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
A.S.Tanenbaum	Computer networks	3rd	PHI
B.A.Farouzan	Data communication and networking	4th	TATA McGraw hill

Suggested List of Laboratory Experiments :

S.No	
1	Implementation of hamming code.
2	Implementation of CRC.
3	Implementation of simplex protocol using RS-232 cable.

Suggested List of Assignments/Tutorial :	
S.No	
1	Draw neat diagrams for all types of cables needed for networking.
2	Write a program for half duplex
3	Write a program for full duplex.

Name of the Course : Computer Engineering Group (Data structure)		
Course code: CO/CM/IF/CD		**Semester : Fourth**
Duration :		**Maximum Marks : 175**
Teaching Scheme		**Examination Scheme**
Theory : 3 hrs/week		Mid Semester Exam: 20 Marks
Tutorial: ---		Assignment & Quiz: 10 Marks
Practical : 3 hrs/week		End Semester Exam: 70 Marks
Credit : 5		

Aim :-	
S.No	
1.	To develop skills in selecting or designing and implementing appropriate data structures in developing software to solve problems
2.	To acquaint students with principles of algorithms
3.	To familiarize with control and data structures of C programming language, and abstract data types

Objective :-	
S.No	Students will able to:
1.	• Write complex applications using structured programming methods.
2.	• Demonstrate understanding of the abstract properties of various data structures such as stacks, queues, lists, and trees.
3.	• Use various data structures effectively in application programs.
4.	• Implement various data structures in more than one manner.
5.	• Compare different implementations of data structures and to recognize the advantages and disadvantages of the different implementations.
6.	• Demonstrate understanding of various sorting algorithms, including bubble sort, insertion sort, selection sort, heap sort and quick-sort. C
7.	• Compare the efficiency of various sorting algorithms in terms of both time and space.
8.	• Program multiple file programs in a manner that allows for reusability of code.
9.	• Trace and code recursive functions.

Pre-Requisite :-	
S.No	
1.	Fundamentals of Programming Languages

Contents	Hrs/week	Marks
Unit -1 **Introduction to data structure:** 1.1 Data Representation 1.2 Abstract data Types 1.3 Data Structure and Structured Types 1.4 Atomic Type	**04**	**06**

	1.5 Difference between Abstract Data Types, Data Types And Data Structures 1.6 Data Types 1.7 Linear data type 1.8 Non- Linear data type 1.9 Primitive data type 1.10 Non primitive data type 1.11 Refinement Stages		
Unit -2	**Principles of programming and Analysis of Algorithms:** *2.1 Algorithms* 2.2 Different approaches for designing an algorithm 2.3 Complexity 2.4 Big 'O' Notation 2.5 Algorithm analysis	02	06
Unit - 3	**Searching & Sorting:** 3.1 Sorting-An Introduction 3.2 Efficiency of Sorting Algorithms 3.3 Bubble Sort 3.4 Selection Sort 3.5 Quick Sort 3.6 Insertion Sort 3.7 Merge Sort 3.8 Binary Tree Sort 3.9 Radix Sort 3.10 Shell Sort 3.11 Heap Sort 3.12 Searching-An Introduction 3.13 Binary Search	08	15
Unit - 4	**Stacks:** 4.1 Introduction to Stacks 4.2 Stacks as an Abstract Data Type 4.3 Primitive operations of stacks 4.3 Representation of Stacks through Arrays 4.4 Representation of Stacks through Linked List 4.5 Application of Stacks 4.6 Stack and Recursion	06	09
Unit - 5	**Queues:** 5.1 Introduction 5.2 Queue as an Abstract Data Type 5.3 Representation of Queues 5.4 Operations on queue : Searching ,Insertion, Deletion. 5.5 Circular Queues 5.6 Priority Queue 5.7 Application of Queues	06	08
Unit - 6	**Linked List**: 6.1 Introduction, 6.2 Terminologies Node, Address, Pointer, Information, Next, Null pointer, Empty list etc. 6.3 Operations on list Searching, Insertion and Deletion	06	06

	6.4 Types of lists Linked list and Circular list 6.5 Array stacks, queues, implementation using list.		

Unit - 7	**Trees:**
	7.1 Introduction to Binary Trees
	7.2 Types of Trees
	7.3 Basic Definition of Binary Trees
	7.4 Operations on Binary Search Tree
	7.5 Type of tree Binary, Height balanced and Weight
	  balanced tree
	7.4 Operations on trees,
	7.5 Searching Depth-first search and Breadth-first
	  search
	7.6 Traversing Pre-order, In-order and Post-order
	7.6 Insertion,
	7.7 Deletion,
		08	10

Unit – 8	**Graphs:**
	8.1 Introduction to Graphs
	8.2 Terms Associated with Graphs
	8.3 Terminology graph, node (vertices), arcs (edge), directed graph, in-
	  degree, out-degree, adjacent, successor, predecessor, relation,
	  Weight, path, length
	8.4 Sequential Representation of Graphs
	8.5 Linked Representation of Graphs
	8.6 Traversal of Graphs
	8.7 Spanning Trees
	8.8 Shortest Path
	8.9 Application of Graph
		06	06

Unit – 9	Hashing 9.1 Hash functions 9.2 Deleting items from hash tables	02	04
	Total	48	70

Practical:
Skills to be developed:

Intellectual skills:

- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
    - Problem definition
    - Analysis
    - Design of logic
    - Coding
    - Testing
    - Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:

	Proper handling of Computer System.		

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
ISRD Group New Dehli	Data Structure Using C		Tata Magraw Hill
Tremblie and Sorrenson	Data Structures		TMH Publications
Lafore	Teach Yourself data Structure and Algorithms in 24 Hrs.		BPB Publication

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
J. Tremblay, P. Soresan	"An introduction to data structures with Applications"	2nd	Tata McGraw-Hill International Editions, 1984, ISBN-0-07-462471-7.
A. Aho, J. Hopcroft, J. Ulman	"Data Structures and Algorithms"		Pearson Education, 1998, ISBN-0-201-43578-0

Suggested List of Laboratory Experiments :

S.No	
1	Write a program to perform Set operations - Union, Intersection, Difference, Symmetric Difference
2	Write a program to perform following operations on any database: Add, Delete, Modify, Display, Search & Sort etc.
3	Represent single variable polynomial as a circular linked list. Accept the terms in the polynomial in any order, i.e. not necessarily in the decreasing order of exponent. Sort while creating polynomial in the decreasing order of exponent and write a menu driven program to perform display, addition, multiplication and evaluation

Suggested List of Assignments/Tutorial :

S.No	
1	Analyze designed algorithm
2	Study of dynamic & static Memory allocation
3	Explain linear, non-linear data structure

List of Practical:

Sr.No.	Practical
01	Programs based on: Array operations, insertion, deletion
02	Programs for implementing various sorting techniques. (Minimum three sorting techniques from topics mentioned in the syllabus))

03	Programs for implementing various sorting and searching techniques. (Minimum two searching techniques from topics mentioned in the syllabus.)
04	Programs based on Stacks Implementation of PUSH & POP operations, Evaluate postfix expressions, Infix to postfix conversions.
05	Recursive programs: factorial, fibonacci, Ackerman function, and tower of Hanoi.(any two)
06	Programs for demonstrating queue operations. one recursive program converted to non recursive ones
07	Two programs based on Linked lists
08	Programs based on trees Creating a binary tree, in order, preorder and post order traversal of binary tree, deleting a node from binary tree.
09	Assignments based on graph theory.
10	Program based on hashing

Name of the Course : Diploma in Engineering and Technology (Development of Life Skills-II)	
Course code: (All Branches)	Semester : FOURTH
Duration :	Maximum Marks : 50
Teaching Scheme	**Examination Scheme**
Theory : 1hrs/week	Mid Semester Exam: 20 Marks
Tutorial: ----	Assignment & Quiz: 10 Marks
Practical : 2 hrs/week	End Semester Exam: 70 Marks
Credit : 3	

Aim :-	
S.No	
1.	This subject will develop the student as an effective member of the team
2.	It will develop the abilities and skills to perform at highest degree of quality as an individual as well as a member of core group or team
3.	skills will enhance his capabilities in the field of searching, assimilating information , managing the given task, handling people effectively ,solving challenging problems .
Objective :-	
S.No	**The students will be able to:**
1.	• Developing working in teams.
2.	• Apply problem solving skills for a given situation.
3.	• Use effective presentation techniques.
4.	• Apply techniques of effective time management.
5.	• Apply task management techniques for given projects.
6.	• Enhance leadership traits.
7.	• Resolve conflict by appropriate method.
8.	• Survive self in today's competitive world.
9.	• Face interview without fear.
10.	• Follow moral and ethics.
11.	• Convince people to avoid frustration
Pre-Requisite :-	
S.No	
1.	Basic Of Self Analysis methods.
2.	Basic knowledge of stress and time management concepts.
3.	Basic knowledge of presentation skills.

Topic No.	Contents	Hours
01	**SOCIAL SKILLS** SOCIETIES, SOCIAL STRUCTURE, DEVELOP SYMPATHY AND EMPATHY.	01
02	SWOT Analysis – Concept, How to make use of SWOT.	01
03	**Inter personal Relation** Sources of conflict, Resolution of conflict , Ways to enhance interpersonal relations.	02
04	**Problem Solving** **I) STEPS IN PROBLEM SOLVING,** 1) IDENTIFY AND CLARIFY THE PROBLEM, 2) INFORMATION GATHERING RELATED TO PROBLEM, 3) EVALUATE THE EVIDENCE, 4) CONSIDER ALTERNATIVE SOLUTIONS AND THEIR IMPLICATIONS, 5) CHOOSE AND IMPLEMENT THE BEST ALTERNATIVE, 6) REVIEW **II) Problem solving technique.** (any one technique may be considered) 1) Trial and error, 2) Brain storming, 3) Lateral thinking	02
05	**Presentation Skills** Body language -- Dress like the audience Posture, Gestures, Eye contact and facial expression. PRESENTATION SKILL – STAGE FRIGHT, Voice and language – Volume, Pitch, Inflection, Speed, Pause Pronunciation, Articulation, Language, Practice of speech. Use of aids –OHP,LCD projector, white board	03
06	**Group discussion and Interview technique** – Introduction to group discussion, Ways to carry out group discussion, Parameters— Contact, body language, analytical and logical thinking, decision making **INTERVIEW TECHNIQUE** NECESSITY, TIPS FOR HANDLING COMMON QUESTIONS.	03
07	**Working in Teams** UNDERSTAND AND WORK WITHIN THE DYNAMICS OF A GROUPS. TIPS TO WORK EFFECTIVELY IN TEAMS, ESTABLISH GOOD RAPPORT, INTEREST WITH OTHERS AND WORK EFFECTIVELY WITH THEM TO MEET COMMON OBJECTIVES, TIPS TO PROVIDE AND ACCEPT FEEDBACK IN A CONSTRUCTIVE AND CONSIDERATE WAY , LEADERSHIP IN TEAMS, HANDLING FRUSTRATIONS IN GROUP.	02

08	**Task Management** INTRODUCTION, TASK IDENTIFICATION, TASK PLANNING ,ORGANIZING AND EXECUTION, CLOSING THE TASK	02
	TOTAL	**16**

CONTENTS: PRACTICAL

List of Assignment: (Any Eight assignments)

1) SWOT analysis: - Analyse yourself with respect to your strength and weaknesses, opportunities and threats. Following points will be useful for doing SWOT.
   a) Your past experiences,
   b) Achievements,
   c) Failures,
   d) Feedback from others etc.
2) Undergo a test on reading skill/memory skill administered by your teacher.
3) Solve the puzzles.
4) Form a group of 5-10 students and do a work for social cause e.g. tree Plantation, blood donation, environment protection, camps on awareness like importance of cleanliness in slump area, social activities like giving cloths to poor etc.(One activity per group)
5) Deliver a seminar for 10-12 minutes using presentation aids on the topic given by your teacher.
6) Watch/listen an informative session on social activities. Make a report on topic of your interest using audio/visual aids. Make a report on the programme
7) Conduct an interview of a personality and write a report on it.
8) Discuss a topic in a group and prepare minutes of discussion. Write thorough description of the topic discussed
9) Arrange an exhibition, displaying flow-charts, posters, paper cutting, Photographs etc on the topic given by your teacher.

Note: - Please note that these are the suggested assignments on given contents/topic. These assignments are the guide lines to the subject teachers. However the subject teachers are free to design any assignment relevant to the topic. The **term work** will consist of any eight assignments.

MINI PROJECT ON TASK MANAGEMENT. DECIDE ANY TASK TO BE COMPLETED IN A STIPULATED TIME WITH THE HELP OF TEACHER. WRITE A REPORT CONSIDERING VARIOUS STEPS IN TASK MANAGEMENT.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Marshall Cooks	Adams Time management		Viva Books
E.H. Mc Grath , S.J.	Basic Managerial Skills for All		Prentice Hall of India, Pvt Ltd
Allen Pease	Body Language		Sudha Publications Pvt. Ltd.
Lowe and Phil	Creativity and problem solving		Kogan Page (I) P Ltd

Adair, J	Decision making & Problem Solving		Orient Longman
Bishop , Sue	Develop Your Assertiveness		Kogan Page India
Marion E Haynes	Make Every Minute Count		Kogan page India
Steven L McShane and Mary Ann Glinow	Organizational Behavior		Tata McGraw Hill
Stephen P. Robbins	Organizational Behavior		Pretice Hall of India, Pvt Ltd
Michael Hatton (Canada – India Project)	Presentation Skills		ISTE New Delhi
--	Stress Management Through Yoga and Meditation		Sterling Publisher Pvt Ltd .
Richard Hale ,Peter Whilom	Target setting and Goal Achievement		Kogan page India
Chakravarty, Ajanta	Time management		Rupa and Company
Harding ham .A	Working in Teams		Orient Longman

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Daniel Goleman	Working with Emotional Intelligence		
Dipak Kumar Bhattacharyya	Organizational Behavior		oxford press
Lorayne, Lucas	Memory Book		

Suggested List of Laboratory Experiments :

S.No	
1	Group discussion on any current issue viz. political, social etc
2	Mock interviews
3	Mock test

Suggested List of Assignments/Tutorial :

S.No	
1	Preparing Vision/Mission/Goals statements for - College - Hypothetical Organization
2	Write a Personal essays and resume
3	Book review, report writing of any event conducted in college/organization

INTERNET ASSISTANCE
1. http://www.mindtools.com
2. http://www.stress.org
3. http://www.ethics.com
4. http://www.coopcomm.org/workbook.htm
5. http://www.mapfornonprofits.org/
6. http://www.learningmeditition.com http://bbc.co.uk/learning/courses/
7. http://eqi.org/
8. http://www.abacon.com/commstudies/interpersonal/indisclosure.html
9. http://www.mapnp.org/library/ethics/ethxgde.htm
10. http://www.mapnp.org/library/grp_cnfl/grp_cnfl.htm
11. http://members.aol.com/nonverbal2/diction1.htm
12. http://www.thomasarmstron.com/multiple_intelligences.htm
13. http://snow.utoronto.ca/Learn2/modules.html
14. http://www.quickmba.com/strategy/swot/

Name of the Course : Information Technology (Management Information System)			
Course code: IF		Semester : Fourth	
Duration :		Maximum Marks : 100	
Teaching Scheme		Examination Scheme	
Theory : 3 hrs/week		Mid Semester Exam: 20 Marks	
Tutorial: ...		Assignment & Quiz: 10 Marks	
Practical : hrs/week		End Semester Exam: 70 Marks	
Credit : 3			

Aim :-

S.No	
1.	To study Management of Information system
2.	To study various system like expert system, Knowledge based system, software system.
3.	To learn how to manage information by using system.

Objective :-

S.No	The students will be able to:
1.	• State the important role of Management Information System in modern organization.
2.	• Describe the function of Business Process Outsourcing, processes in Customer Relationship Management & types of E-commerce.
3.	• State the use of data warehouse, data mining for decision support system.
4.	• Describe advance concepts like Artificial Intelligence and Expert systems.
5.	• State the various tools of Security Management.

Pre-Requisite :-

S.No	
1.	Basic Of Self Analysis methods.
2.	Basic knowledge of stress and time management concepts.
3.	Basic knowledge of presentation skills.

Contents		Hrs/week	
Unit -1	**Foundation of Information System** Information Systems (Concept, Resources and Products, Activities) Management Information System (Definition, Role, Features) Importance of Management, Process of Management (Planning, Organizing, Staffing, Coordinating, Directing) Organizational Structure – Basic model of organization structure, Organizational Behavior, Management Information System Organization Strategic Management of Business – Concept of corporate planning, Essentiality of Strategic planning, Development of Business Strategy, Types of strategies, Tools of planning, MIS Business planning	**10**	**18**
Unit -2	**Application of MIS** Applications in manufacturing sector (Personal Management, Financial	**06**	**10**

	Management, Production Management, Materials Management, and Marketing Management) Applications in Service sector (Airlines, Hotels, Hospitals, Banking, Insurance, Utilities, and Finance.)			
Unit - 3	**Decision Support System** Characteristics of decision making process Decision Support System (Concept, Components, Development, Risk) Management Information System and Decision Support System, Concept of Artificial Intelligence & Expert System. Data warehouse (Concept, Design, Organization and Management, Architecture, Implementation), Data in data warehouse Data Mining	**12**	**14**
	Integration of Information Enterprise Resource Planning (ERP)-ERP (Basic features, Benefits, selection, implementation) Enterprise Management System (EMS) & Management Information System (MIS) Customer Relationship Management (CRM) (Concept , Three Phases of CRM, Benefits , Challenges & Trends) Business Process Outsourcing (BPO) -BPO, Voice BPO i.e. Call Center, Non-Voice BPO, Challenges in BPO Management. Electronic Commerce Systems (E-Commerce) – Concept, Scope, B2C, B2B, C2C, E-Commerce Applications.	**12**	**20**
	Security & Ethical challenges Viewing Versus Security Risks, Threats & Vulnerability, Assessing Risks. Common Controls (Physical, Electronic, Software, Management Controls) Common Threats (Natural Disasters Employee Errors, Computer Crime, Fraud, Abuse, Program Bugs) Ethical & Contractual Behaviors, Privacy, Access & Accuracy Issues, Property Issues.	**08**	**08**
	Total	**48**	**70**

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Robert Schulthis & Mary Sumner	Management Information System		Tata Mcgraw Hill
O'Brien	Management Information System		Tata Mcgraw Hill
Jawadekar	Management Information System		Tata Mcgraw Hill

2. **Websites:**
- www.en.wikipedia.org
- www.dwinfocenter.org
- www.ousourceking.com/bpo

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S. Shajahan	Management Information Systems	01-Jan-2007	New Age International

Kenneth C. Laudon, Jane Price Laudon	Management Information Systems	2002	Prentice Hall

Suggested List of Laboratory Experiments :

S.No	
1	Mini- Project based on syllabus

Suggested List of Assignments/Tutorial :

S.No	
1	Mini- Project based on syllabus

Name of the Course :	Computer Engineering Group (Microprocessor and Programming)		
Course code: CO/CM/IF/CD		**Semester :** Fourth	
Duration :		**Maximum Marks :** 150	
Teaching Scheme		**Examination Scheme**	
Theory : 3 hrs/week		Mid Semester Exam: 20 Marks	
Tutorial: ---		Assignment & Quiz: 10 Marks	
Practical : 2 hrs/week		End Semester Exam: 70Marks	
Credit :			

Aim :-	
S.No	
1.	To study Architecture and memory management of 8 bit & 16 bit microprocessor (i.e 8085& 8086).
2.	To study assembly language programming.
3.	To implement different system interfacing.

Objective :-	
S.No	Students will be able to:
1.	• Draw block diagram for architecture of 8085.
2.	• Draw block diagram for architecture of 8086.
3.	• Describe concepts of pipelining segmentation and address generation.
4.	• Write syntax of given instructions.
5.	• Write the efficient Assembly Language Program for different problem statements.
6.	• Write the efficient Assembly Language Program using procedures and macros.
7.	• Design interface of memory chips.

Pre-Requisite :-	
S.No	
1.	Digital Electronics
2.	Memories
3.	Analog to Digital and Digital to analog converters

Contents	Hrs/week	Marks
Unit -1	***Basics of Microprocessor*** 1.1 Evolution of Microprocessor and types 1.2 Silent features of 8085 Microprocessor, architecture of 8085 (Block diagram), register organization, limitations of 8-bit Microprocessor.	**06**	**06**
Unit -2	**16-bit Microprocessor 8086** 2.1 Silent features of 8086 Microprocessor, architecture of 8086 (Block diagram, signal description), register organization, concepts of	**08**	**14**

	pipelining, memory segmentation and memory address generation. 2.2 Minimum and Maximum Mode operation and diagram		
Unit - 3	**8086 Instruction set** 3.1 Machine Language Instruction format, addressing modes 3.2 Instruction set (Arithmetic, logical, data transfer, bit manipulation, string, program control transfer, process control)	**12**	**16**
Unit – 4	**The art of assembly Language Programming** 4.1 Program development steps defining problem, algorithms flowchart, initialization checklist, choosing instructions, converting algorithms to assembly language programs. 4.2 Assembly Language Programming Tools Editors, Assembler, Linker, Debugger. 4.3 Assembler directives, model of 8086 assembly language programming, programming using assembler.	**12**	**18**
Unit - 5	**Procedure and Macro** 5.1 Defining Procedure (Directives used, FAR and NEAR, CALL and RET instructions) 5.2 Defining Macros. 5.3 Assembly Language Programs using Procedure and Macros.	**06**	**10**
Unit - 6	**System Interfacing** 6.1 Interfacing Techniques (I/O mapped I/O, Memory mapped I/O, memory and I/O addressing, 8086 addressing, and address decoding, memory interfacing as Even and Odd bank)	**04**	**06**
	Total	**48**	**70**

Practical:

Skills to be developed:

Intellectual skills

- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
  - Problem definition
  - Analysis
  - Design of logic
  - Coding
  - Testing
  - Maintenance (Modifications, error corrections, making changes etc.)

Motor skills

- Proper handling of Computer System.

List of Practical:

1) Basics of Assembler, linker, debugger, editor
2) Write an Assembly Language Program to
   - Add / Sub two 16 bit numbers.
   - Find sum of series of numbers.
   - Multiply two 16 bit unsigned/ signed numbers.
   - Divide two unsigned/ signed numbers (32/16 , 16/8, 16/16, 8/8)
   - Add / Sub / Multiply / Divide two BCD numbers.
   - Find smallest/ largest number from array of n numbers.
   - Arrange numbers in array in ascending/ descending order.
   - Perform block transfer data using string instructions / without using string instructions.
   - Compare two strings using string instructions / without using string instructions.
   - Display string in reverse order, string length, Concatenation of two strings.

Convert Hex to Decimal, Decimal to Hex.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Microprocessor & interfacing (programming & hardware)	Douglas V-Hall		Tata McGraw Hill
Advanced microprocessor & peripheral	A.K. Ray & K.M. Bhurchandi		Tata McGraw Hill
An introduction to the Intel family of Microprocessors	James L. Antonakos		Pearson Education Asia
Microprocessor Architecture programming & application with the 8085	Ramesh A. Gaonkar		Penfam International

1. **Websites :**
   www.intel.com
   www.pcguide.com/ref/CPU
   www.CPU-World.com/Arch/
   www.techsource .com / engineering- parts/microprocessor.html

	Demo lectures with power point presentations using LCD projector should be arranged to develop programming concepts of students.

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
John Uffenbeck	The 8086/88 Family: Design, Programming & Interfacing		PHI
Liu, Gibson	Microcomputer Systems: The 8086/88 Family	2nd	PHI,2005
Triebel, Avtar Singh	8086 And 80286 Microprocessors: Hardware, Software, and Interfacing		Prentic Hall

Suggested List of Laboratory Experiments :

S.No	
1	Write 8086 ALP to find and count negative numbers from the array of signed numbers stored in memory.
2	Write 8086 ALP to perform multiplication of two 16–bit numbers. Using add and shift method.
3	Conversion of BCD To HEX and vice- versa using 8086 instruction set.

Suggested List of Assignments/Tutorial :

S.No	
1	Conversion of BCD To HEX using 8086 instruction set.
2	Conversion of HEX To BCD using 8086 instruction set.

Name of the Course : Computer Engineering Group (Professional Practices-IV)		
Course code: CO/CM/IF	**Semester : Fourth**	
Duration :	**Maximum Marks :**	
Teaching Scheme	**Examination Scheme**	
Theory : 2 hrs/week	Mid Semester Exam: 20 Marks	
Tutorial: hrs/week	Assignment & Quiz: 10 Marks	
Practical : 2 hrs/week	End Semester Exam: 70 Marks	
Credit : 3		

Aim :-		
S.No		
1.	To understand the knowledge of computer languages.	
2.	To understand to access internet.	
3.	To understand Data management.	

Objective :-		
S.No	Student will be able to:	
1.	• Acquire information from different sources.	
2.	• Prepare notes for given topic.	
3.	• Present given topic in a seminar.	
4.	• Interact with peers to share thoughts.	
5.	• Prepare a report on industrial visit, expert lecture	

Pre-Requisite :-		
S.No		
1.	Knowledge must required regarding computer language.	
2.	Knowledge of Internet accessing is required.	

	Contents	Hrs/week

Unit -1	**Industrial Visits**
	Structured industrial visits be arranged and report of the same should be submitted by the individual student, to form a part of the term work.
	The industrial visits may be arranged in the following areas / industries :
	    1) Telephone Exchange
	    2) District Level National Information Center(NIC)
	    3) Any other
		19

Unit -2	**Lectures by Professional / Industrial Expert to be organized from any of the following areas:**
	    vii) Interview Techniques.
	    viii) Cyber Laws
	    ix) Nano Technology
	    x) Ethical Hacking
		12

	xi) Any other suitable topic		

Unit - 3	**Information Search :**
	Information search can be done through manufacturers, catalogue, internet, magazines; books etc. and submit a report.
	Following topics are suggested :
	    i) Market survey of different processors.
	    ii) Blue tooth Technology
	    iii) Artificial Technology
	    iv) Data ware-housing
	    v) Cryptography
	    vi) Digital signal processing
	    vii) Bio-informatics
	    viii) Any other suitable areas
			10

	Seminar :
	Each student shall submit a report of at least 10 pages and deliver a seminar
	(Presentation time – 10 minutes)
	Seminar topic
	    i) Parallel Computing
	    ii) Distributed Processing
	    iii) Wireless communication
	    iv) Virtual reality
	    v) Embedded system
	    vi) Computer security
	    vii) Multimedia Techniques
	    viii) Bio - Technology
	    ix) Any other suitable topic
			15

	Mini Project / Activities :
	    a) Web-site development
	    b) Database related any topic
	    c) System projects in VB like notepad, editors
	    d) Animation projects using C, C++, VB etc
	    e) Any other suitable topic
			14

		Total	**70**

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
E. Balgurusamy	Programming in ANSI C	Sixth edition	Tata Mc Graw Hill
E. Balgurusamy	Programming in Java	5 edition	Tata Mc Graw Hill
E. Balgurusamy	Programming in C++	4 edition	Tata Mc Graw Hill

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Yeshwant Kanetkar	Let Us C	10th Edition	BPB Publications

Suggested List of Laboratory Experiments :

S.No	

1	Mini Project based on c
2	Mini Project based on Java
3	Mini Project based on C++
Suggested List of Assignments/Tutorial :	
S.No	
1	Literature survey on selected industrial project.
2	Seminar should be on selected industrial project's synopsis and week wise plan for completion of project.
3	

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME: INFORMATION TECHNOLOGY

COURSE CODE : IF

DURATION OF COURSE : 6 SEMESTERS

SEMESTER: FIFTH SEMESTER   **SCHEME : C**

Sr.No.	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
	THEORY	L	TU	P	SESSIONSAL EXAM			ESE	PR	Oral #	TW @	
					TA	CT	Total					
1	Software Engineering	03	--	--	10	20	30	70	--	--	--	3
2	Java Programming	03	--	04	10	20	30	70	50	--	25	5
3	Operating System	03	--	02	10	20	30	70	--	--	25	4
4	Communication Techniques	03	--	02	10	20	30	70	--	25	25	4
5	Elective – I (Any One)											
	Multimedia and Animation Techniques	02	--	04*	10	20	30	70	--	--	25	4
	Windows Programming	02	--	04	10	20	30	70	--	--	25	4
6	Network Management and Administration	02	--	02	--	--	--	--	--	25	25	3
7	Professional Practices-V	--	--	03	--	--	--	--	--	--	50	2
	Total	**16**	**--**	**17**	**50**	**100**	**150**	**350**	**50**	**50**	**175**	**25**

STUDENT CONTACT HOURS PER WEEK: **33 HRS**

HTEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH

 # , External Assessment   @ , Internal Assessment   ESE - End Semester Exam.

 ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, TU - Tutorial, P - Practical
  TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.

   Total Marks : 775

 Minimum passing for sessional marks is 40%, and for theory subject 40%.

 Assessment of Practical, Oral & term work to be done as per the prevailing norms of curriculum implementation & assessment.

Name of the Course : INFORMATION TECHNOLOGY AND MEDICAL ELECTRONICS (COMMUNICATION TECHNIQUES)	
Course code: IF/MU	Semester : FIFTH
Duration :	Maximum Marks :150
Teaching Scheme	Examination Scheme
Theory : 3 hrs/week	Mid Semester Exam: 20 Marks
Tutorial: -----	Assignment & Quiz: 10 Marks
Practical : 2 hrs/week	End Semester Exam: 70 Marks
Credit :4	

Aim :-	
S.No	
1.	To learn & understand various Encoding and Decoding Techniques
2.	To understand **Modulation Techniques & Signal Processing**.
3.	To learn & understand **Satellite Communication And Mobile Communication** .

Objective :-	
S.No	The student will be able to
1.	• Identify the need for modulation.
2.	• Draw electromagnetic spectrum.
3.	• Draw the block diagram for transmitting AM, FM, PM, Pulse modulation, PCM, ASK, FSK and PSK modulation techniques.
4.	• Draw related waveforms, measure and verify the depth of modulation.
5.	• Describe Satellite and Cellular Mobile Communication systems.
6.	• Use the various data encoding techniques in digital communication system.
7.	• Describe the telephone system and digital carrier system.

Pre-Requisite :-	
S.No	
1.	Basics of Digital Electronics
2.	Basics of communication system.
3.	Basics of various Electronic parts and Circuit Design concepts.

Contents		Hrs/week	
Unit -1	**Introduction To Electronic Communication** 1.1 Block diagram of communication system. 1.2 Electromagnetic spectrum. 1.3 Need for Modulation. 1.4 Concept of noise 1.5 Classification of communication systems.	**08**	**12**

	1.6 Radio communication Comparison of AM, FM, PM on the basis of Definition, Waveforms, Bandwidth Requirement, Representation in Time domain and Frequency Domain, Modulation Index. 1.7 Demodulation in AM, FM (methods not necessary) 1.8 Block diagram and function of each block of : a) AM Transmitter and Receiver. b) FM Transmitter and Receiver.		
Unit -2	**Wave Propagation** 2.1 Fundamentals of Electromagnetic wave. 2.2 Transverse electromagnetic wave. 2.3 Polarization. 2.4 Ground Wave. 2.5 Ionosphere. 2.6 Sky Wave Propagation, Effect of changes in atmospheric conditions on sky wave propagation. 2.7 Concept of actual height and virtual height. 2.8 Definitions: • Critical frequency. • Maximum usable frequency. • Skip distance. • Fading. 2.9 Space Wave Propagation. 2.10 Duct Propagation. 2.11 Troposphere scatters propagation.	04	06
Unit - 3	**Pulse Modulation Techniques & Signal Processing** 3.1 Basics of Pulse Modulation : • Sampling Theorem • Natural Sampling • Flat Top Sampling • Nyquist Rate. 3.2 Advantages of Pulse modulation over AM. 3.3 Block Diagram for generation, Waveforms, working principle, advantages, disadvantages and applications of PAM, PWM, PPM. 3.4 Block Diagram for generation, working principle, waveforms, advantages, disadvantages and applications of : ASK , FSK, QPSK, BPSK, DPSK. 3.5 Introduction to Digital Communication System : Digital modulation methods 3.6 Block diagram, working principle, waveforms, advantages, disadvantages and applications of PCM, Delta modulation, Adaptive delta modulation. 3.7 Baseband and Passband Transmission 3.8 Multiplexing Techniques: FDM, TDM, and WDM - Definition, Schematic diagram, Principle, application, advantages and disadvantages.	14	18
Unit - 4	**Data Encoding And Transmission** 4.1 Introduction to encoding digital data to digital signal.	06	10

	4.2 Encoding techniques viz. Unipolar, polar, Bipolar and their types.
	4.3 Comparison of various techniques.
	44 Definitions :
	       • Data Rate.
	       • Baud Rate.
	       • Bit rate.
	       • Channel Bandwidth.
	       • Channel Capacity
	       • S/N Ratio.		

Unit – 5	**Satellite Communication And Mobile Communication** 5.1 Block diagram of Satellite communication system. 5.2 Brief introduction to Communication and orbits.(Elevation and Azimuth angles of satellite) 5.3 Uplink model, Transponder and Downlink model and the frequencies used. 5.4 Frequency band used in Satellite communication. 5.5 Functions of a satellite. 5.6 Concept of antenna 5.7 Construction and working principle of Parabolic dish and horn antenna. 5.8 Satellite application overview. 5.9 Principle, advantages and disadvantages of TDMA, FDMA, CDMA 5.10 Concepts of mobile phone. 5.11 Block diagram of cellular mobile phone system and description. 5.12 Frequency band and types of modulation used for Cellular mobile communication. 5.13 Call processing , Frequency reuse and cell splitting. Forward and reverse direction (handset to handset) and (Handset to Landline) 5.14 Hand Off procedure.	10	16
Unit – 6	**Analog And Digital Carrier Systems** 6.1 Telephone Carrier system. 6.2 Analog Carrier system Switched , Leased, Analog hierarchy 6.3 Digital Carrier system Switched , Leased Digital hierarchy, T-lines 6.4 Digital Subscriber Line.	06	08
	Total	48	70

Practical:
Skills to be developed**:**
 	
Intellectual skills:
 	
   1. Interpretation skills
   2. Encoding techniques
 	
Motor Skills:
 	
  1 Observation
  2. Draw graphs

List of Practical:

1.   i)   To generate and observe AM waveform using Collector modulator and calculate modulation index.
    ii)   Observe the effect of change in modulating signal voltage on modulation index.
2.   i)   To generate and observe FM waveform and calculate modulation index
    ii)   Observe the effect of change in modulating signal voltage and frequency on modulation index.
3.   i) To generate PAM and draw input/ output waveforms and measure amplitude of each pulse
       ii) Observe the demodulated output and measure its amplitude and frequency.
4.   i) To generate PPM and draw input/ output waveforms and measure the shift in position of pulse
        ii) Observe the demodulated output and measure its amplitude and frequency.
5.   i) To generate PWM and draw input/ output waveforms and measure width of each pulse
       ii) Observe the demodulated output and measure its amplitude and frequency.
6.   To generate PCM and draw input/ output Waveforms. From the sampled outputs, measure the quantum levels.
7.   To observe the demodulated output waveform of a PCM signal and measure the output voltage and frequency
8.   To generate ASK signal and draw input/ output waveforms.
9.   To generate FSK signal and draw input/ output waveforms
10.   To generate PSK signal and draw input/ output waveforms
11.   Assume a data stream consisting of 12 bits and implement various encoding techniques and draw the waveforms
12.   Visit to any mobile communication station. A technical report of visit shall be submitted as a part of term work

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Kennedy	Electronic Communication System		Tata McGraw Hill
Roddy Collen	Electronic Communication		Prentice Hall of India
Forouzan	Data Communication & Networking		Tata McGraw Hill
William Lee	Mobile Cellular Telecommunication		McGraw Hill
William Schwaber	Electronic Communication System		Prentice Hall of India
Frenzel	Communication Electronics		Tata McGraw Hill
Wayne Tomasi	Electronic communication systems		Prentice Hall of India
Anita S. Diwakar & Rahul Kulkarni	Electronic communication systems		Tata McGraw Hill

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
B.G.Evans	**Satellite Communication Systems**	**3rd Edition**	IET Telecommunication
Madhavendra	**Satellite**		McGraw-Hill, 1995

Richharia	**communications systems:** design principles		
William M. Waggener	**Pulse Code Modulation Techniques**		Springer (ITP)

Suggested List of Laboratory Experiments :

S.No	
1	To generate and observe AM and FM waveform and calculate modulation index.
2	To generate ASK , FSK and PSK signal and draw input/ output waveforms.
3	To generate PAM ,PWM and PCM and draw input/ output waveforms and measure amplitude of each pulse

Suggested List of Assignments/Tutorial :

S.No	
1	Study AM and FM modulation Techniques.
2	Assume a data stream consisting of 12 bits and implement various encoding techniques and draw the waveforms
3	Visit to any mobile communication station near to you. Generate a Report using Communication Techniques you have studied.

Name of the Course : COMPUTER ENGINEERING GROUP (JAVA PROGRAMMING)	
Course code: CO/CM/IF/CD	Semester : FIFTH FOR CO/CM AND SIXTH FOR CD
Duration : 6 semester	Maximum Marks : 175
Teaching Scheme	**Examination Scheme**
Theory : 3Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: ---	Assignment & Quiz: 10 Marks
Practical : 4 Hrs/week	End Semester Exam: 70 Marks
Credit :5	

Aim :-	
S.No	
1.	To learn & understand various programming paradigms.
2.	To implement platform independent model.
3.	To increase robustness & Security of software.

Objective :-	
S.No	The student will be able to:
1.	• Design and implement classes and methods
2.	• Understand and implement basic programming constructs
3.	• Apply object oriented features to real time entities
4.	• Differentiate between primitive data types and class data types and implement conversion between them.
5.	• Understand and implement the concept of reusability and extensibility
6.	• Create packages and interfaces and used it in programs
7.	• Design and implement multithreaded programs
8.	• Manage errors and exceptions
9.	• Design and implement applet and graphics programming
10.	• Make use of Data streams in programs
11.	• Write programs by combining all features of Java.

Pre-Requisite :-	
S.No	
1.	Basic of Object Oriented Programming
2.	Basic of Programming Knowledge and Skills

Contents	Hrs/week	Marks

Unit -1   **Introduction to Java**
 1.1   Fundamentals of Object Oriented Programming
       Object and Classes, Data abstraction and encapsulation, Inheritance,
       Polymorphism, Dynamic Binding
 1.2   Java Features
       Compiled and Interpreted, Platform independent and
       portable, Object oriented
       Distributed, Multithreaded and interactive, High performance
 1.3   Constant, Variables and Data Types
       Constant, Data Types, Scope of variable, Symbolic Constant, Type
       casting, Standard default values
 1.4   Operator and Expression
       Arithmetic Operators, Relational Operators, Logical Operators,
       Assignment Operator Increment and Decrement Operator,
       Conditional Operator, Bit wise Operator, Special Operator
 1.5   Decision making and Branching
       Decision making with if statement, Simple if statement, The if else
       statement, The else if ladder, The switch statement, The? : Operator
 1.6   Decision making and Looping
       The While statement, The do statement, The for statement, Jumps in
       Loops, Labeled Loops
	10	**14**

Unit -2   2.1   Classes, Object and Methods
       Defining a class, Creating object, Accessing class members,
       Constructor, Methods Overloading, Static Member
 2.2   Inheritance Extending a Class (Defining a subclass Constructor,
       Multilevel inheritance, Hierarchical inheritance, Overriding
       Methods, Final variable and Methods, Final Classes, Abstract method
       and Classes
 2.3   Visibility Control
       Public access, friend access, Protected access,   Private   access,
       Private Protected access
 2.4   Array, Strings and Vectors
       Arrays, One Dimensional array, Creating an array, Two Dimensional
       array, Strings, Vectors, Wrapper Classes
	08	**14**

Unit - 3   **Interfaces and Packages**
 3.1 Interface: Multiple Inheritance
       Defining interfaces, Extending interfaces, Implementing interfaces,
       Accessing Interface variable
 3.2 Packages: Putting Classes Together
       System Package, Using system Package, Naming Convention,
       Creating Package, Accessing a package, Using a package, adding a
       class to a package
	06	**14**

Unit – 4   **Multithreaded Programming and Exception handling**
 4.1 Multi Threading:
       Creating Thread, Extending a thread class, Stopping and Blocking a
       thread, Life cycle of thread, Using thread method, Thread
       exceptions, Thread priority, Synchronization, Implementing a
       'Runnable'' Interface
 4.2 Managing Errors and Exceptions
	08	**14**

	Types of errors, Exception, Multiple catch statement, using finally statement, Using Exception for Debugging		

Unit – 5	**Java Applets and Graphics Programming**
	5.1 Applet Programming
	    Local and remote applets, How applet differ from application, Preparing to write applets, Building applet code, Applet life cycle, Creating an Executable Applet, Designing a Web page, Applet tag, Adding Applet to HTML file, Running the Applet, Passing parameter to applet
	5.2 Graphics Programming
	    The Graphics Class, Lines and rectangle, Circle and Ellipse, Drawing Arcs, Drawing Polygons, Line Graphs, Using control loops in Applets, Drawing Bar charts
		10	**10**

Unit - 6	**Streams and File I/O** 6.1 Stream Classes 6.2 Character Stream, Byte Stream 6.3 Serialization	**06**	**04**
	Total	48	70

Practical:

Skills to be developed:

Intellectual skills:

- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
    - Problem definition
    - Analysis
    - Design of logic
    - Coding
    - Testing
    - Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:

- Proper handling of Computer System.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
E. Balagurusamy	Programming with Java		BPB
C Thomas WU	An Introduction to Object Oriented Programming		Tata McGraw Hill
Patrick	The Complete Reference		Tata McGraw Hill

Naughton-Herbert Schildt	Java 2 (Third Edition)		
John R.Hubbard	Programming with Java		Tata McGraw Hill
Cohoon & Davidson	Java Program design		Tata McGraw Hill

Notes: LCD has to be used for effective learning for all the topics.

1) Web Sites:

http://www.sun.java.com
http://www.osborne.com
http://www.sun.java.com (For downloading JDK for Practical)

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Jawroski	Java2 Unleashed		Techmedia
Java2 Programming	Keyur Shah		Tata McGraw Hill
Jawroski	Java2 Unleashed		Techmedia

Suggested List of Laboratory Experiments :

S.No	
1	java program to perform garbage collection
2	Java Program to get IP Address
3	Write a program for stopwatch.

Suggested List of Assignments/Tutorial :

S.No	
1	What are Hash Code and equals in Java?
2	When to use Comparator and Comparable Interface in java?
3	**How to create an immutable class?**

List of Practical's

Sr. No.	List of Practical's
1.	Write simple programs based on basic syntactical constructs of Java like: a) Operators and expressions. b) Looping statements. c) Decision making statements. d) Type casting.
2.	Write a simple Java program to demonstrate use of command line arguments in Java..
3.	Write a Java Program to define a class, describe its constructor, overload the constructors and instantiate its object
4.	Write a Java Program to define a class, define instance methods for setting and retrieving values of instance variables and instantiate its object
5.	Write a Java Program to define a class, define instance methods and overload them and use them for dynamic method invocation.

6.	Write a Java Program to demonstrate use of sub class
7.	Write a Java Program to demonstrate use of nested class.

8.	Write a Java Program to practice
	    - use of single Dimensional array.
	    - use of multidimensional array.

9.	Write a Java Program to implement array of objects.

10.	Write a Java program to practice
	    - using String class and its methods.
	    - using String Buffer class and its methods.

11.	Write a Java Program to implement Vector class and its methods.
12.	Write a Java Program to implement Wrapper classes and their methods.
13.	Write a Java Program to implement single inheritance by applying various access controls to its data members and methods.
14.	Write a Java Program to implement multilevel inheritance by applying various access controls to its data members and methods.
15.	Write a Java Program to implement inheritance and demonstrate use of method overriding.

16.	Write a program to demonstrate
	    - use of implementing interfaces.
	    - use of extending interfaces.

17.	Write a Java program to implement the concept of importing classes from user defined package and creating packages.
18.	Write a program to implement the concept of threading.

19.	Write a program to implement the concept of Exception Handling
	    - using predefined exception.
	    - by creating user defined exceptions.

20.	Write a program to implement the concept of Synchronization for
	    - object synchronization.
	    - method synchronization.

21.	Write a program using Applet
	    - to display a message in the Applet.
	    - for configuring Applets by passing parameters.

22.	Write programs for using Graphics class
	    - to display basic shapes and fill them.
	    - draw different items using basic shapes
	    - set background and foreground colors.

23.	Write program to demonstrate use of I/O streams.
24.	Write program to demonstrate use of File streams.

Name of the Course :	**COMPUTER TECHNOLOGY / INFORMATION TECHNOLOGY (MULTIMEDIA AND ANIMATION TECHNIQUES (ELECTIVE- I))**	
Course code: *CM/IF*	Semester : *FIFTH*	
Duration : 6 semester	Maximum Marks :125	
Teaching Scheme	**Examination Scheme**	
Theory : 2 hrs/week	Mid Semester Exam: 20 Marks	
Tutorial: ---	Assignment & Quiz: 10 Marks	
Practical : 4 hrs/week	End Semester Exam: 70 Marks	
Credit :4		

Aim :-

S.No	
1.	To combine moving images, graphics, text, and sound in meaningful ways is one of most powerful aspects of computer technology and which is multimedia and animation.
2.	To accessing data, allowing one to display video, animation, graphics, drawings, documents, and still images as needed during a presentation.
3.	To create visually compelling and technically accurate presentations for industrial and legal applications.

Objective :-

S.No	Students will be able to:
1.	• Import, Export Images.
2.	• Edit Images.
3.	• Create Animation.
4.	• Build Flash Movie.
5.	• Integrate Audio & Video.
6.	• Build Text-Based Animation.
7.	• Play Movie.
8.	• Integrate Multimedia In Web Page.

Pre-Requisite :-

S.No	
1.	They should know uses and application of Multimedia.
2.	Purposes of Animation and image, video..etc.
3.	Uses of multimedia tools and its application

Contents	Hrs/week	Marks
Unit -1 **Multimedia Elements Multimedia Application** 1.1 I/P, O/P devices, 1.2 Evaluation of Multimedia systems 1.3 Storage media	*04*	*08*

Unit -2	**Architecture & Issues For Distributed Multimedia System.** 2.1 Multimedia System Architecture. 2.2 Distributed Multimedia. 2.3 Synchronization, Orchestration & QOS Architecture 2.4 Framework for Multimedia System.	*04*	*08*
Unit - 3	**Compression/Decompression & File Formats** 3.1 Need 3.2 Types 3.3 Evaluating & Visibility 3.4 Video Compression Technique 3.5 Introduction to Standardization of Algorithm 3.6 File Formats 3.7 History of RIF, TIFF 3.8 Introduction to RIFF, AVI 3.9 JPEG-objectives, Architecture, JPEG-DCT encoding Quantization. 3.10 JPEG-stastical coding, predictive lossless coding, JPEG- performance 3.11 MPEG-objectives, Architecture, BIT stream syntax performance 3.12 MPEG2 & MPEG4	*10*	*16*
	Multimedia Authoring and User Interface 4.1 Multi Media Authoring System and its type 4.2 Hypermedia Application Design consideration 4.3 User Interface Design 4.4 Information Access 4.5 Object Display / Playback Issues	*05*	*14*
	Distributed Multimedia Systems 5.1 Components of Distributed Multimedia Systems 5.2 Distributed Client Server Operation 5.3 Multimedia Object Server 5.4 Multi Server Network topologies 5.5. Distributed Multimedia Databases	*05*	*14*

	Multimedia Tool
	6.1 Introduction to Multimedia tool – Flash
	6.2 Creating & Modifying elements
	6.3 Line tool, fill/attributes, different shapes, text tools & pen tool
	6.4 Selecting lines fill with arrow tool, selecting shapes, using lasso tool
	    performing basic editing tools, selecting & deselecting elements, modifying
	    created objects.
		04	*10*

	Total	*32*	*70*

PRACTICAL:
SKILLS TO BE DEVELOPED:
INTELLECTUAL SKILLS:

- USE OF PROGRAMMING LANGUAGE.
- TO BE ABLE TO APPLY DIFFERENT LOGICS TO SOLVE GIVEN PROBLEM.
- TO BE ABLE TO WRITE PROGRAM USING DIFFERENT IMPLEMENTATIONS FOR THE SAME PROBLEM
- IDENTIFY DIFFERENT TYPES OF ERRORS AS SYNTAX SEMANTIC, FATAL, LINKER & LOGICAL
- DEBUGGING OF PROGRAMS
- UNDERSTANDING DIFFERENT STEPS TO DEVELOP PROGRAM SUCH AS

MOTOR SKILLS:

- PROPER HANDLING OF COMPUTER SYSTEM.

Practical Content:

    All of the experiment shall be performed using MS-Flash or 3D-MAX or MAYA.

    Students must also do a mini project covering practical knowledge gained in the subject & submit a brief project report in work book. This report should also include the importance of the project from industry point of view.

    Each experiment including mini project shall be stored in the CD and updated after every practical session.

    Students shall maintain a work-book giving details of the work-carried out during every practical session.

    Assessment shall be done based on the work-book and the CD. This CD along with workbook shall be submitted as term-work.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
PRABHAT K. ANDHEIGH, KIRAN THAKRAR, JOHN F	MULTIMEDIA SYSTEMS DESIGN		PRENTICE HALL OF INDIA
KOEGEL BUFORD	MULTIMEDIA SYSTEMS		PEARSON EDUCATION
KATHERINE ULRICH	MICROMEDIA FLASH FOR WINDOWS AND MACINTOSH		PEARSON EDUCATION
FREE HALSHALL	MULTIMEDIA COMMUNICATION		PEARSON EDUCATION
R. STEIMNETZ, K. NAHRSTEDT	MULTIMEDIA COMPUTING, COMMUNICATION AND APPLICATION		PEARSON EDUCATION
J.D. Gibson	MULTIMEDIA COMMUNICATION DIRECTIONS AND INNOVATIONS		ACADEMIC PRESS, HARDCOURT INDIA
J.F. Kurose, K. W. Rose	COMPUTER NETWORKING		PEARSON EDUCATION

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
S K Chang , T F Znati , S T Vuong.	**Advances In Distributed Multimedia Systems**	Volume 9, Series of software Engg. And Knowledge Engg.	World Scientific Publishing Co.
Robert Reinhardt, Jon Warren Lentz.	**Flash 5 Bible**	http://www.educationonlineforcomputers.com/blogs/post/free_photoshop_flash_training/511/6-freely-available-ebooks-for-macromedia-flash	
John Miano	**Compressed Image File Formats:** Jpeg, Png, Gif, Xbm, Bmp	2nd Printing, January 2000	Addison-Wesley Professional, 1999

Suggested List of Laboratory Experiments :

S.No	List of Experiments:
1	• Create a cycle & name each part of cycle using different styles & format & animate text.
2	• Draw seed & create small plant with use of at least 4 frames.
3	• Create a forest of tree with flowers & fruits from a small plant using different layers & frame transition time.
	• Create a forest of trees using the object created earlier. Also add lighting and rain effect.
	• Insert audio to relevant frames that has lighting & rain effect.
	• Convert created work into file format which can be publish on web.
	• Interfacing digital-web-cam, capturing live image & editing using web-cam software.
	• Importing & exporting images, apply different image editing tools.
	• Mini Project: Students should create a movie of minimum 2 minutes playtime using either Flash or 3D-MAX or MAYA software.
Suggested List of Assignments/Tutorial :	
S.No	
1	Case study on application of multimedia and its tools in industries.
2	Study on various file formats used in industries for compression and decompression.
3	Create flash animation giving introduction about your college campus.

Name of the Course : COMPUTER ENGINEERING GROUP	
(NETWORK MANAGEMENT AND ADMINISTRATION)	
Course code: CO/CM/CD/IF	Semester : FIFTH FOR CO/CM/IF AND SIXTH FOR CD
Duration : 6 semester	Maximum Marks :50
Teaching Scheme	Examination Scheme
Theory : 2 hrs/week	Mid Semester Exam:
Tutorial: ---	Assignment & Quiz:
Practical : 4 hrs/week	End Semester Exam:
Credit :4	

Aim :-	
S.No	
1.	Introduction to computer network
2.	Introduction to network management and Administration
3.	Introduction to network faults and troubleshooting

Objective :-	
S.No	The students will be able to:
1.	• Compare different types of network.
2.	• Describe the different types of network directory services.
3.	• Design the computer network.
4.	• Configure the networking resources and software from the server.
5.	• Know the network management and administration.
6.	• Apply the different types of network technologies for internet connection.
7.	• Troubleshoot and repair the network faults

Pre-Requisite :-	
S.No	
1.	Basic concept of computer network.
2.	Basic knowledge of network management and Administration.
3.	Basic knowledge of network faults and troubleshooting.

Contents		Hrs/week
Unit -1	Exploring Directory Services and Remote Network Access. 1.1 Network Related Jobs – Network Administrator, Network Engineer, Network Architecture / Designer, Other Network Related Jobs. 1.2 Directory Services - Define Directory Services, Definition of Novelle	06

	Directory, Windows NT domains, Microsoft's Active Directory, X500 Directory Access Protocol, Lightweight Directory Access Protocol, Forests, Trees, Roots and Leaves.	
	1.3 Active Directory Architecture – Object Types, Object Naming, Canonical Names, LDAP Notation, Globally unique identifiers, User Principle Names, Domain, Trees & Forests.	
	1.4 Remote Network Access – Need of Remote Network Access, Public Switched Telephone Network, Integrated Services Digital Network, Digital Subscriber Line, CATV.	
	1.5 Virtual Private Network – VPN Protocols, Types of VPNs, VPN Clients, SSL VPNs.	
Unit -2	Network Connection and Printing Services 2.1 Dynamic Host Configuration Protocol (DHCP) – DHCP Origins, Reverse Address Resolution Protocol (RARP), The Bootstrap Protocol (BOOTP), DHCP Objectives, IP Address Assignment, DHCP Architecture. 2.2 Introduction to Domain Name System(DNS) - DNS Objectives, Domain Naming, Top Level Domains, Second Level Domains, Sub domains, DNS Functions, Resource Records, DNS Name Resolution, Resolves, DNS Requests, Root Name Servers, Resolving a Domain Name, DNS Name Registration. 2.3 Understand Network Printing Concepts - Understand Network Printing Concepts, Locally connected print devices, Setting up local print devices, Shared print devices, Sharing Locally Attached Print Devices, Describe Windows Network Printing, Add Print Wizard.	06
Unit - 3	Implementation of Network 3.1 Designing Network – Accessing Network Needs, Applications, Users, Network Services, Security and Safety, Growth and Capacity Planning, Meeting Network Needs – Choosing Network Type, Choosing Network Structure, Choosing Servers. 3.2 Installing and Configuring Windows 2003 Server - Preparing for Installation, Creating windows 2003 server boot disk, Installing windows 2003 server, Configuring server/ client 3.3 Setting windows 2003 server - Creating Domain controller, Adding the DHCP and WINS roles, Adding file server and print server, Adding Web based Administration.	06
Unit - 4	Administering Windows 2000 Server (The Basics) 4.1 Working With User Accounts - Adding a User, Modifying User Account, Deleting or Disabling a User Account. 4.2 Working With Windows 2000 Security Groups – Creating Group, Maintaining	06

	Group Membership.	
	4.3 Working with Shares – Understanding Share Security, Cresting Shares, Mapping Drives	
	4.4 Administering Printer Shares – Setting up Network Printer,	
	4.3 Working with Windows 2000 Backup – Using Windows 2000 Servers Backup Software	
Unit - 5	Troubleshooting and security of Network 5.1 Understanding the Problem – Troubleshooting, Segmenting the Problem, Isolating the Problem, Setting Priorities. 5.2 Troubleshooting Tools – Hardware Tools, Software Tools, Monitoring and Troubleshooting Tools 5.3 Internal Security – Account Security, File and Directory permissions, Practices and user education. 5.4 External Threats – Front Door threats, Back Door threats, Denial services threats, Viruses, worms and other Malicious codes.	08
	Total	**32**

Practical:
Skills to be developed:

Intellectual skills:

- Fault finding of network
- Troubleshooting of network
- Proper installation of network

Motor skills:

- Proper handling of Computer System hardware**.**

List of Practical:

Sr. No.	Practical Name
1	Creating Windows 2003 Server Boot Disk.
2	Installing Windows 2003 Server
3	Installing Active Directory

4	Creating AD Objects
5	Setting up Local Print Device
6	Installing and Configuring a Network – Capable Print Device
7	Create new Users & give the Permission
8	Group of four students prepare a mini report on Latest Networking Technology

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Craig Zacker	The Complete Reference Networking		Tata McGraw-Hill Edition
Bruce Hallberg	Networking A Beginner's Guide		Tata McGraw-Hill Edition
Richard A. McMohan, Sir	Introduction to Networking		Tata McGraw-Hill Edition
Microsoft Press	Networking + Certification Training Kit		--
Microsoft Press	MCSE Training Kit Networking Essential Plus		--

2. Sources of Information – 1) Computer Magazine   2) Computer Today
3) PC Quest   4) Information Technology
5) Internet   6) Linux for U

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
1.Andrew S. Tenenbaum	"Computer Networks"	4th Edition	PHI,ISBN 81-203-2175-8.
StallingsW.	Data and Computer Communications"	Sixth Edition,	Pearson Education 2
Comer D,	Computer networks and internet"	2 nd	Pearson Education 2

Suggested List of Laboratory Experiments :

S.No	
1	Basic TCP/IP utilities and commands. (eg: ping, ifconfig, tracert, arp, tcpdump, whois, host, netsat, nslookup, ftp, telnet etc...)
2	Configure a router (Ethernet & Serial Interface) using router commands including access lists on any network simulator (eg. packet Tracer)
3	Network design and implementation for small network using actual physical components with IP address scheme

Suggested List of Assignments/Tutorial :

S.No	
1	Configuration of any three of the following of for each student a) Remote Login Service – TELNET/SSH b) Configuration of FTP server and accessing it via FTP Client.
2	Installation of NS-2. Test network animation on Network Simulator2 (NS2).
3	Configuration of any three of the following of for each student a) Remote Login Service – TELNET/SSH b) Configuration of FTP server and accessing it via FTP Client.

Name of the Course : COMPUTER ENGINEERING GROUP (OPERATING SYSTEM)	
Course code: CO/CM/IF/CD	**Semester : FIFTH FOR CO/CM/IF AND SIXTH FOR CD**
Duration : 6 semester	**Maximum Marks :125**
Teaching Scheme	**Examination Scheme**
Theory : 3 hrs/week	Mid Semester Exam: 20 Marks
Tutorial: -----	Assignment & Quiz: 10 Marks
Practical : 2 hrs/week	End Semester Exam: 70 Marks
Credit :4	

Aim :-	
S.No	
1.	To learn Basic concepts of operating systems.
2.	To learn in detail different types of OS.
3.	To learn all functionalities of OS in detail.

Objective :-	
S.No	Student will be able to:
1.	• Learn the various milestones in the history of operating system and the modern trends in operating system.
2.	• Understand the features and functions of operating systems provided by various system calls.
3.	• Understand a process, deadlock & the concept of context switching & multiprogramming.
4.	• Learn various memory management and file management techniques.
5.	o Understand the tools and the components of the operating system.
6.	• Implement various algorithms of scheduling.
7.	• Compare and contrast the various standard solutions to operating system problems.
8.	• Make best use of facilities that computer system offer them for solving problems.
9.	• Understand the Unix vi editor and Unix utilities.

Pre-Requisite :-	
S.No	
1.	Handling of Windows OS.
2.	Uses of OS and its application.

Contents		Hrs/week	Marks
Unit -1	*Introduction* 1.1 Operating system, Evolution, Generations –1st, 2nd, 3rd, 4th. 1.2 Mainframe Systems – Batch, Multi programmed, Multitasking, Time sharing, Desktop. 1.3 Multiprocessor Systems	06	08

	1.4 Distributed Systems. 1.5 Clustered Systems. 1.6 Real Time Systems.		
Unit -2	*Operating System Structures* 2.1 System components - Process management, Main memory management, File management, I/O system management, Secondary storage management. 2.2 Operating system services. 2.3 System calls – Uses, process control, file management, Device management, Information maintenance, communication**.** 2.4 Operating system structure. Simple structure, layered, monolithic, microkernel. 2.5 Booting	10	14
Unit - 3	*Process Management* 3.1 Processes - Concept, process, state, process control block. 3.2 Process scheduling - Scheduling queues, scheduler, context switch. 3.3 Operations on processes - creation, termination. 3.4 Inter process communication. 3.5 Threads - Benefits, user and kernel threads. 3.6 Multithreading Models - Many to one, one to one, many to many.	10	16
Unit - 4	*Scheduling* 4.1 Scheduling – Objectives, concept, criteria, CPU and I/O burst cycle. 4.2 Types of Scheduling-Pre-emptive, Non pre- emptive. 4.3 Scheduling Algorithms. First come first served (FCFS), Shortest job first (SJF), Round Robin (RR), Priority. 4.4 Other Scheduling. Multilevel, Multiprocessor, real-time. 4.5 Deadlock. System model, principle necessary conditions, mutual exclusion, critical region. 4.6 Deadlock handling. Prevention and avoidence.	12	16
Unit - 5	**File System and Memory Management** 5.1 File- Concept, Attributes, Operations, Types, Structure 5.2 Access Methods – Sequential, Direct. 5.3 Swapping 5.4 Allocation Methods – Contiguous, Linked, Indexed. 5.5 Directory Structure – Single level, Two level, Tree Structure. 5.6 Protection –Types of accesses, Access control.	10	16

	5.7 Basic Memory Management –Partitioning, Fixed & Variable. 5.8 Free Space management techniques –Bitmap ,Linked List. 5.9 Virtual Memory – Concept ,Paging,Page fault ,Page Table. 5.10 Page Replacement algorithms – FIFO(First in First out) ,Optimal Page replacement, LRU (Least recently used),NRU (Not recently used)			
		Total	**48**	**70**

Practical:

Skills to be developed:

Intellectual skills:

- Understanding syntax of commands
- Interpretation of commands
- Execution of commands
 .

Motor skills:

- Proper handling of Computer System**.**

List of Practical:

1) Identify the major desktop components, interfaces and their functions .Differentiate the various Windows Operating system.(Windows 9x,Windows NT, Windows 2000& Windows XP.

2) Use of file and directory manipulation commands – ls, rm, mv, cp, join, split, cat, head, tail, touch, diff, comm., pr, chmod, mkdir, rmdir, cd, pwd, dir, cmp.

3) Use of text processing and communication commands – tr, wc, cut, paste, spell, sort, grep, mesg, talk, wall, write, who, who am i ,news, mail.

4) Use of general purpose and process commands- ps, wait, sleep, exit, kill, bc, date, time, cal, clear, banner, tty, script, su, man.

5) Use of vi editor & perform all editor commands.

6) Write and execute shell script to display the following output.
   i) Menu:
      a) List of files.
      b) Processes of user.
      c) Todays date
      d) Users of the system
      e) Quit to Unix

   ii) To check every argument and carry out the following.
      a) Argument is a directory, then display the number of files and directories present in that directory.

b) If argument is a file, then display the size of file.
c) If argument does not exist then create the directory.

7) Write and execute the programme to implement round robin scheduling Algorithm.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Silberschatz Galvin, Gagne	Operating System Concepts		John Wiley & Sons (Asia) Pte ltd.
Achyut S. Godbole	Opearating Systems		Tata McGraw-Hill
Andrew S. Tanenbaum	Modern Opearating Systems		Prentice Hall of India
Sumitabha Das	Unix Concepts and Applications		Tata McGraw-Hill
Murugan Sethuraman	Unix Concepts and Programming		Denett & Co.
Yashwant Kanetkar	Unix Shell Programming		BPB Publication

2. Websites

1) www.denett.com
2) www.tatamcgrawhill.com
3) www.phindia.com
4) www.wiley.com/college/silberschatz6e/0471417432/slides/ppt
5) www.en.wikipedia.org
6) www.computerworld.com
7) www.computer.howstuffworks.com
8) www.willamstallings.com/os4e.html
9) www.deitel.com/books/os3e/slides.html

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Milankovic	Operating System	3rd	Tata McGraw hill
Andrew S. Tanenbaum	Modern Operating Systems	**3rd Edition**	Pearson

Suggested List of Laboratory Experiments :

S.No	
1	Installing windows OS.
2	Introduction to Linux OS.
3	C programs in VI editor on linux OS.

Suggested List of Assignments/Tutorial :

S.No	

1	http://www.pearsonhighered.com/tanenbaum/ Students Lab exercise
2	Solve examples by FCFS and draw gantt chart.
3	Solve examples by SJF and draw gantt chart.
4	Solve examples by RR and Priority draw gantt chart.

TEACHING AND EXAMINATION SCHEME FOR POST S.S.C. DIPLOMA COURSES

COURSE NAME: Information Technology(IT)
COURSE CODE : CO/CM/CD
DURATION OF COURSE : 6 SEMESTERS
SEMESTER: SIXTH SEMESTER   **SCHEME : C**

Sr.No.	SUBJECT	PERIODS			EVALUATION SCHEME							Credits
	THEORY	L	TU	P	SESSIONSAL EXAM			ESE	PR	Oral #	TW @	
					TA	CT	Total					
1	Management Ø	03	--	--	10	20	30	70	--	--	--	03
2	Software Testing	03	--	02	10	20	30	70	--	25	--	04
3	Advanced Java Programming	03	--	04	10	20	30	70	50	--	25	05
4	**Elective-II for Computer Technology (Any One) CM**											
	Object Oriented Modelling and Design	02	--	04	10	20	30	70	--	25	25	04
	Advanced Web Technology	02	--	04	10	20	30	70	--	25	25	04
	Elective-II for Computer Engineering (Any One) CO/CD											
	Embedded System	02	--	04	10	20	30	70	--	25	25	04
	Systems Programming	02	--	04	10	20	30	70	--	25	25	04
	Advanced Web Technology	02	--	04	10	20	30	70	--	25	25	04
5	Entrepreneurship Development	01	01	--	--	--	--	--	--	--	25	01
6	Industrial Projects	--	--	06	--	--	--	--	--	50	50	03

7	Professional Practices-VI	--	--	03	--	--	--	--	--	--	50	02
	Total	**12**	**01**	**19**	**40**	**80**	**120**	**280**	**50**	**100**	**175**	**26**

STUDENT CONTACT HOURS PER WEEK: **32 HRS**
HTEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH
#, External Assessment   @, Internal Assessment   ESE - End Semester Exam.

ABBREVIATIONS: CT- Class Test, TA - Teachers Assessment, L - Lecture, TU - Tutorial, P - Practical
TA: Attendance & surprise quizzes = 6 marks. Assignment & group discussion = 4 marks.
Total Marks : 725

Minimum passing for sessional marks is 40%, and for theory subject 40%.
Assessment of Practical, Oral & term work to be done as per the prevailing norms of curriculum implementation & assessment.

Name of the Course : COMPUTER ENGINEERING GROUP (ADVANCED JAVA PROGRAMMING)	
Course code: CO/CM/IF/CD	Semester : SIXTH FOR CO/CM/IF AND SEVENTH FOR CD
Duration :	Maximum Marks :175
Teaching Scheme	Examination Scheme
Theory : 3 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10 Marks
Practical : 4Hrs/week	End Semester Exam: 70 Marks
Credit :5	

Aim :-	
S. No	
1.	To learn how to design web based application.
2.	To catch approach of Object Oriented Programming for building software.
3.	To JDBC connectivity.

Objective :-	
S. No	After studying this subject, the student will be able to:
1.	• Create network based applications.
2.	• Create business applications.
3.	• Implement Server side programming.
4.	• Develop dynamic software components.
5.	• Develop database application.
6.	• Design and develop powerful GUI based components.
7.	• Create Animation using Applet, Thread and AWT controls.

Pre-Requisite -	
S. No	
1.	Basic knowledge of programming.
2.	Knowledge of C & C++ languages.
3.	Familiar with object oriented programming.

Contents : Theory (Name of the Topic)	Hrs/Unit	Marks
Unit -1	**Introduction the Advanced Web Technology: (AWT)** 1.1 Working with Windows and AWT 　　AWT classes 　　Windows Fundamentals 　　Working with frame windows 　　Creating a frame window in applet 　　Creating windowed program	**16**	**18**

	Display information within with in a window		
	1.2 Working with graphics		
	Working with color		
	Setting the paint mode		
	Working with Fonts		
	Managing text output using Font Metrics		
	Exploring text & graphics		
	1.3 Using AWT Controls, Layout Managers and Menus		
	Control Fundamentals		
	Labels		
	Using Buttons		
	Applying Check Boxes		
	Checkbox Group		
	Choice Controls		
	Using Lists		
	Managing scroll Bars		
	Using a Text Field		
	Using a Text Area		
	Understanding Layout Managers		
	Menu Bars and Menu		
	Dialog Boxes		
	File Dialog		
	Handling events by Extending AWT Components		
	Exploring the Controls, Menus, and Layout Managers		
Unit -2	**Networking:**		
	2.1 Basics		
	Socket overview, client/server, reserved sockets, proxy servers, internet addressing.		
	2.2 Java & the Net		
	The networking classes & interfaces		
	2.3 Inet address		
	Factory methods, instance method	**08**	**14**
	2.4 TCP/IP Client Sockets		
	What is URL		
	Format		
	2.5 URL connection		
	2.6 TCI/IP Server Sockets		
	2.7 Data grams		
	Data gram packets, Data gram server & client		
Unit - 3	Java Data Base Client/ Server		
	3.1 Java as a Database front end		
	Database client/server methodology		
	Two-Tier Database Design		
	Three-Tier Database Design	**08**	**12**
	3.2 The JDBC API		
	The API Components, Limitations Using JDBC(Applications vs. Applets), Security Considerations, A JDBC Database Example		
	JDBC Drivers ,JDBC-ODBC Bridge		
	Current JDBC Drivers		

Unit – 4	**The Tour of Swing** 4.1 J applet, Icons and Labels ,Text Fields, Buttons Combo Boxes Tabbed Panes, Scroll Panes. 4.2 Trees, Tables, Exploring the Swings.	**08**	**12**

Unit - 5	**Servlets**
	5.1 Background, The Life Cycle Of a Servlet,The Java
	       Servlet Development Kit, The Simple Servlet, The
	       Servlet API
	 5.2 The Javax Servlet Package, Reading Servlet
	       Parameters Reading Initialization Parameters
	        The Javax. Servlet. http package, Handling HTTP Requests and
	        responses
	5.3 Using Cookies, Session Tracking, Security Issues
	       Exploring Servlet.
		08	**14**

	Total	**48**	**70**

Practical:

Skills to be developed:
Intellectual skills:-
- Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
  - Problem definition
  - Analysis
  - Design of logic
  - Coding
  - Testing
  - Maintenance (Modifications, error corrections, making changes etc.)

    Motor skills:-
Proper handling of Computer System

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Patrick Naughton- Herbert Schildt	The Complete Reference Java 2 (Third Edition)		Tata McGraw hill
Michael Morrison	The Complete IDIOT's Guide To JAVA 2		Prentice Hall of India
Jawroski	Java2 Unleased		Techmedia
Java2 Programming	Keyur Shah		Tata McGraw hill

2. Following web sites may be referred:
                    http://www.sun.java.com,
                    http://www.osborne.com
3) The required JDK for practical can be downloaded from the site:
                    http://www.sun.java.com

Reference books :			
Name of Authors	Titles of the Book	Edition	Name of the Publisher
K. N. King	Java programming from the beginning		
Herbert Schildt	Java: A Beginner S Guide		Tata McGraw hill
Cay S. Horstmann, Gary Cornell	Core Java 2: Fundamentals		Sun Microsystems.

Suggested List of Laboratory Experiments :

S. No	
1	Design employee information form and perform the validations.
2	Program for user login using JSP.
3	Program for client server communication.

Suggested List of Assignments/Tutorial :

S. No	
1	Assignment on AWT, event controls, layout manager, menus.
2	Assignment on different JDBC connections in Java.
3	Assignment of servlet life cycle.

List of Practical's:

Sr. No	Contents
01	Write a program to design a form using components textbox, text field, checkbox, buttons, list and handle various events related to each component.
02	Write a program to design a calculator using Java components and handle various events related to each component and apply proper layout to it.
03	Write a program to demonstrate use of Grid Layout.
04	Write a program to demonstrate use of Flow Layout.
05	Write a program to demonstrate use of Card Layout.
06	Write a program to demonstrate use of Border Layout.
07	Write a program to display any string using available Font and with every mouse click change the size and / style of the string. Make use of Font and Font metrics class and their methods.
08	Write a program to create a menu bar with various menu items and sub menu items. Also create a checkable menu item. On clicking a menu Item display a suitable Dialog box.
09	Write a program to increase the font size of a font displayed when the value of thumb in scrollbar increases at the same time it decreases the size of the font when the value of font decreases.
10	Write a program to retrieve hostname using methods in Inet Address class.
11	Write a program that demonstrates TCP/IP based communication between client and server.
12	Write a program that demonstrates UDP based communication between client and server.
13	Write a program to demonstrate use of URL and URL Connection class for communication.
14	Write an Application program /Applet to make connectivity with database using JDBC API
15	Write an Application program/Applet to send queries through JDBC bridge & handle result.
16	Write a program to design a form using basic swing components.
17	Write a program to demonstrate the use of scroll panes in Swing.
18	Write Java Program to map Directory tree.

19	Write a Java program to demonstrate the use of Tables.
20	Write a servlet for demonstrating the generic servlet class.
21	Write a servlet for demonstrating the generic servlet class.
22	Write a servlet to demonstrate the Http Servlet class using do Get ().
23	Write a servlet to demonstrate the Http Servlet class using do Post ().
24	Write a servlet to demonstrate the cookie.

Name of the Course : COMPUTER ENGINEERING GROUP (ADVANCED WEB TECHNOLOGIES (ELECTIVE))	
Course code: CM/CO/IF/CD	Semester : SIXTH FOR CO/CM/IF AND SEVENTH FOR CD
Duration :	Maximum Marks :150
Teaching Scheme	Examination Scheme
Theory : 2 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10 Marks
Practical : 4 Hrs/week	End Semester Exam: 70 Marks
Credit :4	

Aim :-

S. No	
1.	To Study the techniques to develop web communication services.
2.	It provides information about web technologies that relate to the interface between web servers and their clients
3.	Web technologies are used to support the world wide web and more are being developed all the time.

Objective :-

S. No	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.	• Build net based applications.
6.	• Transfer code form VB to VB.net.
7.	• Can do Asp Transaction.

Pre-Requisite -

S. No	
1.	Basic knowledge of web technology- web1.0, web2.0, semantic web.
2.	Knowledge of client-server system, java-script, php, etc.
3.	Knowledge of HTML, CSS, XML, ASP, JSP, etc.

Contents : Theory (Name of the Topic)		Hrs/Unit	Marks
Unit -1	**Introduction** 1.1 Why dot Net - Introduction to Microsoft .Net Framework. - Building blocks in .Net - Drawback of previous languages.	**04**	**04**

	- Understand what is .Net		
	1.2 VB.Net		
	- VB.Net overview.		
	- Difference between VB and VB.Net		
	1.3 Introduction to .Net		
	- Types of application architecture.		
	- .Net initiative.		
	- .Net framework: components of .Net framework,		
	Advantages, requirement of .Net.		
Unit -2	**Introduction and implementation**		
	2.1 Introduction to VB.Net		
	- Features.		
	- VB.Net IDE.		
	- Data Types, Loops, Control structures, Cases, Operators.		
	- Creating forms.		
	- Procedures and functions.		
	- Form controls.		
	2.2 Implementation of OOP	**04**	**12**
	- Creation of class and objects.		
	- Inheritance.		
	- Constructors.		
	- Exception handling.		
	2.3 Component based programming		
	- Working with Private assembly, shared assembly.		
	- Using COM components developed in VB or other		
	language.		
Unit - 3	**Introduction to ADO.Net and data manipulation**		
	3.1 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.	**08**	**18**
	- Data table and Data row.		
	3.2 Accessing and manipulating data		
	- Selecting data.		
	- Insertion, deletion, updation, sorting.		
	- How to fill dataset with multiple tables.		
	3.3 Multi-threading		
	- Working with multithreading.		
	- Synchronization of Threads.		
	3.4 Migrating from VB 6.0 to VB.Net		
	- Updating the applications developed in VB to VB.net		
Unit - 4	**Introduction to ASP.Net**		
	- Difference between ASP and ASP.Net	**02**	**04**
	- Introduction to IIS.		
	- What is web application? Why it is used?		

	- ASP.Net IDE. - Creation of web forms. - Using web form controls.		

Unit - 5	**ASP.Net objects and components**
	    - 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.
		08	16

Unit - 6	**ADO.Net**
	6.1 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.
	6.2 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.
		04	12

Unit - 7	**ASP transactions and e-mail**
	    - Transactions.
	    - Transaction db design.
	    - CDONTS object.
	    - Email sending web page creation.
		02	04

	Total	**32**	**70**

Practical:
Skills to be developed:
Intellectual skills:
 Use of programming language constructs in program implementation.
    • To be able to apply different logics to solve given problem.
    • To be able to write program using different implementations for the same problem			

- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
  - Problem definition
  - Analysis
  - Design of logic
  - Coding
  - Testing
  - Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:

- Proper handling of Computer System.

List of PracticalS:

1. Introduction to .Net framework.
2. a) Design Login form with validation.
   b) Design Registration form with validation of email address, date of birth,
      blank field, telephones and mobile numbers etc.
3. Design form, make it a class, create its object and access it from another form.
4. Design student class, marks class, inherits it in result class and access it using form.
5. Create instance of class using new operator of above example.
6. Design mark sheet of student using XML file and dataset.
7. Design employee details with help of database (back-end) using data adapter,
   data reader and datasets. Use data grid to display result.
8. Generation of database (data table) of employee or student with help of data tables of .Net.
9. To use multiple table design example of employee and department.
10. Design registration form of college using text box, text area, radio list, check list,
    button etc. using Autopostback property.
11. Simple application for following function: (1) Login (2) Surfing (3) Logout taking
    into considerations (Application, Session, Server object, global .asa file and their
    events, methods and collection) also demonstrates enabling and disabling of session.)
12. Creation of file, entry, reading data from a file.
13. Using components create:
    (1) Advertisement (using Ad rotator)
    (2) Book example (using Next function)
    (3) Find capabilities of browser (Browser object capabilities)
14. Online application (student, employee, product, shopping mall)
    (a) Using dataset, data reader.
    (b) Same application using data table and data row. (use data grid to display data)
    (c) Bind the data to data grid using properties / templates.
    (d) Display details (student, employee, product, etc.) using data list. (4 cols per line)
15. Application which sends email.

Mini Project :

   Design the mini project by integrating all the experiment performed as mentioned in the curriculum

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Anita & Bradely	Prog. In VB.Net		TATA Mc Grow Hill
Dave Mercer	ASP.net		TATA Mc Grow Hill
Anthony Jones	.net Framework		TATA Mc Grow Hill
Robert LandLizer	Designing Application with Microsoft VB.net		TATA Mc Grow Hill
--	Operating .net Framework		TATA Mc Grow Hill
Grun grundgier	Prog. In VB.net		Oerilly
Thwan ThAI , Hoang Lan	.Net Frame Work Essential		Oreilly

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
	Web Technology (including HTML,CSS,XML,ASP,JAVA)		Firewall media
Anders Møller and Michael I. Schwartzbach	An Introduction to XML and Web Technologies		Addison-Wesley
Ivan Bayross	Teach Yourself Web Technologies - Part I		BPB Publications

Suggested List of Laboratory Experiments :

S. No	
1	Design the customer information form and perform the different validations.
2	Write a program to access values from the previous form.
3	Write a code in asp.net to perform the login validation.

Suggested List of Assignments/Tutorial :

S. No	
1	The details of asp.net, vb.net and ADO.net.
2	Assignment on ASP.net objects and components.
3	Assignment on web technologies in vb.net.

Name of the Course : Computer Engineering Group (Embedded System (Elective-II))	
Course code: CO/CD	**Semester : Sixth for CO/CD**
Duration :	**Maximum Marks :150**
Teaching Scheme	**Examination Scheme**
Theory : 2 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10Marks
Practical : 4 Hrs/week	End Semester Exam: 70 Marks
Credit :4	

Aim :-	
S. No	
1.	To study 8051 microcontroller.
2.	To learn different components of embedded systems.
3.	To understand RTOS concepts and Inter-process communications.

Objective :-	
S. No	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.

Pre-Requisite -	
S. No	
1.	Must have studied any Microprocessor and its programming in detail.
2.	Knowledge of Desktop Operating System and its functioning.
3.	'C' coding techniques.

Contents : Theory (Name of the Topic)		Hrs/Unit
Unit -1	**8051- Microcontrollers** 1.1 Overview of 8051 family. 1.2 Architecture. 1.3 Memory organization. 1.4 Functional pin, Ports & circuit. 1.5 Addressing mode, Instruction Set.	03
Unit -2	**Hardware overview** 2.1 Study of interrupt structure. 2.2 Port structure. & Programming.	04

	2.3 Study of SBUF, TCON, TMOD, SMOD, SCON Register. 2.4 Timer/Counter & Serial Communication Programming.	
Unit - 3	**Serial Communication & Parallel communication** 3.1 Serial Communication – RS-232, I2C, CAN 3.2 Parallel Communication – ISA, PCI, PCI-X 3.3 Advance I/P O/P buses. 3.4 Study of RS-232 Pin out.	05
Unit - 4	**Embedded System** 4.1 Introduction. 4.2 Processor in the system. 4.3 Different Hardware Units. 4.4 Software Embedded into System. 4.5 Exemplary Embedded system. 4.6 System –On-Chip (SOC) & VLSI system.	03
Unit - 5	**Memory organization** 5.1 Structure unit in processor 5.2 Processor selection 5.3 Memory devices & Selection 5.4 Allocation of memory 5.5 DMA 5.6 Interfacing processor & I/P O/P device	04
Unit - 6	**Device Driver & Interrupts Servicing Mechanism** 6.1 Device Drivers 6.2 Parallel port device driver 6.3 Serial port device driver 6.4 Internal Programmable timing devices 6.5 Interrupts handling Mechanism 6.6 Context switching	05
Unit - 7	**RTOS & Interprocess Communication** 7.1 Concepts of RTOS 7.2 Requirement, Need, Specification of RTOS in Embedded systems 7.3 Multitasking 7.4 Task synchronization & Mutual Exclusion 7.5 Starvation, Deadlock, Multiple process 7.6 Problem of sharing data by Multiple task and routines 7.7 Interprocess communication	08
	Total	**32**

Practical:
Skills to be developed:

Intellectual skills:
Use of programming language constructs in program implementation.
- To be able to apply different logics to solve given problem.
- To be able to write program using different implementations for the same problem
- Study different types of errors as syntax semantic, fatal, linker & logical
- Debugging of programs
- Understanding different steps to develop program such as
  - Problem definition
  - Analysis

- ▪ Design of logic
- ▪ Coding
- ▪ Testing
- ▪ Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:
    • Proper handling of Computer System.

List of Practical
      It is expected that students should perform at least 8 experiments from the following list. Out of which any one of the experiment shall be performed on 8051 kit & remaining can be performed using pc & kit either using Assembler or "C" programming language.
      Student must also do a mini project covering practical knowledge gained in the subject & submit a brief project report with subject Journal. This report should also include the importance of the Project from industry point of view.

1. Write a Program on Block Move.
2. Assume 1 Hz. Frequency pulse is connected to I/P P3.4 Write a Program to display count on LCD kit.
3. Write a Program to find the frequency of square wave generated on pin P1.0.
4. Write a Program to generate a square wave of 50 Hz. Frequency on pin P1.2 using interrupt for timer.
5. Write a Program to connect INT 1 pin to a switch that is normally high whenever it goes low LED should turn ON which is connected to P1.3 & LED is normally OFF. LED should be ON as long as switch is pressed.
6. Write a Program to transfer massage "Yes" serially at 9600 baud rate 8-bit, data, 1 stop-bit & do this continuously.
7. Write a Program for Interfacing ADC & DAC.
8. Write a Program to Interface keyboard.
9. Write a Program to Interface LCD.
10. Write a Program to Interface stepper motor.

11. Mini project :
      This project should be at least of level of interfacing some devices. "C"-Programming language can also be used for development of project.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Raj Kamal	Embedded Systems		--
David E. Simon	An Embedded Software Primer		Pearson Education
--	The 8051 Microcontroller And Embedded Systems		Pearson Education
Frank Vahid, Toney Givargis	Embedded System Design: A unified Hardware/Software Introduction		John Wiley
Craig Hollabaugh	Embedded Linux		Pearson Education
Daniel Lewis	Fundamentals of Embedded Software		Pearson Education

Barnett, Cox, O'Cull	Embedded C Programming and the Atmel AVR		Thomson Learning
Mike Predko	Programming and Customizing the 8051 Microcontroller		Tata Magrow Hill

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Dr.K.V.K.K.Prasad	Embedded / Real-Time System: Concepts, Design & Programming	2005	Dreamtech press

Suggested List of Laboratory Experiments :

S. No	
1	Interfacing on board Relay with controller using embedded C.
2	Interfacing on board Buzzer with controller using embedded C.
3	Interfacing on board keypad and seven segment with controller using embedded C.

Suggested List of Assignments/Tutorial :

S. No	
1	Learning Embedded C coding techniques.
2	Learning what is IDE?
3	Programming in Keil.

Name of the Course : COMPUTER ENGINEERING GROUP (**ENTREPRENEURSHIP DEVELOPMENT**)	
Course code: CM/CO/IF/CD	**Semester :** SIXTH FOR CO/CM/IF AND SEVENTH FOR CD
Duration :	**Maximum Marks :25**
Teaching Scheme	**Examination Scheme**
Theory : 1 Hrs/week	Mid Semester Exam: --
Tutorial: 1 Hrs/week	Assignment & Quiz: --
Practical : --	End Semester Exam: --
Credit :1	

Aim :-	
S. No	
1.	To Understand Market Assessment
2.	To Identify entrepreneurship creativity and opportunities
3.	To improve students skill to prepare report for business venture

Objective :-	
S. No	Students will be able to
1.	• Identify entrepreneurship opportunity.
2.	• Acquire entrepreneurial values and attitude.
3.	• Use the information to prepare project report for business venture.
4.	• Develop awareness about enterprise management.

Pre-Requisite -	
S. No	
1.	Information regarding market key components
2.	Information of types of Entrepreneur
3.	Different planning method to improve cost of project

	Contents : Theory (Name of the Topic)	Hrs/Unit

01	**Entrepreneurship, Creativity & Opportunities**
	1.1) Concept, Classification & Characteristics of Entrepreneur
	1.2) Creativity and Risk taking.
	    1.2.1) Concept of Creativity & Qualities of Creative person.
	    1.2.2) Risk Situation, Types of risk & risk takers.
	1.3) Business Reforms.
	    1.3.1) Process of Liberalization.
	    1.3.2) Reform Policies.
	    1.3.3) Impact of Liberalization.
	    1.3.4) Emerging high growth areas.
	1.4) Business Idea Methods and techniques to generate business idea.
		03

	1.5) Transforming Ideas in to opportunities transformation involves Assessment of idea &Feasibility of opportunity SWOT Analysis	

02	**Information And Support Systems**
	2.1) Information Needed and Their Sources.
	  Information related to project, Information related to support system,
	  Information related to procedures and formalities
	2.2) SUPPORT SYSTEMS
	  1) Small Scale Business Planning, Requirements.
	  2) Govt. & Institutional Agencies, Formalities
	  3) Statutory Requirements and Agencies.
		02

03	**Market Assessment** 3.1) Marketing -Concept and Importance 3.2) Market Identification, Survey Key components 3.3) Market Assessment	02

04	**Business Finance & Accounts**
	Business Finance
	4.1) Cost of Project
	  1) Sources of Finance
	  2) Assessment of working capital
	  3) Product costing
	  4) Profitability
	  5) Break Even Analysis
	  6) Financial Ratios and Significance
	Business Account
	4.2) Accounting Principles, Methodology
	  1) Book Keeping
	  2) Financial Statements
	  3) Concept of Audit
		03

05	**Business Plan & Project Report**
	5.1) **Business plan steps involved from concept to commissioning:**
	  Activity Recourses, Time, Cost
	5.2) **Project Report**
	  1) Meaning and Importance
	  2) Components of project report/profile **(Give list)**
	5.3) **Project Appraisal**
	  1) Meaning and definition
	  2) Technical, Economic feasibility
	  3) Cost benefit Analysis
		03

06	**Enterprise Management And Modern Trends**
	6.1 **Enterprise Management**:
	  a. Essential roles of Entrepreneur in managing enterprise
	  b. **Product Cycle**: Concept and importance
	  c. **Probable Causes Of Sickness**
	  d. **Quality Assurance**
	  Importance of Quality, Importance of testing
	6.2**) E-Commerce**
	  Concept and process
	6.3) **Global Entrepreneur**
		03

	Total	16

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Entrepreneurship Theory and Practice	J.S. Saini B.S.Rathore		Wheeler Publisher New Delhi
Entrepreneurship Development	TTTI, Chandigadh		TTTI, Chandigadh
Entrepreneurship Development	E. Gorden K.Natrajan		Himalaya Publishing. Mumbai
Entrepreneurship Development	Preferred by Colombo plan staff college for Technical education.		Tata Mc Graw Hill Publishing co. ltd. New Delhi.
A Manual on How to Prepare a Project Report	J.B.Patel D.G.Allampally		EDI STUDY MATERIAL Ahmadabad (Near Village Bhat , Via Ahmadabad Airport & Indira Bridge), P.O. Bhat 382428 , Gujrat,India P.H. (079) 3969163, 3969153 E-mail : ediindia@sancharnet.in/olpe@ediindia.org Website : http://www.ediindia.org
A Manual on Business Opportunity Identification & Selection	J.B.Patel S.S.Modi		
National Derectory of Entrepreneur Motivator & Resource Persons.	S.B.Sareen H. Anil Kumar		
New Initiatives in Entrepreneurship Education & Training	Gautam Jain Debmuni Gupta		
A Handbook of New Enterpreneurs	P.C.Jain		

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Evaluation of Enterpreneurship Development Programmes	D.N.Awasthi , Jose Sebeastian		
The Seven Business Crisis & How to Beat Them.	V.G.Patel		

Suggested List of Laboratory Experiments : Nil	
Suggested List of Assignments/Tutorial :	
S. No	Assignments
1	Assess yourself-are you are entrepreneur?
2	Prepare project report and study its feasibility

2) Video Cassettes

Sr. No.	Subject	Source
1	Five success Stories of First Generation Entrepreneurs	EDI STUDY MATERIAL Ahmadabad (Near Village Bhat , Via Ahmadabad Airport & Indira Bridge), P.O. Bhat 382428 , Gujrat,India P.H. (079) 3969163, 3969153 E-mail : ediindia@sancharnet.in/olpe@ediindia.org Website : http://www.ediindia.org
2	Assessing Entrepreneurial Competencies	
3	Business Opportunity Selection and Guidance	
4	Planning for completion & Growth	
5	Problem solving-An Entrepreneur skill	

Glossary:
Industrial Terms

Terms related to finance, materials, purchase, sales and taxes.
Components of Project Report:
1. Project Summary (One page summary of entire project)
2. Introduction (Promoters, Market Scope/ requirement)
3. Project Concept & Product (Details of product)
4. Promoters (Details of all Promoters- Qualifications, Experience, Financial strength)
5. Manufacturing Process & Technology
6. Plant & Machinery Required
7. Location & Infrastructure required
8. Manpower (Skilled, unskilled)
9. Raw materials, Consumables & Utilities
10. Working Capital Requirement (Assumptions, requirements)
11. Market (Survey, Demand & Supply)
12. Cost of Project, Source of Finance
13. Projected Profitability & Break Even Analysis
14. Conclusion.

Name of the Course : COMPUTER ENGINEERING GROUP (INDUSTRIAL PROJECTS)	
Course code: CO/CM/IF/CD	Semester : SIXTH FOR CO/CM/IF AND SEVENTH FOR CD
Duration :	Maximum Marks :100
Teaching Scheme	Examination Scheme
Theory : --	Mid Semester Exam: --
Tutorial: --	Assignment & Quiz: --
Practical : 6Hrs/week	End Semester Exam:--
Credit :3	

Aim :-

S. No	
1.	To develop technical skill
2.	To make use of hardware in Artificial Intelligence
3.	Analysis of different type of case studies

Objective :-

S. No	The students will be able to,
1.	• Work in Groups, Plan the work, and Coordinate the work.
2.	• Develop leadership qualities.
3.	• Develop Innovative ideas.
4.	• Practically implement the acquired knowledge.
5.	• Develop basic technical Skills by hands on experience.
6.	• Write project report.
7.	• Develop skills to use latest technology in Computer/Information Technology field.
8.	• Analyse the different types of Case studies.

Pre-Requisite -

S. No	
1.	How to prepare Project report
2.	Different software Domains
3.	Latest technology in market

Contents

Two hours should be allotted for giving the Instructions for preparing a Project Report (Refer Guideline Document for Format of Project Report)

I Software Oriented Projects	(1) Develop Application Software for Hospital / Shopping Mall/Cinema Theatre/Commercial Complex/Educational Institute/Industrial Complex. (2) Develop In-house Systems. (3) Case Studies Related to Industries – Operation / Maintenance / Repair and Fault Finding. (Refer Guideline Document). (4) Develop Information Processing System. (5) Develop Web Based Applications using Web Technologies. (6) Develop Network monitoring system. (7) Develop systems for financial organization. Develop System Program based system like compilers, editors, spreadsheets, mini database systems.
II Hardware Oriented Projects	(1) Develop Intrusion Detection System. (2) Develop Speech Recognition System. (3) Develop Image Processing Systems. (4) Develop Expert Systems. (5) Develop Artificial Intelligence based Systems. (6) Develop various types of Interfacing Applications. Develop device Controllers.
Seminar	Seminar on any relevant latest technical topic based on latest research, recent trends, new methods and developments in the field of Computer Engineering / Information Technology.

Note: (1) One Project from any one group.

(2) Seminar will be held under Professional Practices

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
IEEE Transactions/Journals			
Computer Today.			
PC Quest.			

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Data Quest			
Any Journal Related to Computer/Information Technology/Electronics field.			
Computer World			
Chip			
IT World			

2. Website:

Using any search engine, such as http://www.google.co.in/ the relevant information can be searched on the Internet

Suggested List of Laboratory Experiments :	
S. No	
1	Develop a program to calculate transaction in shopping mall
2	Develop a small web application
3	Develop a program to recognize few words by speech recognition
Suggested List of Assignments/Tutorial :	
S. No	
1	Study on the topic selected by the Project Group
2	
3	

Name of the Course :	DIPLOMA IN PRODUCTION ENGINEERING / TECHNOLOGY (MANAGEMENT)	
Course code: EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ME/PG/PT/AE/CE/CS/CR/CO/ CM/IF/EE/EP/CH/CT/PS/CD/EDEI/CV/FE/IU/MH/MI	**Semester : SIXTH FOR** EJ/EN/ET/EX/EV/IC/IE/IS/MU/DE/ME/PG/ PT/AE/CE/ CS/CR/CO/CM/IF/EE/EP/CH/ CT/PS/CD/EDEI/CV/FE/IU/ AND SEVENTH FOR MH/MI	
Duration :	**Maximum Marks :**	
Teaching Scheme	**Examination Scheme**	
Theory : 3 Hrs/week	Mid Semester Exam: 20 Marks	
Tutorial: --	Assignment & Quiz: 10 Marks	
Practical : --	End Semester Exam: 70 Marks	
Credit :		

Aim :-		
S. No		
1.	To introduce management skills.	
2.	Handling management topics.	
3.	Management of production engineering.	

Objective :-		
S. No	The students will able to:	
1.	Familiarize environment in the world of work	
2.	Explain the importance of management process in Business.	
3.	Identify various components of management.	
4.	Describe Role & Responsibilities of a Technician in an Organizational Structure.	
5.	Apply various rules and regulations concerned with Business & Social Responsibilities of the Technician.	

Pre-Requisite -		
S. No		
1.	Basic concepts of machines.	
2.	Knowledge of production steps	
3.	Knowledge of organizational ethics	

Contents		Hrs/ Unit	
Chapter No.	**Name of the Topics**	**Hours**	**Marks**
01	**Overview Of Business** 1.1. Types of Business • Service • Manufacturing	02	---

	• Trade 1.2. Industrial sectors Introduction to • Engineering industry • Process industry • Textile industry • Chemical industry • Agro industry 1.3 Globalization • Introduction • Advantages & disadvantages w.r.t. India 1.4 Intellectual Property Rights (I.P.R.)		
02	**Management Process** 2.1 What is Management? • Evolution • Various definitions • Concept of management • Levels of management • Administration & management • Scientific management by F.W.Taylor 2.2 Principles of Management (14 principles of Henry Fayol) 2.3 Functions of Management • Planning • Organizing • Directing • Controlling	07	12
03	**Organizational Management** 3.1 Organization :- • Definition • Steps in organization 3.2 Types of organization • Line • Line & staff • Functional • Project 3.3 Departmentation • Centralized & Decentralized • Authority & Responsibility • Span of Control 3.4 Forms of ownership • Proprietorships • Partnership • Joint stock • Co-operative Society • Govt. Sector	07	12
04	**Human Resource Management** 4.1 Personnel Management • Introduction	08	14

	• Definition
	• Functions
	4.2 Staffing
	    • Introduction to HR Planning
	    • Recruitment Procedure
	4.3 Personnel– Training & Development
	    • Types of training
	    ➢ Induction
	    ➢ Skill Enhancement
	4.4 Leadership & Motivation
	    • Maslow's Theory of Motivation
	4.5 Safety Management
	    • Causes of accident
	    • Safety precautions
	4.6 Introduction to –
	    • Factory Act
	    • ESI Act
	    • Workmen Compensation Act
	    • Industrial Dispute Act		

05	**Financial Management**
	5.1. Financial Management- Objectives & Functions
	5.2. Capital Generation & Management
	    • Types of Capitals
	    • Sources of raising Capital
	5.3. Budgets and accounts
	    • Types of Budgets
	    ➢ Production Budget (including Variance Report)
	    ➢ Labour Budget
	    • Introduction to Profit & Loss Account (only concepts) ; Balance Sheet
	5.4 Introduction to –
	    • Excise Tax
	    • Service Tax
	    • Income Tax
	    • VAT
	    • Custom Duty
		08	12

06	**Materials Management**
	6.1. Inventory Management (No Numericals)
	    • Meaning & Objectives
	6.2 ABC Analysis
	6.3 Economic Order Quantity
	    • Introduction & Graphical Representation
	6.4 Purchase Procedure
	    • Objects of Purchasing
	    • Functions of Purchase Dept.
	    • Steps in Purchasing
	6.5 Modern Techniques of Material Management
	    • Introductory treatment to JIT / SAP / ERP
		08	12

07	**Project Management** (No Numericals) 7.1 Project Management • Introduction & Meaning • Introduction to CPM & PERT Technique • Concept of Break Even Analysis 7.2 Quality Management • Definition of Quality , concept of Quality , Quality Circle, Quality Assurance • Introduction to TQM, Kaizen, 5 'S', & 6 Sigma	08	08
	TOTAL	48	70

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Dr. O.P. Khanna	Industrial Engg & Management		Dhanpal Rai & sons New Delhi
Dr. S.C. Saksena	Business Administration & Management		Sahitya Bhavan Agra
W.H. Newman E.Kirby Warren Andrew R. McGill	The process of Management		Prentice- Hall
Rustom S. Davar	Industrial Management		Khanna Publication
Banga & Sharma	Industrial Organization & Management		Khanna Publication
Jhamb & Bokil	Industrial Management		Everest Publication , Pune

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
W.H. Newman E.Kirby Warren Andrew R. McGill	The process of Management		Prentice- Hall
Rustom S. Davar	Industrial Management		Khanna Publication
Banga & Sharma	Industrial Organization & Management		Khanna Publication

Suggested List of Laboratory Experiments :

S. No	
1	Introduction to Budget
2	Study of Project Management
3	Study of Human Resource Management and Financial Management

Suggested List of Assignments/Tutorial :

S. No	
1	Updating File for Financial Management
2	Write the Software Requirement Specification
3	Write the Literature Survey of project

Name of the Course : COMPUTER ENGINEERING GROUP (OBJECT ORIENTED MODELING AND DESIGN (ELECTIVE-II))	
Course code: CM/IF	Semester : SIXTH
Duration :	Maximum Marks :150
Teaching Scheme	Examination Scheme
Theory : 2 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10 Marks
Practical : 4 Hrs/week	End Semester Exam: 70 Marks
Credit :4	

Aim :-

S. No	
1.	To analyze the functional requirements for the system.
2.	Graphical representation of system.
3.	Connection of structural elements of system.

Objective :-

S. No	The student will be able to:
1.	• Interpret / give the meaning of object-oriented concepts.
2.	• Understand different Modeling Methodology.
3.	• Prepare an object model for a given problem statement.
4.	• Prepare dynamic for a given problem statement.
5.	• Describe and Design the concepts of class diagram, object diagram, interaction diagram, sequence diagram collaboration, use case diagram, state diagram and activity.
6.	• Usage of anyone design tool.

Pre-Requisites-

S. No	
1.	Basic Concepts of Classes
2.	Basic Concepts of Objects
3.	Data Base Management System

Contents: Theory			
Chapter	Name of the Topic	Hours	Marks
01	**Importance of Modeling** 1.1 Brief overview of Object Modeling Technology (OMT) by Ram Baugh, Booch Methodology, Use Case driven approach (OOSE) by Jacobson, Overview of CRC card method by Cunningham.	03	08

02	**Object Modeling** 2.1 Objects and Classes (Object Diagrams, Attributes, Operations and Methods), Links, Associations and Advanced Concepts (General Concepts, Multiplicity, Link Attributes, Association as a Class, Roll names, Ordering, Qualification, Aggregation). 2.2 Generalizations and Inheritance, Grouping Constructs. 2.3 Aggregation verses Association And Generalization, Recursive Aggregates, and Propagation of Operations. 2.4 Abstract Classes, Multiple Inheritance, Metadata, Candidate Keys, Constraints 2.5 Introduction to Dynamic and Functional Modelling.	**07**	**18**
03	**Overview of UML** 3.1 Efforts of standardization / Integration, OMG approval for UML, Scope of UML, Conceptual model of UML, Architectural –Metamodel, Unified Software Development Lifecycle. 3.2 Introduction to UML Diagrams	**05**	**14**
04	**UML – Structural Modeling** 4.1 Advanced Class Diagrams: - Advanced Classes and Relationships, Interfaces, Types and Roles, Packages, Instances. Object Diagrams. 4.2 Component Diagrams: Terms and Concepts, Common modeling techniques. Deployment Diagrams: Terms and Concepts, Common modeling techniques.	**05**	**14**
05	**UML Behavioral Modeling** 5.1 Use case diagram: Terms and Concepts, Model ling techniques. 5.2 Interaction diagram (Sequence and collaboration diagram): Terms and Concepts, Model ling techniques. 5.3 State chart diagram: Terms and Concepts, Model ling techniques. 5.4 Activity diagram: Terms and Concepts, Modeling techniques.	**12**	**16**
Total		**32**	**70**

Practical:
  Skills to be developed:
  Intellectual skills:
 	
Use of programming language constructs in program implementation.
  • To be able to apply different logics to solve given problem.
  • To be able to write program using different implementations for the same problem
  • Study different types of errors as syntax semantic, fatal, linker & logical
  • Debugging of programs
  • Understanding different steps to develop program such as
      ▪ Problem definition
      ▪ Analysis
      ▪ Design of logic
      ▪ Coding
      ▪ Testing
      ▪ Maintenance (Modifications, error corrections, making changes etc.)

Motor skills:
- Proper handling of Computer System.

List of Practical:

1. Analyze and Design the UML diagrams for
   - ATM System
   - Railway Reservation System
   - Library Management System.

Analyze and design the UML diagrams & develop programs for minimum three systems.

(For Developing Above three programs entire time allotted to practical mention in the teaching Scheme (4 X 16 = 64 Hrs.) should be utilized.

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Rumbaugh, Blaha	Object Oriented Modeling and Designing (Refer for First and Second Chapter)		Rumbaugh, Blaha
Booch, Jacobson, Rumbaugh	The UML User Guide(Addison Wesley) (Refer for Third, Fourth and fifth Chapter)		Booch, Jacobson, Rumbaugh
Mark Paiestly	Practical OOD with UML–.(Refer for Fourth and Fifth Chapter)		Mark Paiestly

2.Web Sites:
- http://uml.tutorials.trireme.com/
- http://pigseye.kennesaw.edu/~dbraun/csis4650/A&D/UML_tutorial/
- http://www.smartdraw.com/tutorials/software-uml/uml.htm
- http://www-db.stanford.edu/~burback/watersluice/node55.html

Demo lectures with power point presentations using LCD projector should be arranged to develop programming concepts of students

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Erich Gamma Richard Helm	"Design patterns " Elements of reusable Object –Oriented Software		Pearson Education
Tom Pender	UML 2 Bible		Wiely publication
Martin Fowler	"UML Distilled: A Brief Guide to the Standard Object Modeling Language	Third Edition	Addisioh Westey

Suggested List of Laboratory Experiments :

S. No	
1	SRS document
2	Develop structural models

3	Develop behavioral models
Suggested List of Assignments/Tutorial :	
S. No	
1	Create SRS document for online shopping
2	Develop structural models for Airline reservation System.
3	Develop behavioral models for Payroll System

Name of the Course :	COMPUTER ENGINEERING GROUP (PROFESSIONAL PRACTICES-VI)	
Course code: CO/CM/IF/CD	Semester : SIXTH FOR CO/CM/IF AND SEVENTH FOR CD	
Duration :	Maximum Marks :50	
Teaching Scheme	Examination Scheme	
Theory :--	Mid Semester Exam: --	
Tutorial:--	Assignment & Quiz: --	
Practical :3 Hrs/week	End Semester Exam: --	
Credit :2		

Aim :-

S. No	
1.	To prepare students to actively participate in different activities related to placement
2.	To polish students management skills
3.	Motivate students to update their Technical/Non-Technical Knowledge

Objective :-

S. No	Student will be able to:
1.	Acquire information from different sources.
2.	Prepare notes for given topic.
3.	Present given topic in a seminar.
	Interact with peers to share thoughts.

Pre-Requisite -

S. No	
1.	Should be prepared to work hard and gather information from different sources
2.	Should have knowledge related to Domain
3.	Eager to work in a team

Contents

Activity	Content	Hours

01	Industrial Visits Structured industrial visits be arranged and report of the same should be submitted by the individual student, to form part of the term work. 1. Visit a industry 2. Collect organization chart 3. Roles and responsibilities of each post. 4. No. of resources available in industry etc	14
02	Lectures by Professional / Industrial Expert be organized from any of the following areas: 1. Meditation. Yoga to improve concentration 2. Robotics 3. Any latest tool useful for software development 4. Mobile computing 5. Data Mining 6. SAP 7. Neural network 8. Software project Management 9. Wi-fi Technology 10. Any other suitable topic	14
03	Information Search : 1. Buying of a new computer (cost, make, model etc.). 2. Comparison of .different computer architectures 3. Software security 4. Video conferencing 5. XML 6. Any other suitable topic	18
04	Group Discussion : The students should discuss in group of six to eight students and write a brief report on the same as a part of term work. The topic group discussions may be selected by the faculty members. Some of the suggested topics are 1) Hacking 2) Computer virus 3) Chatting on Net 4) Working BPO 5) Software piracy 6) Computer gaming 7) Any other suitable topic	10
05	Student Activities : The students in a group of 3 to 4 will perform any one of the following activities (other similar activities to be considered), and write a report as part of term work. Activity : i) Collect information from Computer repairing center (at which level repairing is done, cost). ii) Collect information regarding latest requirement for a job from any industry	14
	Total	70

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
John M. Nicholas Hermasteyn	Project management for business, engineering and technology	3rd	
Adair, J	Decision making & Problem Solving		Orient Longman
SR Doshi	Business communication and Management		

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Henry c. Lucas, Jr.	Information Technology for management	7th	Tata McGraw Hill
Pearson Education Asia	Organizational Behavior		Tata McGraw Hill
E.H. McGrath , S.J.	Basic Managerial Skills for All		Prentice Hall of India, Pvt Ltd

Suggested List of Laboratory Experiments :

S. No	
1	Group Discussion
2	Information Search on topic given by teacher

Suggested List of Assignments/Tutorial :

S. No	
1	Quotation for purchase of a new computer
2	Comparison of .different computer architectures
3	How to write Industrial visit report

Name of the Course : COMPUTER ENGINEERING GROUP (SOFTWARE TESTING)	
Course code: CO/CM/CD	Semester : SIXTH FOR CO/CM AND SEVENTH FOR CD
Duration :	Maximum Marks :125
Teaching Scheme	Examination Scheme
Theory :3 Hrs/week	Mid Semester Exam: 20 Marks
Tutorial: --	Assignment & Quiz: 10 Marks
Practical : 2 Hrs/week	End Semester Exam: 70 Marks
Credit :4	

Aim :-

S. No	
1.	To study the process and methodology required to test the system under development or deployed system.
2.	Meets the requirements that guided its design and development.
3.	Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test

Objective :-

S. No	The students will be able to:
1.	Understand the impact of software bugs and importance of software testing
2.	Develop the skills necessary to find bugs in any types of software.
3.	Learn how to effectively plan your tests, communicate the bugs you find, and measure your success as a software tester.
4.	Use your new testing skills to test not just the software , but also the product specification the raw code, and even the user's manual
5.	Learn how to test software for compatibility, usability and cultural issues.
6.	Discover how to improve your testing efficiency by automating your tests.

Pre-Requisites -

S. No	
1.	Basic knowledge of software engineering
2.	Idea of software development life cycle.
3.	Programming convention and knowledge of programming.

Contents

Chapter	Name of the Topic	Hours	Marks
01	**Purpose of Testing** Software Testing Background Software Error Case Studies:- Disney Lion King, Intel Pentium Floating Point Division Bug, NASA Mars Polar Lander, Patriot Missile Defense System,Y2K Bug. What is Bug? Terms for software Failures, Software Bug: A Formal Definition , Why do Bug occurs? , cost of bugs, What Exactly does a software tester do? What makes a good software tester? Software Development Process Product Components:- What Effort Goes into a software product?, What parts make up a software product? , Software Project Staff , Software Development Lifecycle Models :- Big-Bang Model , Code and fix Model, Waterfall model, Spiral Model The Realities of Software Testing Testing Axioms: - It's impossible to test a program completely, software testing is a risk-based exercises, testing can't show that bug don't exist, the more bug you find, the more bugs there are, the pesticide paradox.	05	08
02	**Testing Fundamentals** **Examining the Specification** Getting Started :- Black-Box and white-box Testing, Static and Dynamic Testing , Static Black Box Testing :- Testing the specification Performing a High Level Review of the Specification:- Pretend to be a customer, Research Existing Standards and guidelines , Review and test similar software Low Level Specification Test Techniques:- Specification Attributes Checklist , Specification Terminology Checklist. **Testing the software with Blinders On** Dynamic Black-Box Testing : testing the software While, Blindfolded, Test-to-pass and Test-to-fail, Equivalences Partitioning , Data Testing :- Boundary Condition, Sub-Boundary Conditions, default, empty, blank, Null, Zero and None, Invalid, Wrong, Incorrect and garbage data. State Testing:- Testing Software 's Logic Flow, Testing States to Fail. Other Black Box Test Techniques :- Behave like a Dumb User, Look for bugs where you have already found them, follow experience, intuition and hunches	10	15
03	**Examining the Code** **Static White Box Testing:** Examining the design and code, Formal Review: - Peer Review, Walkthroughs, Inspections. Coding Standards and Guidelines:- Examples of Programming Standards and Guidelines, Obtaining Standards. Generic Code Review Checklist:- Data Reference Errors, Data Declaration Errors, Computation Errors, Comparison Error, Control Flow Errors, Subroutine Parameter Errors, Input/Output Errors, Other checks. **Testing the software with X-Ray Glasses**	10	14

	Dynamic White Box Testing, Dynamic white box testing versus debugging, Testing the Pieces:- Unit and Integration Testing, An Example of Module Testing. Data Coverage: - Data Flow, Sub-Boundaries, Formula and Equations, Error Forcing. Code Coverage: - Program Statements and Line Coverage, Branch Coverage, Condition Coverage.		
04	**Applying Your Testing Skills** **Configuration Testing** An Overview of Configuration Testing: - Isolating Configuration Bugs, Sizing up the job. Approaching the Task: - Decide the Types of Hardware You'll Need, Decide What Hardware Brands, Model, and Device Drivers are available. Decide which Hardware features, modes and options are possible. Pare Down the identified Hardware Configuration to a Manageable Set. Identify your Software's Unique Features that work with the Hardware Configurations. Design the test Cases to Run on each configuration. Execute the tests on each configuration. Rerun the tests until the results satisfy your team. Obtaining the hardware, Identify hardware standards, configuration testing other hardware. **Compatibility Testing** Compatibility Testing Overview, Platform and Application Versions, Backward and forward compatibility, the impact of testing multiple versions. Standards and Guidelines: - High-Level standards and Guidelines, Low- level standards and Guidelines, Data Sharing Compatibility.	04	06
05	**Foreign Language Testing** Making the words and Pictures Make Sense , Translation Issues :- Text Expansion , ASCII , DBCS and Unicode , Hot Keys and shortcuts , Extended Characters , Computation on characters , Reading Left to Right and Right to Left , Text on Graphics, Keep the Text out of the code . Localization Issues: - Content, Data Formats. Configuration and Compatibility Issues: - Foreign platform configurations, Data Compatibility. How much should you Test?	02	03
06	**Usability Testing** **User Interface Testing:** What makes a Good UI? , Follows standards or Guidelines, Intuitive, Consistent, Flexible, Comfortable, Correct, Useful. Testing for the Disabled: Accessibility Testing: - It's the Law, accessibility features in software. **Testing the Documents** Types of Software Documentation, The importance of documentation testing, what to look for when reviewing documentation, the realities of documentation testing. **Web site Testing** Web Page Fundamentals, Black-Box Testing: - Text, Hyperlinks, graphics, forms, object and other simple miscellaneous Functionality. Gray Box Testing, White Box Testing, Configuration and compatibility testing, Usability Testing, Introducing Automation.	06	08
07	**Supplementing Your Testing** **Automation Testing and test tools** The benefits of automation and tools, Test tools: - Viewers and Monitors,	03	05

	Drivers, Stubs, Stress and load tools, Interference injectors and noise generators, analysis tools. Software Test Automation: - Macro Recording and playback, programmed macros, Fully Programmable Automated Testing Tools. Random Testing: monkeys and gorillas, Dumb monkeys, Semi-smart monkeys, Smart Monkeys, Realities of using test tools and automation. **Bug Bashes and Beta Testing** Only as far as the eye can see, Test sharing, beta testing, outsourcing your testing.		
08	**Working With Test documentation** **Planning your test effort :** the goal of the test planning , test planning topics :- high level expectations , people , places , and things , definitions , Inter group Responsibilities , what will and won't be tested , test phases , test strategy , resource requirements , tester assignments , test schedule , test cases , bug reporting , Metrics and statistics , Risk and Issues. **Writing and Tracking Test Cases** The goal of test case Planning, Test case planning overview, test design, test cases, test procedures, test case organization & tracking. **Reporting What you Find** Getting your bugs fixed, isolating & reproducing bugs , Not all bugs are created equal , a bug's life cycle , bug tracking system :- The standard : The test incident Report , Manual Bug Reporting and Tracking , Automated bug reporting and tracking. -Measuring Your Success Using the information in the bug tracking database, Metrics that you'll use in your daily testing, Common Project level Metrics.	05	08
09	**The Future** **Software Quality Assurance :** Quality is free, testing and quality assurance in the workplace , software testing , Quality Assurance, other names for software testing groups, Test management and organizational structures, Capability Maturity Model (CMM), ISO 9000 **Your Careers As a Software Tester:** Your job as a software tester, finding software testing position, gaining hands-on experience, Internet links, Professional Organizations.	03	03
Total		48	72

Practical:
Skills to be developed:
Intellectual Skills:
1.   Use installation procedure
2.   Creation of GUI objects and their applications
3.   Know various tools
4.   Know Test procedures

List of Practical: (Any 10)

Sr. No.	Practical Name

1	Introduction To Software Testing Concepts
2	Case Study:- Study any system specification and report bugs
3	Write Test Cases For any Application (e.g. Railway Reservation Form)
4	Display "Hello World"
5	Write a program to demonstrate use of 1) For ...Loop 2) Switch ... Case 3) Do...While 4) If....else
6	Automate Notepad Application.
7	Automate any installation procedure (e.g. WinZip)
8	Automate Microsoft Word Application 1) Open Microsoft Word 2) Type text (automatically) 3) Generate random file name. 4) Save file and close Microsoft Word.
9	Create GUI Objects.
10	Create any GUI Application e.g. Calculator
11	Assignment for Web Testing (use any Web testing tools e.g. Selenium)
12	Assignment for any Bug Tracking Tool (e.g. Bugzilla, Bugit)
13	Assignment for any test management tool (e.g. Test Director)

All above Practical may be performed on **Windows** *or* **Linux** Platform, using the tools mentioned below:

Sr. No	Testing Tools	Type of Tool
1	Auto IT	Free Ware
2	Ruby	Free Ware
3	Water	Free Ware
4	Sahi	Free Ware
5	Bugzilla	Licensed Software
6	Test Track	Licensed Software

Learning Resources:

1. Books:

Sr. No.	Author	Title	Publication
01	Ron Patton	Software Testing	SAMS Techmedia
02	Srinivasan Desikan Gopalaswamy Ramesh	Software Testing : Principals and Practical	Pearson Education

2. Sources of Information –

1) www.autoitv3.com	2) www.selenium.com		

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Nick Jenkins	A Software Testing Primer		
Paul Ammann and Jeff Offutt	Introduction to Software Testing		
Ron Patton	Software Testing		Sams

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Dorothy Graham , Erik van eenendaal , Isabel Evans , **Rex Black.**	Foundations of Software Testing		
W. Lewis	Software Testing and Continuous Quality Improvement		
C. Kaner, J. Bach, and B. Pettichord	Lessons Learned in Software Testing		

Suggested List of Laboratory Experiments :

S. No	
1	Write different test cases for checking the login form.
2	Write the different test cases and execute the test cases on login form
3	Perform the load testing the university of Pune website.

Suggested List of Assignments/Tutorial :

S. No	
1	Different methodologies of software testing
2	Develop a test plan for library management system.
3	Implement the test plan from the above assignment.

Name of the Course :	COMPUTER ENGINEERING GROUP (SYSTEM PROGRAMMING (ELECTIVE))	
Course code: CO/CD	Semester : SIXTH FOR CO AND SEVENTH FOR CD	
Duration :	Maximum Marks :150	
Teaching Scheme	**Examination Scheme**	
Theory :2 Hrs/week	Mid Semester Exam:20 Marks	
Tutorial: --	Assignment & Quiz: 10 Marks	
Practical : 4Hrs/week	End Semester Exam: 70 Marks	
Credit :4		

Aim :-	
S. No	
1.	To study techniques for development of system related applications and services.
2.	It is the activity of programming system software.
3.	It aims to produce software which provides services to the user.

Objective :-	
S. No	After studying the subject students will be able to
1.	Understand various design aspect of the system software.
2.	Develop software tools like editors and debuggers.
3.	Develop various system softwares.

Pre-Requisites -	
S. No	
1.	Knowledge of programming languages.
2.	Knowledge of system tools available in computer system.
3.	Knowledge of assembly language program.

Contents			
Chapter	**Name of the Topic**	**Hours**	**Marks**
01	**Features of System Programming** 1.1 What is System Software 1.2 Components of System Software : Assemblers; Loaders; Macros; Compilers 1.3 Evolution of System Software 1.4 Foundations of system Programming.	**02**	**12**
02	**Assemblers** 2.1 General design procedure 2.2 Design of the assembler - Statement of the problem; Data Structure; Format of databases; Algorithm; Look for modularity. 2.3 Table Processing: Searching and Sorting- Linear Search;	**05**	**16**

	Binary Search Sorting: Interchange sort; Shell sort; Bucket sort; Radix exchange sort; Address calculation sort; Comparisons of sort; Hash or Random entry searching		
0 3	**Macro Language and Macro Processors** 3.1 Macro Instructions 3.2 Features of a Macro facility - Macro Instruction Arguments; Conditional macro expansion; Macro call within Macros; Macro Instruction defining Macros. 3.3 Implementation - Implementation of restricted faculty : Two Pass Algorithm, A Single Pass Algorithm, Implementation of macro calls within Macros, Implementation within an assembler	05	10
04	**Loaders** 4.1 Loaders Schemes - "Compile and go" loaders; General Loader Schemes; Absolute Loaders; Subroutine linkages; Relocating loaders; Direct linking loaders; Other loaders scheme: Binders, Linking loaders Overlays, Dynamic Binders. 4.2 Design of Absolute loaders 4.4 Design of Direct Linking Loaders: Specification Problem; Specification of data structures; Format of database; Algorithm	10	16
05	**Compliers** 5.1 Statement of a problem - Recognizing basic elements; Recognizing Syntactic units and Interpreting meaning; Intermediate from: Arithmetic statements, Non-Arithmetic statement, Non-executable statements; Storage Allocation; Code Generation: Optimization(M/c independent), Optimization(M/c dependent); Assembly Phase; General Model of Compiler. 5.2 Phases of Compiler - Lexical Phase: Tasks, Databases, Algorithm; Syntax Phase: Databases, Algorithm; Interpretation Phase: Databases, Algorithm; Optimization: Databases, Algorithm; Storage Assignment: Databases, Algorithm; Code Generation: Databases, Algorithm; Assembly Phase: Databases, Algorithm; Passes of a Compiler	10	16
	Total	32	70

Practical:
Skills to be developed:
1. Programming skills
2. Design of assemblers
3. Logical Thinking

List of Practical:

Sr. No.	Practical Name

1	Programming on sorting and searching techniques Liner search, Binary search, Interchange sort; Shell sort; Bucket sort; Radix exchange sort; Address calculation sort; Comparisons of sort; Hash or Random entry searching.	
2	Design of a single pass assembler or two pass assembler.	
3	Design of Macro Processor.	
4	Design of Loaders.	
5	Design of various phases of Compiler.	

Text Books:

Name of Authors	Titles of the Book	Edition	Name of the Publisher
John J. Donovan	System Programming		Tata McGraw-Hill Edition2003
Mr. Dhamdhere	System Programming and Operating System		Tata McGraw-Hill Edition

Reference books :

Name of Authors	Titles of the Book	Edition	Name of the Publisher
Randal Bryant and David	*Computer Systems: A Programmer's Perspective*	2nd edition	
D. Elder-Vass	MVS systems programming		

Suggested List of Laboratory Experiments :

S. No	
1	Take a simple piece of code and separate the tokens from it.
2	Program for simple macro processing.
3	Program for pass-I assembler.

Suggested List of Assignments/Tutorial :

S. No	
1	Assignment of compiler, assemblers, macro, linkers and loaders.
2	Different phases in compilations.
3	Macro processing in details.