PART – I

2nd Semester

FINAL

CURRICULAR STRUCTURE

AND

SYLLABI OF

FULL–TIME DIPLOMA COURSES IN

ENGINEERING & TECHNOLOGY

W.E.F. 2013-14

WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION

(A Statutory Body under West Bengal Act XXI of 1995)

"Kolkata Karigori Bhavan", 2nd Floor, 110 S. N. Banerjee Road, Kolkata – 700013

CURRICULAR STRUCTURE FOR PART – I (1st YEAR) OF THE FULL-TIME DIPLOMA COURSES IN ENGINEERING & TECHNOLOGY

WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA IN ENGINEERING COURSES

COURSE NAME: All Branches except Architecture, Photography , Multi media and Printing Technology

DURATION OF COURSE: 6SEMESTERS

SEMESTER: FIRST

BRANCH: Common for all branches except Architecture, Photography, Multi media and Printing Technology

SR. NO.	SUBJECT	CREDITS	PERIODS			EVALUATION SCHEME					
			L	TU	PR	INTERNAL SCHEME			ESE	PR	Total Marks
						TA	CT	Total			
1	Communication Skill-I	3	2	2	-	10	20	30	70		100
2	Basic Physics	3	2	-	2	10	20	30	70	50	150
3	Basic Chemistry	3	2	-	2	10	20	30	70	50	150
4	Mathematics	5	4	1	-	10	20	30	70	-	100
5	Engineering Mechanics	4	3	1	-	10	20	30	70	-	100
6	Technical Drawing	4	2	-	3	5	10	15	35	50	100
7	Computer Fundamentals	2	1	-	3	-	-	-	-	50	50
8	Workshop Practice	2	-	-	3	-	-	-	-	50	50
Total:		26	16	4	13	55	110	165	385	250	800

STUDENT CONTACT HOURS PER WEEK:33 hrs
Theory and Practical Period of 60 Minutes each.
L- Lecture, TU- Tutorials, PR- Practical, TA- Teachers Assessment, CT- Class Test, ESE- End Semester Exam.

WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION

TEACHING AND EXAMINATION SCHEME FOR DIPLOMA IN ENGINEERING COURSES

COURSE NAME: All Branches except Architecture, Photography, Multi media and Printing Technology

DURATION OF COURSE: 6 SEMESTERS

SEMESTER: SECOND

BRANCH: Common for all branches except Architecture, Photography, Multi Media and Printing Technology

SR. NO.	SUBJECT	CREDITS	PERIODS			EVALUATION SCHEME					
			L	TU	PR	INTERNAL SCHEME			ESE	PR	Total Marks
						TA	CT	Total			
1	Business Economics & Accountancy	3	4	-	-	10	20	30	70	-	100
2	Applied Physics	3	2	-	2	5	10	15	35	50	100
3	Applied Chemistry	3	2	-	2	5	10	15	35	50	100
4	Engineering Mathematics	4	3	1	-	10	20	30	70	-	100
5	Strength of Materials	2	2	1	-	5	10	15	35	-	50
6	Electrical Technology	2	2	1	-	5	10	15	35	-	50
7	Engineering Drawing	3	1	-	3	5	10	15	35	100	150
8	Workshop Practice	2	-	-	3	-	-	-	-	100	100
9	Development of Life Skill	3	1	-	3	-	-	-	-	50	50
Total:		25	17	3	13	45	90	135	315	350	800

STUDENT CONTACT HOURS PER WEEK:33 hrs
Theory and Practical Period of 60 Minutes each.
L- Lecture, TU- Tutorials, PR- Practical, TA- Teachers Assessment, CT- Class Test, ESE- End Semester Exam.

2nd Semester

Syllabus for: Business Economics & Accountancy

Name of the Course: Business Economics & Accountancy	
Course Code:	**Semester:** Second
Duration: : Seventeen weeks	**Maximum Marks: 100**
Teaching Scheme	**Examination Scheme**
Theory: 4 hrs./week	Mid Semester Exam.:20 Marks
Tutorial: Nil hrs./week	Attendance & Teacher's Assessment : 10 Marks
Practical: Nil hrs./week	End Semester Exam.:70 Marks
Credit: 3	

Aim:	
Sl. No.	The Students will be able to:
1.	Understand some basic economic principles applied in business
2.	Analyse logically the interrelationships among economic ideas
3.	Solve economic problems using mathematics as a tool
4.	Derive results using mathematical formula
5.	Apply decision rules to select best alternative
6.	Relate theory to real life observations
7.	Make judgement in case of choice problems
8.	Understand basic concepts of Accounts
9.	Apply Golden Rules in Journal & Ledger
10.	Maintain Cash Book
11.	Prepare Trial Balance
12.	Prepare Final Account

Objective:	
Sl. No.	The students are likely to acquire the following skills at the end of the course:
1.	Critical thinking skill
2.	Mathematical problem solving skill
3.	Theorising skill
4.	Decision making skill
5.	Accounting skill
6.	Computing skill

Pre-Requisite:	
Sl. No.	
1.	Elementary knowledge about Co-ordinate Geometry
2.	Basic knowledge in Algebra and Differential Calculus

Contents : GROUP: A BUSINESS ECONOMICS TOTAL PERIODS: 30		Hrs./Unit	Marks
Unit: 1 Name of the Topics: **Economics and Its Relation with Engineering** **Period: 10**	**1.1 <u>The domain where both the Engineering and Economic Principles operate</u>** Uses of resources for *<u>production</u>* of goods and services for the *<u>market.</u>* ; Scarcity of resources; Alternative uses of resources; Choice of resources; Choice of technique; Efficient use of resources. ***1.2. <u>Core Economic Ideas and Principles</u>*** 1.2.1 Opportunity cost: something must be given up to get something else. Every choice either economic or engineering involves a trade-off. 1.2.2 People are rational and respond to incentives: Individuals maximise self-interest. 1.2.3 People calculate costs and benefits: 'How much of something 'is a decision at the margin => marginal analysis. ***1.3 <u>Theory of demand and Supply</u>*** 1.3.1 Demand function : use of elementary calculus ; demand schedule 1.3.2 Law of demand : use of diagram and mathematical conditions; examples of violation of law of demand 1.3.3 Price elasticity of demand : definition and its importance 1.3.4 Point elasticity of demand in a linear demand curve Interpretation: E =0, E <1, E >1 E =1 and E = ∞. Use diagrams, give examples and classify goods as necessity/luxury 1.3.5 Income and Cross Elasticity of demand : Classification of goods as normal/ inferior , substitutes/complements 1.3.6 Determinants of price elasticity **Application** : **(a)** Calculating elasticity from linear demand equation; **(b)** Change of elasticity because of change of position and **s**lope of linear demand curve 1.3.7 Supply function and supply curve, supply schedule ***1.4 <u>Market Mechanism</u>*** 1.4.1 Define market: An institutional arrangement which allows demand and supply determine equilibrium market price. 1.4.2 Price mechanism : Use linear demand and supply curves ; equilibrium process ; 1.4.3 Stability of equilibrium : stability condition : D'(Q) < S'(Q) 1.4.4 Shifts of demand and supply curves : economic reasons behind shifts and its implications => graphical analysis	**Period: 1** **Period: 1** **Period :5** **Period: 3**	

	1.4.5 **Application** : solving linear demand and supply equations , also their shifts		
Unit: 2 Name of the Topics: **Theory of Production, Cost and Profit Maximisation** ***Principles*** **Periods: 12**	***2.1 Theory of Production and Costs*** 2.1.1 Production function : technical relation between output and factors of production 2.1.2 Concept of short run and long run: concept of fixed and variable inputs 2.1.3 Short run : Law of Variable Proportion – graphical & tabular analysis 2.1.4 Long run : Laws of returns to scale – IRS , CRS, DRS 2.1.5 **Application** : Cobb-Douglas production function $Q = AL^{\alpha}K^{\beta}$, $\alpha,\beta>0$ Short run: derive AP & MP; verify Law of Diminishing Returns; Mathematical relations => (1) MP> 0 (2) d/dL(MP)<0 **(a)** Solving values of MP_L & MP_K from for specific values of L, K, α and β **(b)**Proving that $MP_L = AP_L$ when AP_L is maximum. **(c)** Finding out output elasticity of L & K: $€_L = MP_L / AP_L = \alpha$ and $€_K = MP_K / AP_K = \beta$; output elasticity is defined as proportional change in output resulting from proportional change in input; it is a constant. 2.1.6 Theory of Costs : Cost function 2.1.7 Short run : Concept of Fixed cost, Variable cost TFC ,TVC , TC ; AFC ,AVC , AC ,MC ; relation between AC & MC ; use diagrams 2.1.8 Long run average cost curve : direct consequences of IRS, CRS & DRS. 2.2 ***Market and Profit Maximization*** 2.2.1 Basic features of (a) Perfectly Competitive Market (b) Monopolistic Competition (c) Oligopoly and (d) Monopoly, with relevant examples from business situation 2.2.2 Economic concept of profit : $\pi = TR - TC$ 2.2.3 Revenue function R = R (Q) ; Cost function : C = C (Q) Profit function $\pi = \pi (Q)$ Deriving results of First order condition of profit maximization, MR = MC; Second order condition (S.O.C.) : R" (Q) < C" (Q); Graphical analysis; economic interpretation. **2.2.3 Application**: (a) Set linear demand equation and quadratic/cubic cost function to calculate profit maximizing output; verify S.O.C.	**Period 8** **Period :4**	
Unit: 3 **Investment Planning and**	***3.1 Investment Planning***	**Period: 3**	

Problems of Indian Economy **Periods: 8**	3.1.1 Concept of investment 3.1.2 Evaluating Capital Projects : (a) Payback Period Method (b) Net Present Value Method (c) Internal Rate of Return Method 3.1.3 **Application** : Solving numerical problems on Payback Period , NPV and IRR methods **3.*2 <u>Economic Concepts and issues in the Context of Indian Economy</u>*** (Only **brief** macro- economic ideas to be mentioned and students are expected to answer **short notes only**): Mixed Economy; Globalisation; Gross Domestic Product; Inflation; Business Cycle and unemployment; Foreign Direct Investment; **NOTE: All symbols and notations are of usual meaning.**	**Period: 5**	
	Total Periods :	**30**	
GROUP – B ACCOUNTANCY	**TOTAL PERIODS: 30**		
Unit: 4 Name of the Topics: **Fundamentals of Accountancy** **<u>Periods: 12</u>**	**4.1 *<u>Introduction to Accountancy</u>*** 4.1.1 **Accountancy**: Definition & objectives 4.1.2 **Book** Keeping & Accountancy 4.1.3 Accountancy &Accounting Evolution 4.1.4 Single & Double Entry System **4.2 *<u>Double Entry System</u>*** 4.2.1**.** Transaction Concepts: Accounts & Classification of Accounts – Transaction- Two fold aspects Events – Golden Rules 4.2.2 Journal as a book of prime entry : subdivisions of Journal –Recording of Transaction Narration 4.2.3 Ledger : Rules for writing Ledger – Balancing of Ledger Accounts—Concepts of b/d and c/d	**Periods: 2** **Periods:10**	
Unit: 5 Name of the Topics: **Cash Book and Trial Balance** **<u>Periods: 9</u>**	**5.1 *<u>Cash Book</u>*** 5.1.1. Single Columns and Double Column including Contra Entry 5.1.2. Concept of Petty Cash Book ***5.2 Trial Balance*** 5.2.1 Preparation of Trial Balance 5.2.2 Rectification of Wrong Trial Balance 5.2.3 Errors detected in Trial Balance 5.2.4 Errors not detected in Trial Balance	**Periods: 3** **Periods: 6**	

Unit: 6 Name of the Topics: **Preparing Final Account** **Periods: 9**	**6.1 Basic Concepts Regarding Final Account** General Concept – Assets, Liabilities, Capital Drawings, Provision, Reserve, Reserve Fund, Bad Debts, Provision for Debts, Investments Share& Debentures, Profit Seeking and Non-profit Seeking Concerns **6.2 Final Account** Trading Account – Profit & Loss Account – Balance Sheet (with simple adjustment)	**Periods:2** **Periods: 7**	
	Total Periods :	**30**	

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Samuelson & Nordhaus	Economics		Tata McGraw Hill
Asis Banerjee & Debashis Mazumdar	Fundamentals of Economic Principles & Problems		ABS Publishing House
A.N. Agarwal	Indian Economy: Problem of Development and Planning		New Age International
Hanif & Mukerjee T S Grewal	Financial Accounting Introduction to Accountancy		S. Chand
Ranesh Roy	Bharat-er Arthaniti (Bengali Version)		Mitram
Haridas Acharya	Adhunik Arthaniti		De Book Concern

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Archibald & Lipsey	Introduction to Mathematical Economics		Harper & Row
Basu & Das S. N. Maheshwari	Practice in Accountancy Introduction to Accountancy		Rabindra Library Pioneer Book House
B. K. Basu	Lecture on Management Accountancy		New Central Book
A Gillespie	**Business Economics**		Oxford University Press
R. Lipsey & A Chrystal	**Economics**	12 edn	Oxford University Press
P Shah	**Financial Accounting for Management**		Oxford University Press

Sl. No.	**Question Paper setting tips**
A	**Business Economics** Short Question: 10 Marks, Students will answer 10 questions, each carrying 1 mark out of 14 questions. Type : True/False, MCQ, Fill in the blanks, Definitions, Matching the items etc. **Accountancy** Short Question: 10 Marks, Students will answer 10 questions, each carrying 1 mark out of 14 questions. Type : True/False , Classification of Accounts(Personal/Real/Nominal) etc.
B	**Business Economics** Broad question: 25 Marks, Students have to answer any 5 questions choosing at least 1(one) from each of the 3 units. A total of 9(nine) questions have to be set, 3 from each unit. Each question will carry 5 Marks. Only short note to be set from Unit 3 Chapter 2

	Accountancy Broad Question: 25 Marks, students will answer 3 questions choosing 1 (one) from each of the 3 units. A total of 6(six) questions have to be set, 2(two) from each Unit. From Unit 4, 1(one) numerical problem & 1(one) theoretical question carrying 8(eight) marks. From Unit 5, 1(one) numerical problem & 1(one) theoretical question carrying 7(seven) marks. From Unit 6, 1(one) numerical problem & 1(one) theoretical question carrying 10(ten) marks. Theoretical questions may have more than 1(one) part questions.

Syllabus on Applied Physics

Name of the Course: **Subject : APPLIED PHYSICS**	
Course Code:	**Semester: SECOND**
Duration: 6 months	**Maximum Marks: 50**
Teaching Scheme	**Examination Scheme**
Theory: 2 hrs./week	Mid Semester Exam.: 10 Marks
Tutorial: -- hrs./week	Attendance, Assignment & interaction: 5 Marks
Practical: 2 hrs./week	End Semester Exam.: 35 Marks
Credit: 3	

Aim:	
Sl. No.	
1.	To make the students of Engineering & Technology aware of the basic laws and principles of Physics and their applications in the field of Engineering & Technology.
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:	
Sl. No.	Students will be able to
1.	• Analyze and solve problems of mechanics with engineering aspects. • Acquire basic knowledge on rotational mechanics for engineering applications. • Acquire knowledge on superconductivity • Differentiate galvanometer, ammeter and voltmeter. • Learn the applications of Wheatstone bridge principle. • Learn thermoelectric effects.
2.	• Analyze magnetic effect of electric current and its application. • Learn the applications of electromagnetic induction.
3.	• Acquire basic knowledge on semiconductor and applications of p-n junction diode. • Learn the applications of X-ray and LASER. • Enhance analytical approach in formulating and solving problems related to different physical situations.

Pre-Requisite:	
Sl. 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

End Semester Examinations Scheme. Maximum Marks – 35. Time allotted – 2 hrs.

Group	**Unit**	**Objective Questions (**MCQ only with one correct answer)		**Subjective Questions**			
		No. of questions to be set	Total marks	No. of questions to be set	To answer	Marks per question	Total marks
A	**1, 2, 3**	**6**	**10**	**5**	**3**	**5**	**25**
B	**4, 5**	**4**		**4**	**2**		

- Only multiple choice type questions (MCQ) with one correct answer are to be set in the objective part.
- Specific instruction to the students to maintain the order in answering objective questions should be given on top of the question paper.

	Content (Theory)	Hrs/Unit	Marks/Unit
Unit – 1 **PARTICLE DYNAMICS**	**1.1 Rectilinear Motion:** Kinematical equations in one dimension: $v=u+at$, $s=ut+(1/2)at^2$, $V^2=u^2+2as$ (only equation), Distance travelled by particle in n_{th} second, Velocity- Time Diagrams:- uniform velocity, uniform acceleration and uniform retardation. Kinematical equations for motion under gravity. **1.2 Laws of Motion**: Newton's laws of motion, definition of force from second law. Momentum and impulse of force (definition and SI unit) and their relation. Conservation of linear momentum (statement only). Applications to – Recoil of gun, Motion of lift, Motion of two bodies connected by light inextensible string passing over smooth pulley. (Simple problems). **1.3 Rotational Motion:** Angular displacement, angular velocity and angular acceleration (definition and SI unit only). Relation between linear velocity & angular velocity and between linear acceleration & angular acceleration. Centripetal acceleration and centripetal force (definition and formula only, no derivation). Centrifugal force (formula & concept only). Moment of a force or torque (definition & SI	8	10

	unit). Moment of inertia (definition & SI unit). Angular momentum (definition & SI unit). Relation between torque and angular momentum (no derivation). Principle of conservation of angular momentum (Statement only).		
Unit – 2 **WORK, POWER AND ENERGY**	Concept and explanation of work, power and energy with their SI units. Importance of force – displacement curve (concept of work). Mechanical energy: kinetic energy (derivation) and potential energy. Work – energy principle. Law of conservation of mechanical energy. (Simple numerical problems).	3	4
Unit – 3 **CURRENT ELECTRICITY**	**3.1 ELECTRIC CURRENT:** Ohm's law — Resistance and its unit, specific resistance — Various factors affecting the resistance. Concept of super conductivity, Equivalent resistance for Series and Parallel arrangements of resistances (No deduction), (Simple numerical problems) Concept of conversion of Galvanometer to Ammeter and Voltmeter and related simple problems. Wheatstone Bridge Principle for balanced condition, its applications in Meter Bridge and P.O. Box. **3.2 HEATING EFFECTS OF CURRENT:** Joule's law — Electrical work, energy and power with practical units (Simple numerical problems). **3.3 THERMOELECTRICITY:** Thermocouple. Seebeck effect, thermo-emf (expression only), emf-temperature curve, neutral temperature & inversion temperature, thermoelectric power(definition only) Peltier effect (statement only). Differences between Peltier effect with Joule's effect.	6	7
Unit – 4 **ELECTROMAGNETISM**	4.1 **MAGNETIC EFFECT OF ELECTRIC CURRENT:** Bio-Savart's law. Magnetic field: (i) for infinitely long straight current conductor, (ii) at the centre of a current carrying circular coil, (iii) for infinitely long current solenoid (no deduction, only concept and mathematical expression in S.I. units). Force on a current carrying conductor placed in a magnetic field (formula only), Fleming's left hand rule. Application of Magnetic effect of electric current – Galvanometer (concept only) 4.2 **ELECTROMAGNETIC INDUCTION:** Magnetic flux, Magnetic flux density with SI units, Faraday's laws, Lenz's law, Motional emf (qualitative discussion with formula only). Fleming's right hand rule. Self induction, mutual induction and their coefficients (definition and SI unit). Principles of generation of AC.	5	5

Unit – 5 **MODERN PHYSICS**	**5.1 SEMI – CONDUCTOR:** Energy band in solids (Idea only). Distinction between conductor, insulators & semi-conductors in terms of energy band diagram, Intrinsic and extrinsic (P-type; N-type) semiconductor, P – N junction diode, depletion region, potential barrier. Forward and reverse biasing; Forward and reverse bias characteristic curve. Application of P – N junction diode as – (i) half wave rectifier, (ii) full wave rectifier (Bridge circuit only) (only circuits and explanation with input and output curves). **5.2 X – rays**: Production of X- rays by Coolidge X-ray tube. X-ray spectra – continuous and characteristic X- rays (Graphical plot only), minimum wavelength (simple problems). Properties of X- rays. Application of X- rays. **5.3 LASER:** Light amplification by stimulated emission of radiation. Properties of laser. Spontaneous and stimulated emission, population inversion, pumping. He - Ne laser (Principle only). Hologram and its use (mention only).	8	9
	TOTAL	30	35

Recommended that Units – 3 & 4 be taught at the beginning to provide back up to ELECTRICAL TECHNOLOGY.

Practicals:

Sl. 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.
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 and precautions while performing the experiment. • To plot the graphs.

Examination scheme:

- **Continuous Internal Assessment:** 25 marks.

- **External Assessment:** Marks – 25. Time allotted – 2 hrs. External teacher will assess the students. Each student will have to perform one experiment allotted on lottery basis. **Distribution of marks:** Theory – 5. Table, units & data taking – 10. Viva – Voce – 10.

Laboratory Experiments :	
Sl. No.	At least six experiments to be performed
1.	• Verification of series law of resistances by P.O. Box (Values of resistances to be supplied).
2.	• Determination of specific resistance of the material of a wire by metre bridge (length and diameter of the wire to be supplied).
3.	• Verification of parallel law of resistances by ammeter – Voltmeter method.
4.	• Drawing of the forward bias characteristic curve (I-V curve) of a P – N junction diode.
5.	• Determination of the velocity of sound in air at NTP by resonance air column method.
6.	• Determination of the frequency of an unknown tuning fork by resonance air column method / preferably by sonometer.
7.	• Determination of acceleration due to gravity by simple pendulum.
8.	• Determination of the resistance of a table galvanometer by half deflection method.

Text and reference books:

Sl. No.	Title of the Book	Name of Authors	Publisher
1.	Physics – I &II	Resnik & Halliday	Wily Eastern Ltd.
2.	Physics. Part – I & II		NCERT
3.	Applied Physics	Arthur Beiser	Tata McGraw- Hill
4.	Physics - I	V. Rajendram	Tata McGraw- Hill Pub.
5.	Engineering Physics	Avadhanulu, Kshirsagar	S. Chand Publication
6.	Concept of Physics. Vol.- I &II	H. C. Verma	Bharati Bhavan Pub. & Distribution
7.	B. Sc. Physics. Vol.- I & II	C. L. Arora	S. Chand & Co. Ltd.
8	Engineering Physics	R. K. Gaur & S. L. Gupta	Dhanpat Rai Pub.
9	University Physics	Young	
10.	ABC of Physics	S. K. Gupta	Modern Publisher, New Delhi
11.	General Properties of matter	D. S. Mathur	S. Chand & Co. Ltd.
12.	Text Book of ISC Physics	Bhatnagar	Selina Publication
13.	A Text Book of Light	B. Ghosh & K. G. Majumder	Sreedhar Pub.
14.	Elements of H. S. Physics-I & II	Dutta & Pal	Publishing Syndicate
15.	H. S. Physics. Vol.- I & II	Duari, Maity & Majumder	Chhaya Prakashani
16.	H. S. Physics – I & II	C. R. Dasgupta	Pub.Book Syndicate
18.	Senior Practical Physics	A.S. Vasudeva	S. K. Kataria & Sons
19.	Elements of Physics-2	Dr. Subrata Kamilya	Knowledge Group Publications
20	Physics 2	Basak (WBSCTE Series)	Tata McGraw- Hill

List of equipments / apparatus for laboratory experiments :

Sl. No.	Name of major equipment / apparatus	
1	P. O. Box	
2	Metre bridge	
3	Table galvanometer	
4	Resistance box	

5	Standard resistance coil	
6	Variable DC power supply (Eliminator)	
7	Sliding rheostat	
8	Commutator	
9	Sonometer	

Syllabus for: Applied Chemistry

Name of the Course: Applied Chemistry (All Branches of Diploma in Engineering And Technology)			
Course Code:		**Semester:** first	
Duration: : **6 months**		**Maximum Marks: 50**	
Teaching Scheme		**Examination Scheme**	
Theory: 2 hrs./week		Internal Examination: 10Marks	
Tutorial: Nil hrs./week		Attendance+Assignment + interaction :05 Marks	
Practical: 2 hrs./week		Final Examination: 35Marks	
Credit:			
Aim:			
Sl. No.	The Students will be able to:		
1.	It is intended to teach students the appropriate use of engineering materials, their protection & lubrication processes in different working conditions of machines.		
Objective:			
Sl. No.	The students are likely to acquire the following skills at the end of the course:		
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.		
Pre-Requisite:			
Sl. No.			
Detailed Course Content GROUP: A		Hrs./Unit	Marks
Unit: 1 Name of the Topics: Cement	Portland cement: Raw materials, Composition and Manufacture, Setting and Hardening of cement, function of gypsum, Cement Mortar, Cement concrete, Lime mortar, plaster of paris.	**3**	4
Unit: 2 Name of the Topics: lubricant	Definition, purpose and types of lubrication, names of common lubricants and uses, Flash point, Fire point, Pour point, Cloud point, selection of lubricant.	**2**	4
Unit: 3 (For printing Technology only)	Aliphatic compounds: Chemical test to identify & uses- Alcohol: Ethanol, 2-propanol, 1- butanol. Ketone: Acetone, butanone. Acid: Acetic acid, propanoic acid. Ester: Ethyl acetate, amylacetate.	**3**	**4**

	Aromatic compounds : Benzene: chlorination, Nitration, Friedel-Crafts alkylation; Aniline: Diazolisation, Coupling reaction with phenol aniline & N, N-dimethyl aniline.		
Unit: 4 Name of the Topics: **Fuel**	Defination and classification, calorific value (Dulong formula), Determination of calorific value by Bomb calorimeter. Solid Fuels : Composition , properties and uses of wood, peat, lignite, Proximate andU A Liquid fuels : Fractional distillation of petroleum (product and uses), Cracking, Knocking, Octane number, Cetane number, antiknock compounds. Gaseous Fuels : Composition and uses of Coal gas, Water gas, Producer gas, Gobar gas, Natural gas, LPG, CNG, LNG.	**6**	**7**
GROUP – B			
Unit: 5 Name of the Topics: **Corrosion**	Definition, Causes of Corrosion and methods of prevention, Refractories --- properties and use of Boron Carbide and Carborandirm , Asbestors, Glass, Ceramics, Cork (preliminary idea only).	**4**	**4**
Unit: 6 Name of the Topics: **Protective Coating**	Paints : Composition , types (Snowchem, distemper) Varnishes : Definition , types , difference from paint, uses, characteristics. Metallic coating : Galvanisation, Electroplating, Tin plating. Lacquers.	**4**	**4**
Unit: 7 Name of the Topics: **Polymers**	Definition & classification of Synthetic polymers Synthetic plastic : Thermoplastic plastic and Thermosetting plastic --- their differences with examples, preparation and uses of Polythene, PVC, Polypropylene, Polystyrene, Teflon, Bakelite, Orlon, Saran. Synthetic rubber : Buna –S, Buna –N, Neoprene, Butyl, rubber, silicone, Vulcanization of rubber. Synthetic Fibres : Nylon , Terylene , Rayon.	**5**	**6**
GROUP – C			
Unit: 8	Introduction , Definition , Causes of pollution, Types of	**6**	**6**

Name of the Topics: **Environmental Pollution**	pollution. **<u>Air pollution</u>** : Definition, sources of Air pollution, causes of Air pollution, Different types of Air pollutants and their effects, Green House Effect, Acid Rain, OZone Layer Depletion, Air pollution control methods. **<u>Water Pollution</u>** : Definition, causes of water pollution, sources of water pollution, Methods of preventing water pollution, Domestic wastes, Industrial wastes, their physical and Biologocal characteristics, BOD, COD, Effects of water pollution.		
a) Internal Examination Marks : 10 b) Final Examination Marks : 35 c) Attendance + Assignment + interaction. : 5 } Full Marks = 50			
Laboratory Experiments :			
Sl. No.			
1	Estimation of total hardness of a sample of water by standard EDTA method.		
2	Qualitative detection of Arsenic content of a given sample of water [5 ppm soln of sod. Arsenite] [2 lit Arsenic containing water to 20ml by evoporation]		
3	To determine pH value of an unknown solution by pH meter.		
4	To apply Thin Layer Chromatography for separation of mixture of compounds.		
5	Preparation of phenol formaldehyde resin.		
6	Determination of dissolve O_2 in a sample of water.		
7.	To determine neutralization point of weak acid and		

	weak base by conductivity meter.		
8.	1. To determine end point of titration between dilute H_2SO_4 and $BaCl_2$ using conductivity meter.		

Text Books:		
Name of Authors	Title of the Book	Name of the Publisher
S. S. Dara	Environmental chem. & pollution control	S. Chand Publication
Dr. Aloka Debi	A Text Book of Env. Engg.	Dhanpat Rai Publishing Co.
Jain & Jain	Engg. Chem.	Dhanpat Rai Publishing Co.
Madhusudan Chowdhury	Chem I & II	Naba Prakashani
Dr. Kaberi Bhattacharya	Chem I & II	Lakshmi Prakasani
Dr. Aloka Debi	Chem I & II	Bhagabati Prakasani
Reference Books:		
Name of Authors	Title of the Book	Name of the Publisher
Jain & Jain	Engg. Chem.	Dhanpat Rai Publishing Co.
Dr. Aloka Debi	A Text Book of Env. Engg.	Dhanpat Rai Publishing Co.
Shrieve Atkins	Industrial Chem	
Bahl & Bahl	A Text Book of Organic Chemistry	S. Chand Publication
M. M. Uppal	Engg. Chemistry	
S. N. Poddar & S. Ghosh	General & Inorganic. Chemistry	Book Syndicate Pvt. Ltd.
Harish Kr. Chopra Anupama Parkar	Engg. Chemistry A Text Book	Narosha Publishing House
B. K. Sharma	Industrial Chemistry	Goel Publishing House

Syllabus for Engineering Mathematics

Name of the Course : **ENGINEERING MATHEMATICS** (Second Semester all branches)			
Course Code :		Semester : Second	
Duration : 15 weeks		**Maximum Marks : 100**	
Teaching Scheme :		**Examination Scheme :**	
Theory : 3 contact hours/week.		Internal Examination : 20 Marks	
Tutorial : 1 contact hour/week		Class Attendance : 05 Marks	
Practical : NA		End Semester Examination : 70 Marks	
Credit : 4		Teacher's Assessment : 05 Marks	
Aim :			
1.	To make the student efficient in mathematical calculations.		
2.	To make the student aware about the topics in mathematics having application to engineering.		
3.			
Objectives – The student will be able to			
1.	Develop the ability to apply mathematics for solving engineering & practical problems.		
2.	Gather concepts, principles & different methods of mathematics.		
3.	Realize the importance of mathematics in the study of engineering.		
Pre-Requisite -			
1.	Concepts of mathematics taught in the subject Mathematics in Sem-1.		
	Content (Name of Topic)	Periods	
Group – A			
Unit 1	**DETERMINANTS & MATRICES**	**12**	
	1.1 Determinant 1.1.1 Definition & expansion of determinants of order 2 and 3. 1.1.2 Properties of determinants (statement only) 1.1.3 Minors and cofactors. 1.1.4 Evaluation of determinants of order 4 by Chio's method.		
	1.2 Matrix Algebra 1.2.1 Definition of a matrix of order mxn, leading element, principal diagonal. 1.2.2 Types of matrices – null matrix, square matrix, diagonal matrix, identity matrix etc. 1.2.3 Symmetric and Skew symmetric matrices. 1.2.4 Matrix algebra – addition, subtraction, scalar multiplication and multiplication of matrices. 1.2.5 Matrix inversion by adjoint method.		
Unit 2	**NUMERICAL METHODS**	**7**	
	2.1 Concept of Interpolation with Newton forward interpolation formula (Statement only). Simple Problems. 2.2 Numerical solution of simultaneous linear equations by Gaussian elimination method only (without proof). 2.3 Numerical Solutions of non-linear equations by Newton-Raphson method (without proof). 2.4 Numerical integration by trapezoidal rule & Simpson's 1/3 rule (without proof).		
GROUP - B			

Unit 3	**INTEGRATION**	**17**	
	3.1 Definition of Integration as inverse process of differentiation. 3.2 Integration of standard functions. 3.3 Rules for integration (sum, difference, scalar multiple). **3.4 Methods for Integration** 3.4.1 Integration by substitution. 3.4.2. Integration by trigonometric substitution. 3.4.3 Integration by parts. 3.4.4 Integration by partial fraction. **3.5 Definite Integral** 3.5.1 Definition of Definite Integral. 3.5.2 Properties of definite integrals with simple problems. **3.6 Applications of Definite Integral** 3.6.1 Area under plain curves. 3.6.2 Area bounded by two curves. 3.6.3 Volume of revolution. Simple examples.		
GROUP - C			
Unit 4	**ORDINARY DIFFERENTIAL EQUATIONS**	**10**	
	4.1 Definition of ordinary differential equation, order & degree. 4.2 Solution of differential equations of 1^{st} order & 1^{st} degree of 4.2.1 variable separable type 4.2.2 Homogeneous type 4.2.3 Reducible to homogeneous type 4.2.4 Exact type 4.2.5 Linear type 4.2.6 Reducible to linear type (Bernoulli's Equation). .**4.3 Solution of 2^{nd} order linear ordinary differential equations with constant coefficients –** 4.3.1 Evaluation of Complementary functions (C.F.) 4.3.2 Evaluation of Particular Integral (P.I.) for exponential function, polynomial function, sine and cosine function & functions of the form $e^{ax}V$ where V is any one of the above.		
	GROUP - D		
Unit 5	**PARTIAL DIFFERENTIATION**	**4**	
	5.1 Definition & meaning of partial derivative. 5.2 Evaluation of partial derivatives. 5.3 Definition & examples of homogeneous functions. 5.3 Euler's theorem (1^{st} order) on Homogeneous functions for 2 & 3 variables (without proof). Simple problems.		
Unit 6	**STATISTICS & PROBABILITY**	**10**	
	6.1 Statistics		
	6.1.1 Definition & examples of frequency distribution. 6.1.2 Measures of central tendency (mean, median, mode) for ungrouped and grouped frequency distribution. 6.1.3 Measures of dispersion – Standard deviation, Simple problems.		
	6.2 Probability		
	6.2.1 Definition of random experiment, sample space, event, occurrence of events & types of events (eg. Impossible, mutually exclusive, exhaustive, equally likely)		

	6.2.2 Classical & axiomatic definition of probability 6.2.3 Addition & multiplication theorems of probability (statement only). Simple problems.		
	Total	**60**	

EXAMINATION SCHEME

Internal Examination : Marks – 20 Marks on Attendance : 05
Final Examination : Marks – 70 Teacher's Assessment : 05

Group	Unit	Objective Questions			Total Marks
		To be Set	To be Answered	Marks per Question	
A	1,2	10	Any Twenty	1	20 x 1 = 20
B	3	6			
C	4	6			
D	5,6	6			

Group	Unit	Subjective Questions			Total Marks
		To be Set	To be Answered	Marks per Question	
A	1,2	3	Any Five Taking At Least One From Each Group	10	5 x 10 = 50
B	3	3			
C	4	2			
D	5,6	2			

Note 1 : Teacher's assessment will be based on performance on given assignments & quizzes.
Note 2 : Assignments may be given on all the topics covered on the syllabus.

Text Books

Name of Authors	Title of the Book	Publisher
B.K. Paul	Diploma Engineering Mathematics (Vol-2)	U.N. Dhar & Sons
A. Sarkar	Engineering Mathematics	Naba Prakashani
G.P. Samanta	A Text Book of Diploma Engineering Mathematics, Volume-2	Learning Press
Konch & Dey	Engineering Mathematics	Bhagabati Publication
B.S. Grewal	Higher Engineering Mathematics	Khanna Publishers, New Delhi
Babu Ram	Engineering Mathematics	Pearson
H.K. Dass	Advanced Engineering Mathematics	S. Chand & Co.
Erwin Kreyszig	Advanced Engineering Mathematics	Wiley
Nurul Islam	Numerical Analysis	Academic Press
B.C. Das & B.N. Mukherjee	Integral Calculus - Differential Equations	U.N. Dhar & Sons
Srimanta Pal	Engineering Mathematics	Oxford University Press

Reference Books

Name of Authors	Title of the Book	Publisher
Fatunla S O	Numerical Methods for initial value problems in ordinary differential equations.	Academic Press Inc. (London) Ltd
Kendall E A	An Introduction to numerical analysis (Second edition)	John Wiley and Sons, 1989

Burden, Richard L and Douglas	Numerical Analysis	Thomson, 9th Edition, 2011
Braun M, Golubitsky M, Marsden J, Sirovich L, Jager W,	Differential Equations and their applications	New York, Springer-Verlag LLC, 1992

Syllabus of Strength of Materials

Name of the Course: **Strength of Materials**			
Course Code:		Semester: Second	
Duration: 17 Weeks		Maximum Marks: 50	
Teaching Scheme		Examination Scheme	
Theory: **2** hrs/week		Internal Examination: 10	
Tutorial: **1** hrs/week		Assignment & Quiz: 5	
Practical: Nil hrs/week		End Semester Exam:35	
Credit: **2**			
Aim:			
1. To study and realize the effect of deformable body under various loading conditions. 2. To study the concept of Moment of Inertia of various cross section. 3. To study the various mechanical properties and stress – strain diagram of different materials. 4. To prepare the students for further understanding of other allied subjects (e.g. TOS, MOM, TOM, machine design, and Design of structure).			
Objective: The students will be able to			
1. Define mechanical properties of materials and understand and analyze stress-strain diagram of engineering materials 2. Determine normal stress, shear stress, thermal stress, hoop stress, buckling stress, linear deformation, lateral deformation and angular deformation of deformable body. 3. Calculate moment of inertia of different cross sections of various engineering body.			
Pre-Requisite: Students should know			
1. Elementary knowledge on engineering mechanics 2. Differential and integral calculus			
Contents:			
		Hrs/unit	Marks
Unit 1	**Mechanical Properties of Materials, Simple stresses & Strain:**		
	Definition of Elasticity, plasticity, ductility, malleability, hardness, fatigue, creep, brittleness. Types of loads, Types of stress – normal stress (tensile stress & compressive stress) & shear stress, Strain – longitudinal & lateral strain, Poisson ratio, Hooke's law, Young's modulus, Stress- strain curves for ductile material (MS) and brittle material (CI)- discussion on salient points on the stress – strain diagram, working stress, Factor of safety.(simple problems on normal stresses and longitudinal strain, no discussion on composite section). Direct shear stress, Single shear, double shear, shear strain, modulus of rigidity. (simple Problems on direct shear in riveted joint, punching press, cotter pin, lap welded joint) Thermal stress & strain of uniform section (no discussion on composite section) simple problem. Thin cylindrical shell subjected to internal pressure - hoop stress – longitudinal stress. Simple problem.	15	10
Unit 2	**Shear Force & Bending Moment**		
21	Definition of Shear force & bending moment, sign convention, Relation between shear force & bending moment, Shear force and bending moment diagrams for simply supported beam, overhanging beam and cantilever subjected to point loads &	12	8

	uniformly distributed load, location of point of contraflexure. (Problems to be based on simply supported beam, overhanging beam & cantilever beam)		
Unit 3	**Moment of Inertia**		
	Definition of area and mass moment of inertia, Parallel and perpendicular axes theorem (no derivation), Moment of inertia about centroidal axis of **solid sections** – Square, rectangular, circular, semicircular, Triangular section, **Hollow sections** – square, rectangular and circular cross section only. Moment of Inertia of angle section, channel, Tee, I section about centroidal axis and any other axis parallel to centroidal axis. Polar moment of inertia of circular solid and hollow section. Problems on concerned cross sections	9	7
Unit 4	**Deflection of Beam**		
	Concepts of deflection, Maximum deflection and slope of simple supported beam subjected to point load at mid span and / or uniformly distributed load on entire span and cantilever beam subjected to point load at free end and / or uniformly distributed load on entire length. (**no deduction**). Simple problem on maximum deflection and slope of beam.	3	5
Unit 5	**Columns & Struts**		
	Definitions of column & strut – Buckling of column, Concept of equivalent length as per different end conditions, Critical load/ buckling load, safe load, Euler's & Rankine's formulae for critical/ buckling load for columns. Simple problem	6	5
Total:		45(Lecture + Tutorial)	35
Internal assessment examination and preparation for semester examination		2 weeks i.e. 6 lecturer hour	
Totat:		51 lecturer hour(17 weeks)	

Text Books:

Name of Author	Title of the Book	Name of the Publisher
R.S.Khurmi	Strength of Materials	S. Chand & Co
S.S.Bhavikatti	Strength of Materials	V ikas publishing House Pvt. Ltd.
S. Ramamrutham & R. Narayanan	Strength of Materials	Dhanpat Rai & Publication
R.K. Rajput	Strength of Materials	S. Chand & Co
B.K.Sarkar	Strength of Materials	Tata McGraw Hill
R.K.Bansal	Strength of Materials	Laxmi Publication Pvt. Ltd.
M. Chakraborty	Strength of Materials	S.K. kataria

Reference Books:		
S.P. Timoshenko, D.H. Young	Elements of Strength of materials	West Press Pvt. Ltd.
D. S. Prakash Rao	Strength of Materials – A Practical Approach	Universities Press
Egor P Popov	Engineering Mechanics of Solid	Prentice Hall of India
R. Subramanian	Strength of Materials	Oxford Press
Pranab Majumdar	Learning Strength of Materials	Knowledge Kit publication

Suggested List of Laboratory Experiment: **Nil** (As decided in the meeting of subject coordinators)	
Suggested list of Assignments / Tutorial:	
	Group A
1.	One problem on normal stress, longitudinal strain & lateral strain
2.	Stress – strain diagram of MS & CI and label the salient points
3	One problem on shear stress, shear strain and modulus of rigidity
4.	One problem on thermal stress and strain
5.	One problem on hoop stress
6.	One problem on area moment of inertia
7.	One problem on column
8.	One problem on deflection of beam
	Group B
1.	One problem of Shear force & Bending moment diagram for simple supported beam use graphical method
2.	One problem of Shear force & Bending moment diagram for cantilever beam use graphical method
3.	One problem of Shear force & Bending moment diagram for overhanging beam use graphical method and locate point of contraflexure
Note:	
	Total students have to be divided into 10 groups. Each group shall be allotted three different numerical from group A and two different problems from group B. problems shall be submitted by each student in separate note book. All problems have to be solved in the tutorial classes.
Sl. No.	
1.	Examination Scheme: **(End semester examination)**

Unit:	Marks of each question	Question to be Set	Question to be answered
1	5	3	2
2,3	5	4	2
4,5	5	2	1
1	1	4	4
2	1	2	2
3	1	2	2
4	1	1	1
5	1	1	1
		Total	5×5+10×1 = 35

Syllabus for Electrical Technology

Name of the Course:	**ELECTRICAL TECHNOLOGY**		
Course Code:		**Semester: 2ND**	
Duration: 51 hrs (34L+17T)		**Maximum Marks: 50**	
Teaching Scheme		**Examination Scheme**	
Theory: 02 hrs./week		Mid Semester Exam.: 10 Marks	
Tutorial: 01 hr./week		Assignment & Quiz: 05 Marks	
Practical: 00 hrs./week		End Semester Exam.: 35 Marks	
Credit: 2			

Aim:	
Sl. No.	
1.	To understand the working principle, field of application of various electrical machines, equipments and instruments.
2.	To study basic rules and laws of electric (dc & ac) and magnetic circuits
3.	To understand the basics of electric power supply both general and domestic

Objective:	
Sl. No.	
1.	State definitions of Basic electrical quantities used in electricity, magnetism and electromagnetic induction and application of different laws to analyze dc and ac circuits.
2.	Impart Knowledge of basic principles and field of application of electrical machines and storage cells
3.	To give Basic knowledge of electrical power supply system and testing equipments necessary for a diploma engineer.

Pre-Requisite:	
Sl. No.	
1.	knowledge of basics of physics and mathematics at 10th std.

Contents (Theory)		Hrs./Unit	Max Marks
UNIT-I			**7+5x4 =27**
Module 1 : Different sources of Energy	1.1 Conventional & Non- conventional sources of energy 1.2 Advantages of Electrical Energy 1.3 Uses of Electrical Energy	2L	
Module 2: Basic concepts of Electrical quantities	2.1 Basic concept of charge, current, voltage, resistance, inductance, Capacitance, power, energy and their units. 2.2 Basic concept about supply source- D.C. & A.C. (names only)	2L	

Module 3: D.C. Circuits	3.1 Statement & explanation of (a) Ohm's law, resistances in series and parallel (b) Kirchhoff's Current & Voltage laws 3.2 Simple problems on D.C. Circuits	3L+1T	
Module 4: A.C. Circuits	4.1 Principle of generation of sinusoidal voltage and its waveform representation 4.2 Difference between a.c. & d.c. 4.3 Idea about- (i) instantaneous value(ii) Cycles (iii) Frequency (iv) Time Period (v) Amplitude (vi) Phase (vii) Phase difference (viii) average value & R.M.S. value of Sinusoidal quantity (ix) Form factor & peak factor 4.4 Representation of sinusoidal quantities in (i)Exponential form (ii) Complex form (iii) Polar form 4.5 Expressions of voltage and current for sinusoidal sources through Pure Resistance, Inductance, and Capacitance 4.6 Simple R –L, Simple R – C and Simple R– L – C circuits 4.7 Concept of impedance , impedance triangle , power factor, active, reactive and apparent power and power triangle. 4.8 Simple problems on A.C. circuit.	5L+2T	
UNIT-II			**4+5x3 =19**
Module 1: Electromagnetism	1.1 Introduction to electromagnetism : magnetic field around a straight current carrying conductor and a solenoid and methods to find its direction (concept only) 1.2 Force between two parallel current carrying conductors (concept only) 1.3 Force on a conductor placed in the magnetic field (concept only) 1.4 Definitions and units of : Magnetising force, Magnetic intensity, Magnetomotive force, Magnetic flux, Permeability, Permeance, Reluctance 1.5 Concept of magnetic circuit and comparison with electric circuit 1.6 Concept of hysteresis, loop and hysteresis loss 1.7 Simple problems	4L	
Module 2: Electromagnetic induction	2.1 Faraday's Laws of electromagnetic induction 2.2 Lenz's law 2.3 Fleming's right and left hand rule 2.4 Principle of self and mutual induction 2.5 Energy stored in a magnetic field 2.6 concept of eddy current, eddy current loss	3L	

Module 3: Electrical Machines	3.1 Classification of electrical machines 3.2 Basic working principles of generator , motor and transformer (no deductions) 3.3 Field of applications 3.4 Storage cells- working principle, charging method, care and maintenance of storage cells.	4L+4T	
UNIT-III			**4+5x2 =14**
Module 1: Electrical power supply systems	1.1 Comparison between D.C. and A.C. system 1.2 Block diagram of a typical A.C. power supply system 1.3 Concept of single phase and three phase system 1.4 Star and delta connections- relation between phase and line voltage and current (no deductions)	4L+3T	
Module 2: Domestic power supply	2.1 Simple idea of house wiring starting from commencement of supply 2.2 Types of electric wiring used for domestic purpose and name of materials 2.3 Role of fuses/ MCB/RCCB/ELCB 2.4 Concept and necessity of earthling	4L+3T	
Module 3: Measuring and Testing Instruments	3.1 Name and Types of instruments used in measurement of Voltage, Current, Power and Energy (Moving iron, Moving coil & Digital Meters 3.2 Use of Meggar with connection diagram, measurement of earth resistance 3.3 Connection diagram of energy meter and basic principle of energy measurement 3.4 Digital & Analog multimeters-applications	3L+4T	
	Total	**34L+17T**	**35**

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
1.B.L. Thereja	A text book of Electrical Technology Vol-I & II		S.Chand Publication
2.Nagrath& Kothari	Basic Electrical Engineering		Tata McGraw hill Publication
3.J.B.Gupta	Basic Electrical Engineering/		S K Kataria & Sons

4.Surjit Singh	Electrical Estimating & Costing		Dhanpat Rai Publication
5.K.Murugesh Kumar	Basic Electrical Science & Technology/		Vikas Publication
Reference Books			
T. K. Nagsarkar & M. S. Sukhija	Basic Electrical Engineering	2 nd	Oxford University Press
Dr. J Pal	Electrical Technology		Knowledge Kit Publication

Note: During Tutorial classes Teachers will take students to the laboratory for demonstration and make them familiar with electrical apparatus, machineries and instruments.

Assignments & Question paper setting tips:

1. 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.

2. **Question Paper setting tips**

GROUP	OBJECTIVE QUESTIONS				SUBJECTIVE QUESTIONS			
	TO BE SET	TO BE ANSWERED	MARKS PER QUESTION	TOTAL MARKS	TO BE SET	TO BE ANSWERED	MARKS PER QUESTION	TOTAL MARKS
A	7	10	1	10 X 1 = 10	4	FIVE QUESTIONS, TAKING AT LEAST ONE FROM EACH GROUP	5	5 X 5 = 25
B	4				3			
C	4				2			

Syllabus for Engineering Drawing

Name of the Course: **ENGINEERING DRAWING(For** ETCE,MLT,FPT,EE,CSWT,CST,DP,PHO,CHE,EIE,IT, MET, ME,MEP,CE, AE, ARCH, MIN, MS, SE, PT, LGT, and FWT.)	
Course Code:	**Semester:** Second
Duration: **17** weeks	**Maximum Marks:** **150**
Teaching Scheme	**Examination Scheme**
Theory: 1 hrs./week	Internal Examination: Marks: 10 Marks on attd.:05
Tutorial: hrs./week	Continuous Internal Assessment : 50 External Assessment: 50
Practical: 3 hrs./week	End Semester Exam.: Marks 35
Credit: 3	
Aim:	
Sl.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.
2.	Understand the fundamentals of Engineering Drawing
3.	Read and interpret object drawings.
Objective:- The student should be able to:-	
Sl.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
Pre-Requisite:	
Sl.No.	
1.	Unambiguous and clear visualization.
2.	Sound Pictorial Intelligence

Contents (Theory)		Hrs./Unit	Marks
Unit: 1 Name of the Topics: **Projections of Solids**	1.1 Projections of Prism, Pyramid, Cone, Cylinder, Tetrahedron, Cube with their axes perpendicular /inclined to one reference plane and parallel to other.	**02**	**05**
Unit: 2 Name of the Topics: **Sectional Views**	2.1 Types of sections 2.2 Conversion of pictorial view into sectional orthographic views (First Angle Projection Method only)	**02**	**05**
Unit: 3 Name of the Topics: **Missing Views[Not for ARCH]** **Perspective Projection [For ARCH]**	3.1 Draw missing view from the given orthographic views-simple components (First Angle Projection Method only)[Not for ARCH] Introduction to the Principals of perspective projection (one point and two points) Ground Plane-Picture Plane-Station Point-Horizontal Plane-Central Plane-Ground Line-Horizontal Line-Axis of Vision-Centre of Vision-Visual Ray Method- Vanishing Point Method. [For ARCH]	**02**	**05**
Unit: 4 Name of the Topics: **Sections of Solids**	4.1 Prism, Pyramid, Cone, Cylinder, Tetrahedron, Cube resting on their base on Horizontal plane. 4.2 Prism, Cylinder : Axis parallel to both the reference plane 4.3 Section plane inclined to one reference plane and perpendicular to other	**03**	**05**
Unit: 5 Name of the Topics: **Isometric Projection**	5.1 Conversion of orthographic views into Isometric view / projection (Including rectangular, cylindrical objects, representation of slots on sloping as well as plane surfaces)	**03**	**05**
Unit: 6 Name of the Topics: **Developments of Surfaces**	6.1 Developments of Lateral surfaces of cube, prism, pyramids, cylinder, cone and their applications such as tray, funnel, chimney, pipe bends etc.	**02**	**05**
Unit: 7 Name of the Topics: **Free Hand Sketches[Not For ARCH]** **Axonometric Projections[For ARCH]**	7.1 Free hand sketches of nuts, bolts, rivets, threads, split pin, foundation bolts, keys and couplings.[Not for ARCH] Introduction to Axonometric Projections [For ARCH]	**02**	**05**
	Total	**16**	**35**

Contents (Practical)

List of Practical	Intellectual skill	Motor skill
1.**Projection of solids** Three problems on three different solids, one by axis of solid inclined to H.P and parallel to V.P. and one problem by axis inclined to V.P. and parallel to H.P. and one problem by axis inclined to both planes. (1 sheet)	To interpret the different positions of solids with reference planes. To develop ability to differentiate between true length of axis and apparent length of axis.	To draw projections of different solids when axis is inclined or perpendicular to one of the reference plane.
2.**Sectional Views & Isometric Projections** Two objects by First Angle Projection Method with section Two objects one by true scale and another by Isometric scale (1 sheet)	To interpret sectional views of given object Develop ability to differentiate between Isometric view and isometric projections	Develop ability to draw sectional views , Isometric views and Isometric projections from given objects and orthographic views of an object
3.**Missing Views** Two problems by first angle projection	To interpret the missing view from given orthographic views.[Not for	To develop ability to draw missing view from given orthographic views.

method [Not for ARCH] Two simple problems on Perspective Projection [For ARCH] (1 sheet)	ARCH] To generate the perspective views from given orthographic views [For ARCH]	To develop ability to draw perspective view from given orthographic views.
4.**Section of solids** Three problems on different solids, one problem, section plane inclined to H.P.and perpendicular to V.P. one problem ,section plane inclined to V.P.and perpendicular to H.P And one problem, section plane perpendicular to one reference plane and parallel to other plane. (1 sheet)	To differentiate between true shape and apparent shape of section. To Interpret the positions of section plane with reference planes.	To develop ability to draw the sectional orthographic views of given solids ,when it is cut by section plane in different position with reference planes. Ability to draw true shape of section.
5.**Development of surfaces** Three problems on development of surfaces of different objects (1 sheet)	Able to interpret the development of surfaces of different solids.	Ability to draw the development of surfaces of different objects in different shapes.
6.**Free hand sketches [Not for ARCH]** Any six figures on different topics **Axonometric Projections[For ARCH]** Axonometric Projection of exterior interiors (Bed Room-Kitchen-Toilet etc.) of any house. (1 sheet)	To differentiate between scale drawing and free hand drawing. To differentiate between various parts of machine.[Not for ARCH] To express exterior or interior views of any house through Axonometric views [For ARCH]	Develop ability to draw orthographic views of different machine elements.[Not for ARCH] Develop ability to draw axonometric views of exterior or interiors of any house [For ARCH]
7. **Drawing with CAD** One object by first angle projection method with section and one Isometric figure.	To differentiate between two dimensional figure and three dimensional figure.	Develop ability to draw orthographic and Isometric figure with computer

Text Books:			
Name of Authors	Titles of the Book	Edition	Name of the publisher
N.D.Bhatt	Engineering Drawing		Charotkar Publishing House
R.K.Dhawan	Engineering Drawing		S.Chand & Co.
K.Venugopal	Engineering Drawing and Graphics +AutoCAD		New Age publication
Basant Agrawal C M Agrawal	Engineering Drawing		Tata McGraw Hill Education Private Ltd.
N D Bhatt	Machine Drawing		Charotkar Publishing House
R K Dhawan	Machine Drawing		S.Chand & Co.
Pal & Bhattacharya	Engineering Drawing	6th	Viva Books
Reference Books:			
Name of Authors	Titles of the Book	Edition	Name of the publisher
P S Gill	Engineering Drawing		SK Kataria and sons
Dhananjay A Jolhe	Engineering Drawing		Tata McGraw Hill Education Private Ltd.
Pal & Bhattacharya	Computer Aided Engineering Drawing	7th	Viva Books
B. Bhattacharyya	Machine Drawing		Oxford University Press
Suggested list of laboratory experiments:			
	Not Applicable		
Suggested list of Assignments/ Tutorial:			
	Not Applicable		
Note :			
1.Students should use two separate A3 Size sketch books ,One for class work practice and another for assignment.			
2.Students should solve assignment on each topic.			
3.Use approximately 570mm x 380mm size Drawing Sheet for sessional work			

Syllabus for : Workshop Practice

Name of the Course: Workshop Practice (For Diploma in Mechanical/ Electrical/ Electronics/ Electronics & Instrumentation/ Civil/ Computer/ Chemical Engg. Groups/Mechanical (Production)/Automobile/Computer Software/Footwear/Leather Goods/Food Processing/Packaging/Medical Lab. Tech/Mine Survey/ Mining/ Metallurgical Engg. & Technology/IT/ Agricultural Engg).			
Course Code:		**Semester:** Remaining **two unit** (except the unit completed in 1st semester) should be completed in 2nd semester. Evaluation may be done by continuous assessment process and by External Examiner in end semester.	
Duration: : Seventeen weeks/Semester		**Maximum Marks: 100 (2nd semester)**	
Teaching Scheme		**Examination Scheme: Continuous Evaluation- 50 (Internal), External practical exam-50 (at the end of 2nd semester)**	
Theory: Nil hrs./week		Mid Semester Exam.: Nil	
Tutorial: Nil hrs./week		Attendance & Teacher's Assessment:-50 Marks**(2nd)**	
Practical: 3 hrs./week		End Semester Exam.: 50 Marks**(2nd)**	
Credit: 2			
Aim: To impart practical knowledge in Work Shop related with course of study.			
Objective: Student will able to			
Sl. No.			
1.	Know basic Work Shop Processes.		
2.	Read and interpret job drawings.		
3.	Identify, select, & use of various marking, measuring, holding, striking & cutting tools & equipments.		
4.	Operate, control different machines & equipments.		
5.	Inspect the job for specified dimensions.		
6.	Produce jobs as per specified dimensions.		
7.	Adopt safety practices (tools, jobs& personal) while working on various machines.		
8.	Acquaint with the chronological operational processes involving in the jobs.		
9.	Care & maintenance of the tools & machines.		
Pre-Requisite: Nil			
Sl. No.			
Contents : TOTAL PERIODS: 45 (15 Weeks) + 6 (2 Weeks) = 51 (17 Weeks) Unit: 1 is compulsory(1st sem) and any two units (2nd sem) from the rest as deemed fit for the branches.		Hrs./Unit	Marks
Unit: 1	**Electrical Shop (Compulsory)** **1. General Shop Talk** 1.1 General safety & precautions taken in Electrical Workshop 1.2 Electric shock, methods of shock treatment 1.3 Fuse and safety measure 1.4 Earthing as safety measure — I.E. Rule – 61 — Different types of Earthing 1.5 Different types of wire-gauge & strands, applications 1.6 Different tools used Electrical wiring installations —	6 periods	

	Applications 1.7 General wiring accessories & their uses. 1.8 Types of wiring & their comparison. **2.0 PRACTICES** 2.1 Study of Single Phase service connection from Pole to house (Equipments required : Service Pole, Energy Meter, Service Fuse, Distribution Board, Earth Wire) & Complete connection of Consumer Installation. 2.2 To make Straight & 'T' Joint of 7/20 PVC wire. 2.3 Wiring practice in Casing / Conduit Wiring (PVC Conduit) (one light, one fan ,one plug point & One lamp controlled by Two- Way switches including connection of Single phase Energy Meter & Main Switch). 2.4 Wiring of Calling-Bell (on T.W. batten/ PVC conduit / PVC casing). 2.5 Connection of Twin-Fluorescent Tube (AC/DC) . 2.6 Practice of Soldering & De soldering Techniques). 2.7 Identification of Basic Electronics components using Multimeter. * N.B. ITEM 2.1 & 2.3 ARE COMPULSORY AND THE STUDENTS ARE TO UNDERGO ANY 3 OUT OF THE REST 5 PRACTICES.	24 periods	
Unit: 2	**Carpentry** **GENERAL SHOP TALK** 1.1 Name and use of raw materials used in carpentry shop**:** wood & alternative materials 1.2 Names, uses, care and maintenance of hand tools such as different types of Saws, 'G'- Clamp Chisels, Mallets, Carpenter's vices, Marking gauges, Try-squares, Rulers and other commonly used tools and materials used in carpentry shop by segregating as cutting tools, supporting tools, holding tools , measuring tools etc. 1.3 Specification of tools used in carpentry shop. 1.4 Different types of Timbers , their properties, uses & defects. 1.5 Seasoning of wood. 1.6 Estimation. **2.0 PRACTICES** 2.1 PRACTICES FOR BASIC CARPENTRY WORK (a) Sawing practice using different types of saws (b) Assembling jack plane — Planning practice including sharpening of jack plane cutter (c) Chiselling practice using different types of	**6 PERIODS** **24 PERIODS**	

	chisels including sharpening of chisel (d) Making of different types of wooden pin & Fixing methods. (e) Marking, measuring and inspection of jobs. 2.2 PREPARATION OF JOINTS IN A SINGLE PIECE OF JOB (ANY ONE) (a) Half-lap joint ("I" Cross or "L" or 'T'). (b) Mortise & Tenon Joint (including drilling and fixing using wooden pins) — T-joint (c) Dovetail joint (Lap & Bridle Dovetail) 2.3 PRACTICE ON WOOD WORKING LATHE (a) Safety precaution on Wood working machines. (b) Study of wood working lathe; (c) Sharpening of lathe tools; (d) Setting of jobs and tools; (e) Different type of wood turning practice 2.4 * PRODUCTION OF UTILITY ARTICLES (GROUP WORK) (a) Making Handles of chisels / files /screw drivers etc. (b) Making Legs of cabinets**:** Straight, Tapered and Ornamental 2.5 Study on and practice of the following machines: (a) Surface Planer (b) Band Saw (c) Circular Saw * May be done in group work if possible		
Unit: 3	**SMITHY/ FORGING SHOP** **1. GENERAL SHOP TALK** 1.1 Purpose of Smithy / Forging Shop 1.2 Different types of Hearths used in Smithy / Forging shop 1.3 Purpose specifications uses, care and maintenance of various tools and equipments used in hand forging by segregating as cutting tools, supporting tools, holding tools, measuring tools etc. 1.4 Types of fuel used and maximum temperature obtained 1.5 Types of raw materials used in Smithy / Forging shop 1.6 Uses of Fire Bricks & Clays in Forging Work Shop.	**6 PERIODS**	

	2. **PRACTICES** 2.1 Practice of firing of hearth / Furnace, Cleaning of Clinkers and Temperature Control of Fire. 2.2 Practice on different basic Smithy / Forging operations such as Cutting, Upsetting, Drawing down, Setting down, Necking, Bending, Fullering, Swaging, Punching and Drifting (A) Demonstration — Making cube, hexagonal cube, hexagonal bar from round bar (B) Job Preparation (Any one) Job 1 Making a cold / hot, hexagonal / octagonal flat chisel including tempering of edges Job 2 Making a chain-link or Door Ring by bending and forge-welding Job 3 Production of utility goods e.g. hexagonal bolt / square shank boring tool, fan hook (long S-type) [Two jobs are to be done by the students] **2.3 Practice of Simple Heat treatment processes like Tempering, Normalizing Hardening etc.**	**24 PERIODS**	
Unit: 4	**WELDING SHOP** **1. GENERAL SHOP TALK** 1.1 Purpose of Welding, Brazing and Soldering. 1.2 Purpose, specifications, uses, care and maintenance of various Welding machines, Cables, tools and equipments used for welding, brazing and soldering (soft and hard) 1.3 Purpose of fluxes, electrodes, filler rods 1.4 Safety equipments used in Welding Shop 1.5 Various method of Welding (Fusion and Resistance) and its use. 1.6 Selection of Electrods **2.0 PRACTICES** 2.1 Study of Welding Transformers and Generators used in Arc-Welding 2.2 Demonstration of Gas-Cutting and Gas-Welding processes 2.3 Practice of Edge Preparation, Simple run, Tag Welding on arc-welding. 2.4 PRACTICE OF WELDING: (a) Lap welding, (b) Different methods of Butt Welding (c) T' Fillet & Groove Welding, (d) Edge & Corner Welding in	**6 Periods** **24 PERIODS**	

	different position like Down hand Flat, Horizontal and Vertical (e) Stress relieving method. (A) Job Preparation (Any One) JOB - 1 JOINING of M.S. plates — Two jobs on Lap-Joint and Butt-Joint (single/double plates), thickness of plates varying from 6 mm to 12 mm with proper edge preparation JOB - 2 SPOT-WELDING on M.S. /G.I. Sheets JOB - 3 SOLDERING: use of soft / hard solders and brazing on dissimilar materials JOB - 4 Study of TIG / MIG welding sets (B) Testing Defects in welding and testing of welding joints by Dry Penetration method & by Mechanical Method. ———		
Unit: 5	**BENCH WORK & FITTING SHOP** **1. GENERAL SHOP TALK** Purpose of Bench Work and Fitting Shop: (a) Study of different types of hand tools & their uses, care and maintenance of tools e.g. Files, Chisels, Hammers, Hack-saw with frames, Fitting Bench Vice, Different other Vices, Divider, Try-square, Drill-taps, Dies, V-blocks, Bevel protector, Scribers, Surface plates, Types of Callipers Types of Drill bits etc. (b) Study of measuring instruments by direct and indirect methods: Micrometer – Vernier callipers – Bevel protectors – Steel Rule. (c) Dismantling & Assembling of Fitting Bench Vice. (d) Study of Drilling Machine. **2.0 BASIC FITTING SHOP PRACTICES*** 2.1 Chipping and chiselling practice 2.2 Filling practice 2.3 Marking and measuring practice 2.4 Drilling and tapping practice 2.5 Making Stud Bolt by Die. 2.6 Making Male- Female Joint. * N.B. AT LEAST ONE JOB COVERING THE ABOVE MENTIONED ARE TO BE PREPARED INCLUDING PROCESSES.	**6 PERIODS** **24 PERIODS**	
Unit: 6	**MACHINE SHOP** **1. SHOP TALK ON MACHINE SHOP**	**6PERIODS**	

	1.1 Safety Precautions. 1.2 Demonstration of drilling machine, Lathe machine, Shaping, Slotting machine. 1.3 Demonstration of drill bits, Single Point & Multi point Cutting tools **2. PRACTICE ON MACHINE SHOP** 2.1 Use of Drill Machine and drilling practice 2.2 Preparation of one job in Lathe machine involving the operation like Plane Turning, Step Turning, Grooving, Chamfering, Knurling etc.	**24 PERIODS**	
Unit :7	**ELCTRONICS WORKSHOP** **1. SHOP THEORY** 1.1 Common Assembly tools. 1.2 Identification of Basic Components; both active & passive 1.3 Use of Multimeter (both Analog and digital). 1.4 Rules for soldering & de-soldering. 1.5 Rules of component mounting and harnessing. 1.6 Artwork Materials in PCB design, General artwork rules, taping guidelines. **2. PRACTICES** 2.1 Identification of basic components: Passive- resistors, Capacitors, Inductors/Coils, Transformers, relays, switches, connectors; Active- Batteries/cells, diode, transistors (BJT, FET) SCR, diac, Triac, LED, LCD, Photo-diode, Photo-transistors. 2.2 Use of Multimeters to test components and measurement of circuits, Voltage, resistance etc. 2.3 Soldering and de-soldering practice 2.4 Component mounting practice 2.5 Wire harnessing practice 2.6 General artwork practice on graph sheets and taping practice on mylar sheet.	**6 PERIODS** **24 PERIODS**	
Unit :8	**COMPUTER WORKSHOP** **1. SHOP THEORY** 1.1 Different types of Key Boards. 1.2 Different types of Mouse. 1.3 Different types of Scanners.	**6 PERIODS**	

	1.4 Different types of Modems. 1.5 Different types of Printers. 1.6 Different types of CD Writers, Speakers, CD Read/ Write Drive. 1.7 Different types of Microphones, LCD Projectors, Pen Drive, DVD Drives. 1.8 Different types of Monitors. 1.9 Different makes of Hard Disks. 1.10 Different types of Net Work Interface Cards. 1.11 Different types of Cables Such as Data Cables, Printers Cables Net Work Cables, Power Cables etc. 1.12 Different types of Floppy Disk. 1.13 Mother Board connection. 1.14 Graphics Card connection. 1.15 Net Work Interface card connection. **2. PRACTICES** 2.1 Connection of Mouse in different ports. 2.2 Connection of Key Boards in different ports. 2.3 Connection of Monitors. 2.4 Connection of Printers. 2.5 Different Switch settings of Printers. 2.6 Printer's self test. 2.7 Jumper setting of Hard Disks. 2.8 Attaching FDD, HDD and CD Drives. 2.9 Attaching Pen Drives and DVDs. 2.10 Attaching Scanner.	**24 PERIODS**	

Text Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
S. K. Hazra Chaudhury	Work Shop Technology Volume I &II	Latest	Media promoters, Mumbai
Raghuwanshi	Work Shop Technology Volume I &II	Latest	Dhanpath Rai &Sons
Gupta	Production Technology		Sayta Prakasani
Bawa	Manufacturing Processes		Tata McGraw-Hill
Ali Hasan & R. A. Khan	Manufacturing Processes		Scitech Pub.Chenni

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher

Sl. No.	Question Paper setting tips
A	D. S. Kumar, Mechanical Engineering
B	

Workshop Practice for Survey Engineering

S U R V E Y P R A C T I C E – II

CONTACT PERIODS: 45

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

UNIT - I PLANE TABLE SURVEY **39 PERIODS**

1. Setting up and Orientation of plane table with Trough Compass and Back Ray Method
2. Plane Tabling by Radiation Method
3. Plane Tabling by Intersection Method
4. Plane Tabling by Traversing Method
5. Plane Tabling by Resection Method
6. Fixing inaccessible objects in a plane table survey
7. Relaying a missing traverse station with plane table and sight vane
8. Surveying a small area by plane table and determination of area by graphical method

UNIT - II THEODOLITE USE **6 PERIODS**

1. Temporary adjustment of Theodolite.

Measurement of horizontal angle by repetition method and reiteration method

Syllabus of Development of Life Skill

Name of the Course: All Branches of Diploma in Engineering and Technology (Development of Life Skill)	
Course Code:	**Semester:** Second
Duration: : Seventeen weeks	**Maximum Marks: 50**
Teaching Scheme	**Examination Scheme**
Theory: 1hrs./week	
Tutorial: Nil hrs./week	Internal Teacher's Assessment :25
Practical: 3 hrs./week	External Teacher's Assessment :25
Credit: 3	
Aim:	
Sl. No.	
1.	Conduct different session to improve students memory Power
2.	Conduct different session to improve time management skills
3.	Developing the team work culture
4.	Personality development and problem solving ability
Objective:	
Sl. No.	
1.	Develop reading skills
2.	Use techniques of acquisition of information from various sources
3.	Draw the notes from the text for better learning.

4.	Apply the techniques of enhancing the memory power.
5.	Develop assertive skills.
6.	Apply techniques of effective time management.
7.	Set the goal for personal development.
8.	Enhance creativity skills.
9.	Develop good habits to overcome stress.
10.	Face problems with confidence
11.	Apply problem solving skills for a given situation
12.	Survive self in today's competitive world

Pre-Requisite:	
Sl. No.	
1.	Basic Of Self Analysis methods.
2.	Basic knowledge of stress and time management concepts.
3	Basic knowledge of presentation skills.
4.	Desire to gain comparable knowledge and skills of various activities in various streams of engineering.

Contents :	Development of Life Skill TOTAL PERIODS: 48	Hours
Unit: 1	Importance of Development of Life Skill(DLS), Introduction to subject, importance in present context, application	03
Unit: 2	**Information Search** Information source –Primary, secondary, tertiary Print and non – print, documentary, Electronic Information center, Library , exhibition, Government Departments. Internet Information search – Process of searching, collection of data –questionnaire , taking Interview , observation method**.**	06
Unit: 3	**Written Communication** Method of note taking, Report writing-concept, types and format	03
Unit: 4	**Self Analysis** Understanding self— Attitude, aptitude, assertiveness, self esteem, Confidence buildings. Concept of motivation.	08
Unit: 5	**Self Development** Stress Management –Concept, causes, effects and remedies to Avoid / minimize stress. Health Management – Importance, dietary guidelines and exercises. Time management- Importance, Process of time planning, Urgent Vs importance, Factors leading to time loss and ways to handle it, Tips for effective time management. EMOTION-CONCEPT, TYPES, CONTROLLING, EMOTIONAL INTELLIGENCE. CREATIVITY-CONCEPT, FACTORS ENHANCING CREATIVITY. GOAL SETTING – CONCEPT, SETTING SMART GOAL.	18
Unit: 6	**Study habits** Ways to enhance memory and concentration. Developing reading skill. Organisation of knowledge, Model and methods of learning.	10

		Total	**48**
Text Books:			
Name of Authors	Title of the Book	Edition	Name of the Publisher
Personality Development & Soft Skills	B. K. Mitra		Oxford University Press
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
Pearson Education Asia	Organizational Behavior		Tata McGraw Hill
Michael Hatton (Canada – India Project)	Presentation Skills		ISTE New Delhi
-- --	Stress Management Through Yoga and Meditation		Sterling Publisher Pt Ltd.
Richard Hale, Peter Whilom	Target setting and Goal Achievement		Kogan page India
Chakravarty, Ajanta	Time management		Rupa and Company
Marshall Cooks	Adams Time management		Viva Books
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		
7.	http://bbc.co.uk/learning/courses/		

8.	http://eqi.org/
9.	http://www.abacon.com/commstudies/interpersonal/indisclosure.html
10.	http://www.mapnp.org/library/ethics/ethxgde.htm
11.	http://www.mapnp.org/library/grp_cnfl/grp_cnfl.htm
12.	11)http://members.aol.com/nonverbal2/diction1.htm
13.	http://www.thomasarmstron.com/multiple_intelligences.htm
14.	http://snow.utoronto.ca/Learn2/modules.html
15.	http://www.quickmba.com/strategy/swot/

Reference Books:

Name of Authors	Title of the Book	Edition	Name of the Publisher
Darlene Mannix	Life Skills Activities for Secondary Students with Special Needs	5th	Kindle Edition
Autism or Asperger's,	1001 Great Ideas for Teaching and Raising Children with Autism or Asperger's,	2 nd	Kindle Edition
How to Become Smarter	Nikolai Shevchuk		Kindle Edition

Suggested List of Laboratory Experiments :

1.	Conduct Guest Lectures.
2.	Conduct industrial visit
3.	Conduct Seminar/Group Discussions.

Suggested List of Assignments/Tutorial :

S. No	The Term Work Will Consist Of Following Assignments.
	Library search:- Visit your Institute's Library and enlist the books available on the topic given by your teacher. Prepare a bibliography consisting name of the author, title of the book, publication and place of publication.
	Enlist the magazines, periodicals and journals being available in your library. Select any one of them and write down its content. **Choose a topic for presentation**
	Attend a seminar or a guest lecture, listen it carefully and note down the important points and prepare a report of the same.
	Visit to any one place like historical/office/farms/development sites etc. and gather information through observation, print resources and interviewing the people.
	Prepare your individual time table for a week – (a) List down your daily activities. (b) Decide priorities to be given according to the urgency and importance

	of the activities. (c) Find out your time wasters and mention the corrective measures.
	Keep a diary for your individual indicating- planning of time, daily transactions, collection of good thoughts, important data, etc
	Find out the causes of your stress that leads tension or frustration .Provide the ways to Avoid them or to reduce them.
	Undergo the demonstration on yoga and meditation and practice it. Write your own views, feeling and experiences on it.
	MINI PROJECT on Task management. Form different teams from taking 5-8 students in a group. Decide any task to be completed in a stipulated time with the help of teacher. Write a report considering various steps in a task management.
NOTE: - THESE ARE THE **SUGGESTED ASSIGNMENT** FOR GUIDE LINES TO THE SUBJECT TEACHER. HOWEVER THE SUBJECT TEACHERS CAN SELECT, DESIGN ANY ASSIGNMENT RELEVANT TO THE TOPIC, KEEPING IN MIND THE OBJECTIVES OF THIS SUBJECT.	