STATE BOARD OF TECHNICAL EDUCATION, JHARKHAND

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

COURSE NAME : ELECTRICAL ENGINEERING GROUP

DURATION OF COURSE : SIX SEMESTERS **WITH EFFECT FROM 2011-12**

SEMESTER : SECOND **DURATION : 16 WEEKS**

FULL TIME / PART TIME : FULL TIME

SR. NO.	SUBJECT TITLE	abbreviation	SUB CODE	TEACHING SCHEME			PAPER HRS.	TH (1)		PR (4)		OR (8)		TW (9)		SW (16002)
				TH	TU	PR		Max	Min	Max	Min	Max	Min	Max	Min	
1	Communication Skills	CMS	12012	02	--	02	03	100	40	--	--	25#	10	25@	10	
2	Engineering Mathematics	EMS	12013	03	01	--	03	100	40	--	--	--	--	--	--	
3	Applied Science (Electrical/ Electronics)	ASE	12021	04	--	04	03	100	40	50@	20	--	--	--	--	
4	Engineering Mechanics	EGM	12015	03	--	02	03	100	40	--	--	--	--	25@	10	50
5	Fundamentals of Electrical Engineering.	FEE	12022	03	--	02	03	100	40	50@	20	--	--	--	--	
6	Development of Life Skills-I	DLS	12018	01	--	02	--	--	--	--	--	25#	10	25@	10	
7	Computer Applications	CAS	12023	--	--	04	--	--	--	50#	20	--	--	25@	10	
8	Professional Practices-II	PPS	12024	--	--	02	--	--	--	--	--	--	--	50@	20	
	Total			**16**	**01**	**18**	**--**	**500**	**--**	**150**	**--**	**50**	**--**	**150**	**--**	**50**

Student Contact Hours Per Week: **35 Hrs.**

THEORY AND PRACTICAL PERIODS OF 60 MINUTES EACH.

Total Marks **: 900**

@ Internal Assessment, # External Assessment,   No Theory Examination.

Abbreviations: TH-Theory, TU- Tutorial, PR-Practical, ,OR-Oral, TW- Termwork, SW- Sessional Work

➢ Conduct two class tests each of 25 marks for each theory subject. Sum of the total test marks of all subjects is to be converted out of 50 marks as sessional work (SW).

➢ Progressive evaluation is to be done by subject teacher as per the prevailing curriculum implementation and assessment norms

➢ Code number for TH, PR, OR, TW are to be given as suffix 1, 4, 8, 9 respectively to the subject code.

w.ef. Academic Year 2011-12

Course Name : All Branches of Diploma in Engineering & Technology

Semester   : Second

Subject Title : Communication Skills

Subject Code : 12012

Teaching and examination scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
02	--	02	03	100	--	25#	25@	150

NOTE:
> **Two tests each of 25 marks to be conducted as per the schedule given by SBTE.**
> **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)**
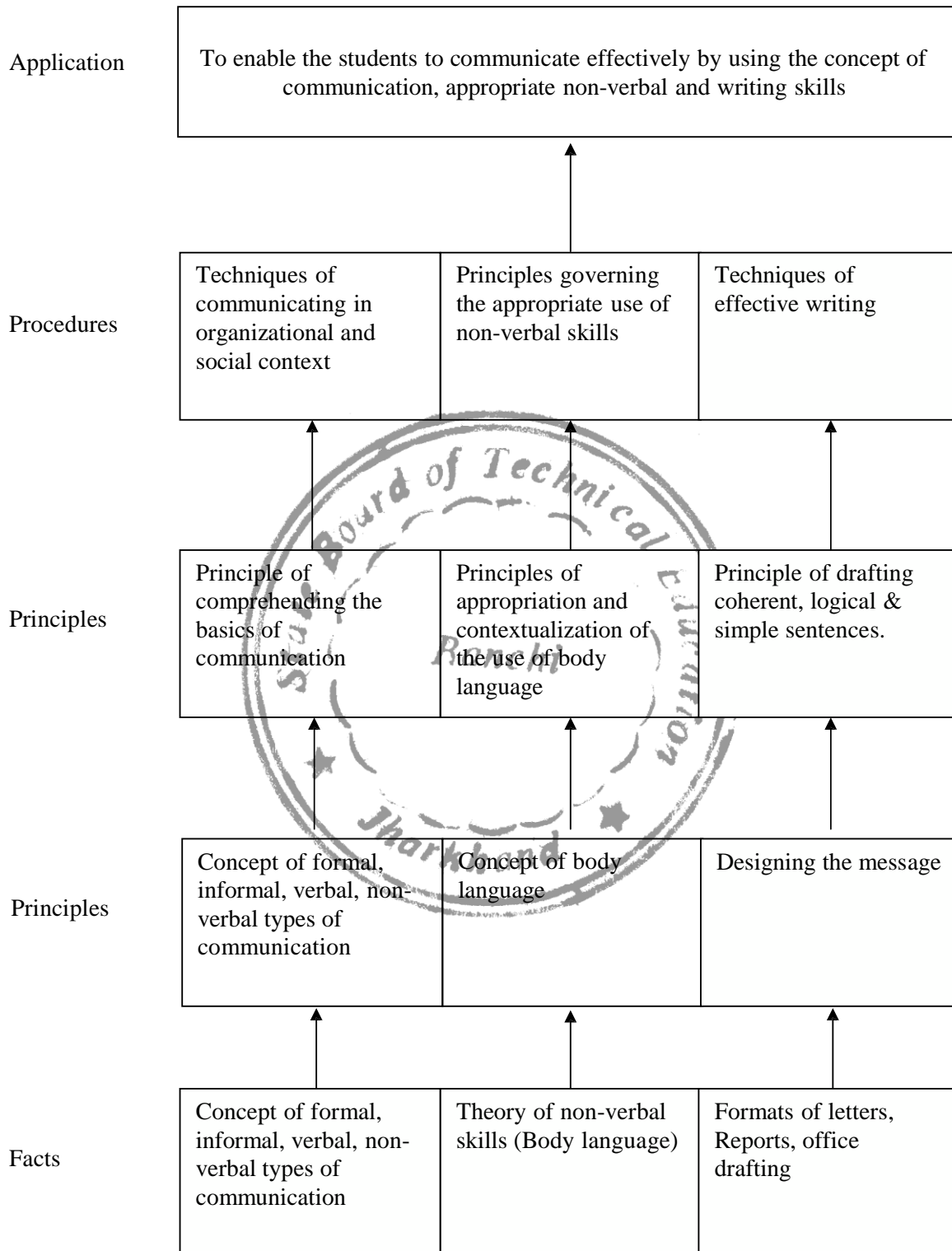
Rationale:

The Students have been already been exposed to the Language Skills pertaining to English, leading to a better understanding of English & use of grammar, developing a base for the language. Now with a view to achieve some mastery over the language & to develop Communication Skills, which is the main objective of this subject, the basic concepts of communication, Non-verbal and written skills have been Introduced.

Objectives:

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.

Learning Structure:

Application	To enable the students to communicate effectively by using the concept of communication, appropriate non-verbal and writing skills		

Procedures	Techniques of communicating in organizational and social context	Principles governing the appropriate use of non-verbal skills	Techniques of effective writing

Principles	Principle of comprehending the basics of communication	Principles of appropriation and contextualization of the use of body language	Principle of drafting coherent, logical & simple sentences.

Principles	Concept of formal, informal, verbal, non-verbal types of communication	Concept of body language	Designing the message

Facts	Concept of formal, informal, verbal, non-verbal types of communication	Theory of non-verbal skills (Body language)	Formats of letters, Reports, office drafting

Contents: Theory

Chapter	Name of the Topic	Hours	Marks

01	**Introduction to communication:**
	1.1 Definition, communication cycle.,
	1.2 The elements of Communication: sender- message – channel-
	    Receiver –Feedback.
	1.3 Concept of Communication Process.
	1.4 Stages in the process: defining the context, knowing the audience,
	    designing the message, encoding, selecting proper channels,
	    transmitting, receiving, decoding and giving feedback. (Case lets.)
		04	14

02	**Types of communication**
	2.1 Formal Communication.
	2.2 Formal: Types – a) Vertical Communication.
	                b) Horizontal Communication.
	2.3 Informal: Types – a) Diagonal Communication.
	2.4 Verbal Vs Non-Verbal Communication.
	2.5 Verbal: Types-a) Oral Communication.
	             b) Written Communication.
	2.6 Non-Verbal: Types- a) Body Language. b) Graphic Language.
		04	08

03	**Principles of Effective Communication :**
	3.1 Principles of Effective Communication. (One example each.)
	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.
	(Examples: Writing articles for newspapers, magazines.)
		04	16

04	**Non verbal- graphic communication**:
	4.1 Non- verbal codes: A- Kinesecs , B- Proxemics , C – Haptics
	    D-Vocalics , E- Physical appearance. F -Chronemics ,
	    G –Artifacts. (One example each.) **Marks: 08**
	4.2 Aspects of Body Language. Types of Body Language. (One
	example each.) **Marks: 06**
	4.3 Interpreting visuals & illustrating with visuals like tables, charts &
	    graphs. **Marks: 08**
		08	22

05	**Formal written skills :**
	5.1 Office Drafting: Circular, Notice, and Memo. **Marks: 08**
	5.2 Job Application with resume. **Marks: 08**
	5.3 Business correspondence: Enquiry, Order letter, Complaint letter,
	    and Adjustment letter. **Marks: 08**
	5.4 Report writing: Accident report, Fall in production, Progress
	    Report,, Investigation Report. **Marks: 08**
	5.5 Defining, Describing Objects &Giving Instructions. **Marks: 08**
	5.5.1 Defining Objects- Appearance, It's Use.
	5.5.2 Describing Objects- Purpose, Components, Functions,
	       Applications.
	5.5.3 Giving Instructions- Precise, Directive, Imagistic Statements of
	       a futuristic stance.
		12	40

	Total	32	100

Assignments:

1. Communication Cycle (With the Help of Diagram) + Any two communication situations to be represented with the help of Communication Cycle. (Use Pictures)

2. Communication Situations (List of 5 Communication situations stating the type of communication viz; Vertical, Horizontal, Diagonal.

3. Barriers That Hinder a Particular Communication Situation. (State the type of barrier, and how to overcome them). (04 Caselets)

4. Writing articles (two) in keeping with the parameters of developing effective messages.
   (Collect samples from newspapers, articles, Internet and pate them in the assignment.)

5. Business Letters: a) Job Application with Resume.

   b) Enquiry Letter.

   c) Order Letter.

   d) Complaint Letter.

6. Non-Verbal Communication:

   a) Body Language.: Five Illustrations of appropriate use of Body Language used on the part of student in formal and Informal setups. (Example- formal setup- classroom

   b) Graphic Language: Five Illustrations of the use of Signs, Symbols, Colours, Maps, Graphs, Charts in day to day life.

7. Presentation Skills: Select topic (current issues) and ask students to give a class presentation as per the principles of effective communication and paste these topics as an assignment in the file.

8. Non-Verbal Codes: Kinesics, Physical Appearance, Haptics. (Collect five pictures per group of five students on the above mentioned non-verbal codes, analyse and discuss them in the class. Ask the students to paste these pictures along with explanation in their individual files.

GUIDELINES: Teachers can make use of group discussions, class presentations, role plays, simulations, caselets, listen and repeat drills with the help of cassettes etc to give a hand on experience for students.

Students should maintain the Institute Files to write all the eight assignments with aprper Index and get it duly certified.

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
01	SBTE, Mumbai.	Text book of Communication Skills.	SBTE, Mumbai.
02	M.Ashraf Rizvi	Effective Technical Communication	Tata McGraw Hill Companies.
03	Krushna Mohan, Meera Banerji	Developing Communication Skills	Macmillan
04	Joyeeta Bhattacharya	Communication Skills.	Reliable Series
05	Jayakaran	Every ones guide to effective writing.	Apple Publishing.
06	Website: www.mindtools.com/page8.html-99k		
07	Website: www.khake.com/page66htm/-72k		
08	Website: www.BM Consultant India.Com		
09	Website: www.letstak.co.in		
10	Website: www.inc.com/guides/growth/23032.html-45k		

Course Name : All Branches of Diploma in Engineering and Technology.

Semester   : Second

Subject Title : Engineering Mathematics

Subject Code : 12013

Teaching and examination Scheme

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	01	--	03	100	--	--	--	100

NOTE:
  ➢ **Two tests each of 25 marks to be conducted as per the schedule given by SBTE.**
  ➢ **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)**

Rationale:
In 21st century man has developed new disciplines like Information Technology Genetic Engineering, Biotechnology etc. on the basis of Mathematics. Thus the study of mathematics is necessary to develop in the student the skills essential for these new disciplines. The subject is extension of basic mathematics of First Semester and stepping into the prerequisites to learn applied mathematics. Engineering Mathematics lay down the foundation to understand and express principles and laws involved in other technological subjects.

Objective: The student will be able to

Acquire knowledge of Mathematical terms, concepts, principles and different methods. Develop the ability to apply mathematical methods to solve technical problems, to execute management, plans with precision. Acquire sufficient mathematical techniques necessary for daily and practical problems.

Learning Structure:

Application:	Relationship between two quantities that vary, continuity of curves	Use of derivatives in applications. Slope of a curve	Analysis of experimental data for drawing valid conclusions and decision-making process.	To understand various physical quantities. Understanding signal processing, laws of impedance fluid flow, electricity.
Procedure:	To explain value of function & types of fun. Methods to evaluate limits of different functions.	To explain methods for finding derivative of different function. Second order derivative.	To explain measures of central tendency and dispersion addition and multiplication	Explain geometric meaning of deri., max,& mini, rates, radius of curvature. algebra of complex numbers Euler's forms, hyperbolic function.
Concept:	Dependent and independent variables. Standard formulae for Limits. Theorems on Limit	Derivatives of Standard functions. Rules of Differentiation	Classification of data, frequency, mean, mode and median. Sample space, event occurrence of event & types.	Slope of the curve, increasing decreasing functions. Real and imaginary parts of complex no. Euler's exponential forms.
Facts:	Concept of interval, neighborhood of a point, Definition of function and limit. Meaning of X Æ a	Definition of derivative and notation, order of derivative	Concept of data, frequency distribution, attribute and variant.	First order and second order derivatives. Number system. Imaginary unit.

Contents: Theory
<mark>Note:</mark>
1. Chapters 1 to 5 are common for all branches.
2. Chapter 6-For Civil, Electrical, Mechanical and Electronics groups
3. Chapter 7 & 8-For Computer Engineering Group.

Chapter	Name of the Topic	Hours	Marks
01	**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, Simple Examples..	04	08
02	**Limits** 2.1 Definition of neighborhood, concept and definition limit. 2.2 Limits of algebraic, trigonometric, exponential and logarithmic functions with simple examples	08	16
03	**Derivatives** 3.1 Definition of Derivatives, notations. 3.2 Derivatives of Standard Functions 3.3 Rules of Differentiation. (Without proof). Such as Derivatives of Sum or difference, scalar multiplication, Product and quotient. 3.4 Derivatives of composite function (Chain rule) 3.5 Derivatives of inverse and inverse trigonometric functions. 3.6 Derivatives of Implicit Function 3.7 Logarithmic differentiation 3.8 Derivatives of parametric Functions. 3.9 Derivatives of one function w.r.t another function 3.10 Second order Differentiation.	14	24
4	**Applications Of Derivative** 4.1.1 Geometrical meaning of Derivative, 4.1.2 Maxima and minima 4.1.3 Radius of Curvature	06	12
05	**Statistics** 5.1 Measures of Central tendency (mean, median, mode) for ungrouped and grouped frequency distribution. **Marks 08** 5.2 Graphical representation (Histogram and Ogive Curves) to find mode and median **Marks 06** 5.3 Measures of Dispersion such as range, mean deviation, Standard Deviation, Variance and coefficient of variation. Comparison of two sets of observations. **Marks 10**	10	24
	<mark>NOTE: Chapter 6 is for Civil, Electrical, Electronics and Mechanical Groups</mark>		
06	**Complex number** 6.1 Definition of Complex number. Cartesian, polar, Exponential forms of Complex number. 6.2 Algebra of Complex number(Equality, addition, Subtraction, Multiplication and Division) 6.3 De-Moivre's theorem (without proof) Examples based on it,	06	16

	roots of complex numbers, roots of unity 6.4 Euler's form of Circular functions, hyperbolic functions and relations between circular &hyperbolic functions		
	<mark>**Note: Chapter 7 and 8 is for Computer Engineering Group Only**</mark>		
07	**Numerical Solution of Algebraic Equations** Bisection method, Regula-Falsi method and Newton-Raphson method	**03**	**08**
08	**Numerical Solution of Simultaneous Equations** Gauss elimination method Iterative methods-Gauss Seidal and Jacobi's method	**03**	**08**
	Total	**48**	**100**

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	Application of derivative/numerical Solution of algebraic equations
10	Application of derivative/numerical Solution of algebraic equations
11	Complex Numbers/Numerical Solution of Simultaneous Equations
12	Complex Numbers/Numerical Solution of Simultaneous Equations

Learning Resources:
Books:

Sr. No	Title	Authors	Publications
1	Mathematics for Polytechnic	S.P. Deshpande	Pune Vidyarthi Griha Prakashan, Pune.
2	Calculus :Single Variable	Robert T Smith	Tata McGraw Hill
3	Advanced Engineering Mathematics	Dass H. K.	S. Chand Publication, New Delhi
4	Fundamentals of Mathematical Statistics	S.C Gupta and Kapoor	S. Chand Publications New Delhi.
5	Higher Engineering Mathematics	B.S Grewal	Khanna Publication, New Delhi
6	Applied mathematics	P. N. Wartikar	Pune Vidyarthi Griha Prakashan, Pune.

Course Name : Electronics and Electrical Engineering Group

Semester   : Second

Subject Title : Applied Science (Electrical/Electronics)

Subject Code : 12021

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
04	--	04	03	100	50@	--	--	150

Note I : 1. Two periods each for theory and Practical will be used for Applied Physics and Applied Chemistry respectively

    2. Theory paper will have two parts one for Applied Physics and one for Applied Chemistry. Each will have same weightage of 50 marks.

    3. Practical Marks will be divided equally between Applied Physics and Applied Chemistry

NOTE II:

➢   **Two tests each of 25 marks to be conducted as per the schedule given by SBTE.**

➢ **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)**

Part A: Applied Physics (12021)

Rationale:

    Physics provides foundation for core technology subjects. Understanding of any subject is entirely depending on logical thinking and hierarchy of knowledge component. As Physics is considered as basic science its principles, laws, hypothesis, concepts, ideas are playing important role in reinforcing the knowledge of technology.
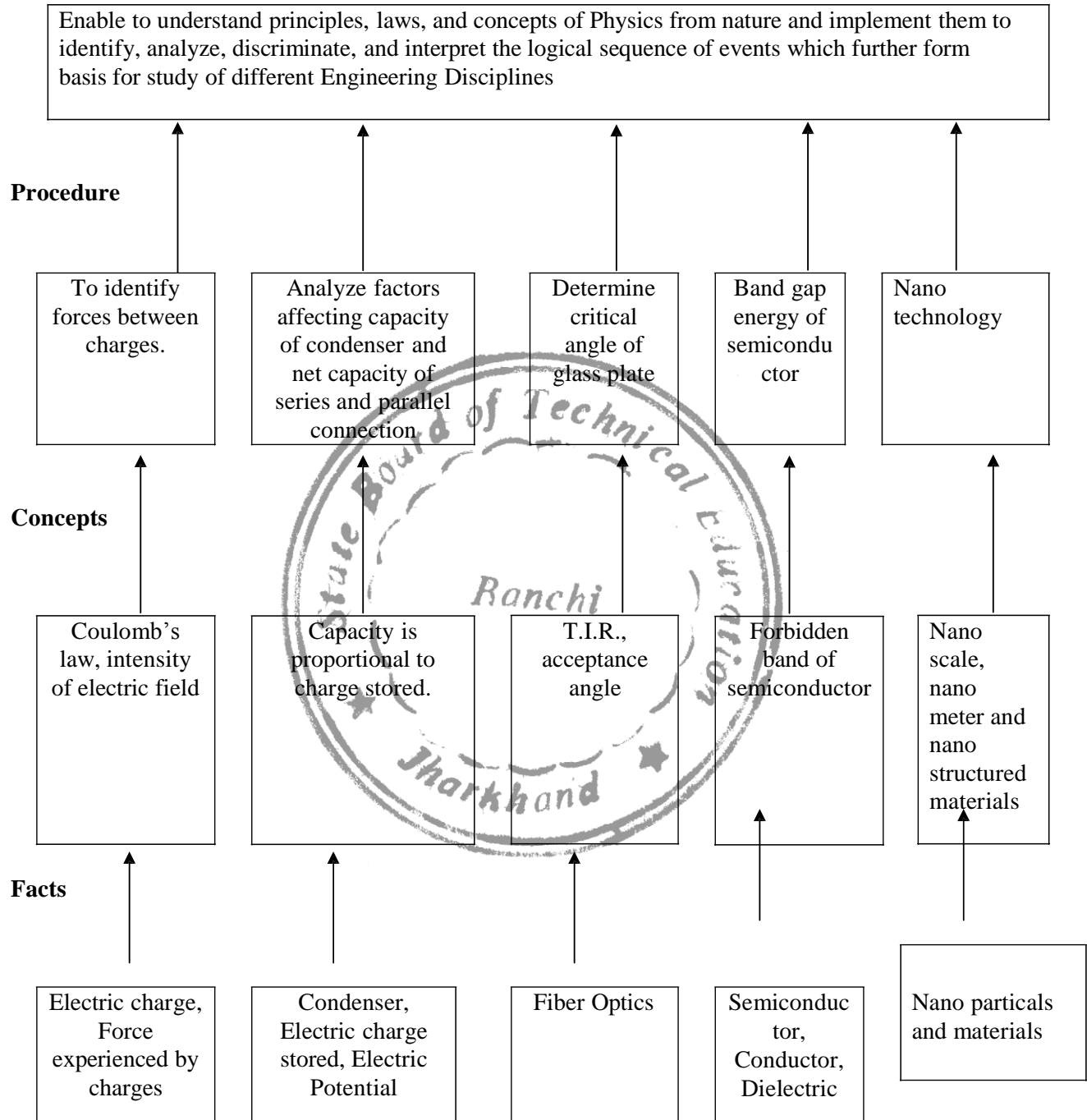
    Deep thought is given while selecting topics in physics. They are different for different groups. This will provide sound background for self-development in future to cope up with new innovations. Topics are relevant to particular programme and student will be motivated to learn and can enjoy the course of Physics as if it is one of the subjects of their own stream.

Objectives: The Student will be able to:

1. Analyze different factors on which capacitance depends.
2. Differentiate between field intensity and potential.
3. List advantages of optical fiber.
4. Describe principle of working of optical fiber.
5. Differentiate between conductor, insulator and semiconductor on the basis of band Theory.
6. State the effect of variation of resistance of material at very low temperature.

Learning Structure

Applications

Enable to understand principles, laws, and concepts of Physics from nature and implement them to identify, analyze, discriminate, and interpret the logical sequence of events which further form basis for study of different Engineering Disciplines

Procedure

To identify forces between charges.	Analyze factors affecting capacity of condenser and net capacity of series and parallel connection	Determine critical angle of glass plate	Band gap energy of semiconductor	Nano technology

Concepts

Coulomb's law, intensity of electric field	Capacity is proportional to charge stored.	T.I.R., acceptance angle	Forbidden band of semiconductor	Nano scale, nano meter and nano structured materials

Facts

Electric charge, Force experienced by charges	Condenser, Electric charge stored, Electric Potential	Fiber Optics	Semiconductor, Conductor, Dielectric	Nano particals and materials

Chapter	Name of Unit	Hrs	Mks
1	**Electric Field and Potential** **1.1 Electric field** Electric charge, Coulomb's inverse square law, Definition of unit charge, Electric field, Electric lines of force and their properties, Elect field intensity, Electric flux, Electric flux density, Relation between fi e Intensity and flux density, Electric field intensity due to charged spher **(Numericals on Coulombs law, Electrical Intensity)**	06	10
	1.2 Electric Potential Concept of potential, Definition and unit, Potential due to point charge using integration method, Potential difference between two points, Absolute potential, potential due to charged sphere, Definition of dielectric strength and breakdown potential. **(Numericals on electric potential, potential due to charged sphere)**	05	08
2	**Condenser** Capacity of condenser-Definition and unit, 1 Farad capacity, Principle of condenser, Capacity of parallel plate condenser, Series and parallel combination of condensers, Energy of charged condenser, Types of condensers –variable air condenser, condenser with solid dielectric- paper, mica and ceramic, electrolytic condenser(construction ,working voltage range and capacitance). **(Numericals on capacity of parallel plate condenser, series and parallel combination, energy of condenser)**	06	10
3	**Fiber Optics** Introduction, Total internal reflection, critical angle, acceptance angle, Structure of optical fiber, Numerical Aperture, Fiber optic materials, Types of optical fibers, Applications in communication systems. **(Numerical on critical angle, numerical aperture, acceptance angle)**	06	10
4	**Band Theory of Solids** Energy levels in solids, Valence, conduction and forbidden band, Conductors, Semiconductors and Insulators, Intrinsic and Extrinsic Semiconductors, p-type and n-type semiconductor, P-N junction diode-forward and reversed biased characteristics. **(no numericals)**	06	08
5	**Introduction to Nanotechnology** Definition of nanoscale, nanometer, nanoparticle, Definition and examples of nanonstructured materials, applications of nanotechnology- electronics, automobiles, medical, textile, cosmetics, environmental, space and defence **(no numericals).**	03	04
	Total	32	50

Practical:

Skills to be developed:

Intellectual skills:
- ƒ Selection of measuring instruments
- ƒ Read and interpret the graph.
- ƒ Interpret the results from observations and calculations.
- ƒ Use these results for parallel problems

Motor skills:
- ƒ Proper handling of instruments.
- ƒ Measuring physical quantities accurately.
- ƒ To adopt proper procedure while performing the experiment.

List of Experiment:
1. To determine effective capacitance of series and parallel combination of capacitors by calculating its reactance.
2. To verify Total Internal Reflection (TIR) phenomenon for given glass slab and to calculate critical angle of incidence.
3. To determine forbidden energy gap in a semiconductor.
4. To calculate permittivity of air condenser using flat condenser plates.
5. To determine Joule's constant (J) by electric method.
6. To Verify Ampere's rule using Oersted's Experiment and find variation of intensity of magnetic field with Current and Distance.
7. To determine temperature coefficient resistance of metal (conductor) using Platinum resistance thermometer.
8. To calculate refractive index of material of prism using spectrometer device.
9. To determine I-V characteristics of P-N junction diode.
10. To convert galvanometer into an ammeter of required range using appropriate value of shunt.
11. To calibrate voltmeter of required range using potentiometer.
12. To measure the numerical aperture of the plastic fiber using 660 nm wavelength LED. (Take at least 5 different plastic fibers)

Laboratory based Mini Projects:
1. To convert galvanometer into an ammeter of required range using appropriate value of shunt.
2. To calibrate voltmeter of required range by using potentiometer.
3. To measure the numerical aperture of the plastic fiber using 660 nm wavelength LED. (Take at least 5 different plastic fibers)

Learning Resourses:

Books:

Sr. No.	Name of the Book	Author	Publisher
01	Physics-I	V.Rajendran	Tata McGraw-Hill
02	Applied physics	Arthur Beiser	Tata McGraw-Hill
03	Engineering Physics	R. K. Gaur & S. L. Gupta	Dhanpatral
04	Physics	Rensic and Halliday	John Wiley 6th ed.
05	Nano- Technology-principles and practices	Dr. S. K.Kulkarni	Capital Publishing Company

Web sites:
1) www.hyper-physics.com
2) www.physics.org
3) www.physics.about.com

4) www.physicscllasroom.com
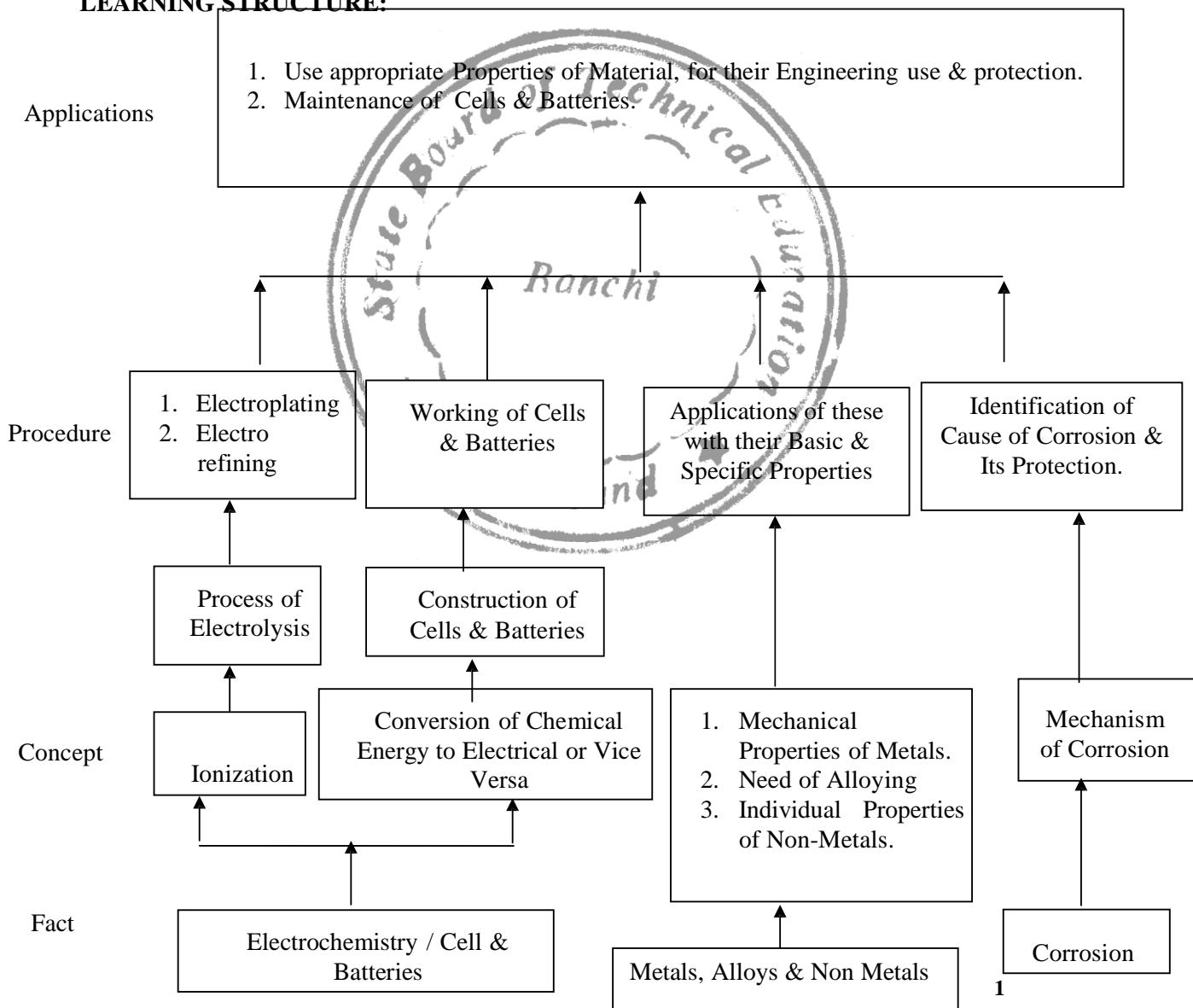
Part B: Applied Chemistry (12021)

RATIONALE

This syllabus of chemistry for electronics & electrical students is classified under the category of applied science. It is intended to teach students the working of cells & batteries, selection of various materials for engg. applications & their protection by metallic coatings.

OBJECTIVES
1. Apply knowledge to correlate the properties of materials, their engg. uses & protection.
2. Able to learn working of cells & batteries.

LEARNING STRUCTURE:

Applications	1. Use appropriate Properties of Material, for their Engineering use & protection. 2. Maintenance of Cells & Batteries.

Procedure	1. Electroplating 2. Electro refining	Working of Cells & Batteries	Applications of these with their Basic & Specific Properties	Identification of Cause of Corrosion & Its Protection.

Concept	Process of Electrolysis Ionization	Construction of Cells & Batteries Conversion of Chemical Energy to Electrical or Vice Versa	1. Mechanical Properties of Metals. 2. Need of Alloying 3. Individual Properties of Non-Metals.	Mechanism of Corrosion

Fact	Electrochemistry / Cell & Batteries	Metals, Alloys & Non Metals	Corrosion

Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	**Electrochemistry** Conductivity of Electrolytes – Concept of Ohms Law, Specific Conductivity, Specific Resistance, Equivalent Conductivity & Molar Conductivity, Variation of Specific & Equivalent Conductance with dilution, Definition of Cell Constant, Concept of pH & pOH and Numericals, Applications of pH, Buffer Solutions.	02	04
02	**Cell And Batteries** Definition of Electrochemical Cell, Battery, Charge, Discharge, Closed Circuit Voltage, Open Circuit Voltage, Electrochemical Couple, Internal Resistance, Separator, E.M.F., Classification of Batteries Such as Primary, Secondary & Reserve Batteries, Construction, Working & Applications of a Primary Cell Such as Lachlanche Cell & Daniel Cell, Secondary Cell Such as Ni – Cd Cell, Examples of Reserve Batteries, Hydrogen Oxygen Fuel Cell its Chemical Reactions, Advantages and Limitations, Introduction of Solar Cell.	08	12
03	**Non-Metallic Engineering Materials** **3.1 Insulators (Marks 2)** Definition of Dielectrics and Insulators, Classifications of Insulating Materials, Properties & Applications of Inert Gases, Silicone Fluids, Mineral Oil or Transformer Oil, Teflon, Epoxy Resin, Ceramics, Glass, Mica, Mylar. **3.2 Adhesives: (Marks 4)** Definition, Characteristics, advantages of adhesives, examples such as phenolformaldehyde resin, ureaformaldehyde resin, epoxy resin- their properties and applications as an adhesives. **3.3 Ceramics : (Marks 4)** Definition, Properties and Engg. Applications, Types- Structural ceramic, Facing material, , Fine Ceramics, Special Ceramics and Refractories.	06	10
04	**Metals & Alloys** Definition of Metallurgy, Important Ores of Copper, Metallurgy of Copper, Physical & Chemical Properties (Action of Air, Water & Acids), Uses of Copper, Important Ores of Aluminium, Extraction of Aluminium from Alumina by Electrolytic Reduction Process, Electrolytic Refining of Aluminium, Engineering Properties of Aluminium & Uses, Properties & Applications of Semiconductors such as Silicon, Germanium, Selenium, Graphite, Silicon Carbide, Cadmium Sulphide. **Alloys –** Definition, Compositions, Properties & Applications of Soft Solder, Tinmann's Solder, Brazing Alloy, Plumber's Solder, Rose Metal.	08	12

05	**Corrosion** Definition, Types of corrosion, Atmospheric Corrosion, Mechanism, Types of oxide films, Factors Affecting Atmospheric Corrosion, Definition of Immersed Corrosion, Types of immersed corrosion, Mechanism of immersed corrosion with evolution of hydrogen and absorption of oxygen, Factors affecting immersed corrosion, Protection of Metals by Purification of Metals, Alloy Formation, Cathode Protection, Controlling the external Conditions and Application of Protective Coatings like metal coating by Galvanising, Tinning, Metal Spraying, Sherardizing, Electroplating, Metal Cladding, Cementation or Diffusion Method, their Definition, Procedure, Advantages and Disadvantages, Application. Example of Non Corrosive Materials. Protection of Corrosion by the application 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.	08	12
	Total	**32**	**50**

Practical:

Skills to be developed:

Intellectual Skills:

      1. Select proper equipment and instruments

      2. Interpret results

Motor Skills**:**

      1. Accuracy in measurement

      2. Careful use of equipment

List of Practical:

01	To know your chemistry laboratory.
02	To verify Faraday's Second Law of electrolysis.
03	To determine neutralization point of acetic acid (weak acid) and ammonium hydroxide (weak base). To calculate normality and strength of acetic acid.
04	To determine the equivalent point of precipitation titration of $BaCl_2$ with H_2SO_4 using conductivity meter. To find the normality and strength of $BaCl_2$ solution.
05	To find the strength in grams per litre of the given electrolyte solution (NaOH) with the help of standard oxalic acid.
06	To determine pH value of given solutions by using pH paper, universal indicator and pH meter.
07	To determine the strength of given hydrochloric acid solution by titrating it against sodium hydroxide solution using pH meter.
08	To determine percentage of copper from brass iodometrically.
09	To determine thinner content in oil paint.
10	To measure the voltage developed due to chemical reactions y setting up a Daniel Cell.

11	To determine acid value of a plastic material by using KOH/NaOH solution.
12	To prepare urea formaldehyde resin and understand the structure and properties for its applications in engineering.
	Laboratory Base Mini project.
13.	To learn etching process of PCB's (printed circuit boards) in chemistry laboratory.
14	To observe the process of corrosion of given Aluminium strip in acidic and basic medium and find relation between decrease in weight due to corrosion.

Learning Resources:

Books:

Sr. No.	Author	Name of the book	Publisher
01	Jain & Jain	Engineering Chemistry	Dhanpat Rai and Sons
02	S. S. Dara	Engineering Chemistry	S. Chand Publication
03	B. K. Sharma	Industrial Chemistry	Goel Publication
04	S. S. Dara	Environmental Chemistry & Pollution Control	S. Chand Publication
05	Vedprakash Mehta	Polytechnic Chemistry	Jain brothers

Course Name : Civil, Mechanical and Electrical Group

Semester   : Second

Subject Title : Engineering Mechanics

Subject Code : 12015

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	---	---	25@	125

NOTE:
 ➢ **Two tests each of 25 marks to be conducted as per the schedule given by SBTE.**
 ➢ **Total of tests marks for all theory subjects are to be converted out of 50**
 and to be entered in mark sheet under the head Sessional Work. (SW)

Rationale:

The Subject is grouped under basic engineering courses, which helps the students to understand facts, concepts, principles and techniques of scientific investigation in the field of Civil Engineering. The subject describes analysis of structure and mechanisms, principles which are commonly used in Civil Engineering Structures and also used in the machines and measuring instruments.

Objectives:

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

Learning Structure:

Applications	Analysis of engineering structures, Reactions of beams, Lifting machines, Screw jack

Procedure	Methods to find component of force and resultant of forces	Moment of a force couple	Support Reaction of Beam	Velocity Ratio, Mechanical advantages, efficiency

Principles	Principle of transmissibility, Law of parallelogram of forces	Varignon's Theorem	Lami's Theorem, Centroid	Law of Machine

Concept	Component and Resultant	Moment	Equilibrium and center of gravity	Friction	Simple Machines

Fact	Force, Body, Weight, Length, Time

Contents: Theory

Chapter	Name of the Topic	Hours	Marks
01	**Force** **1.1 Fundamentals: -** Definitions of mechanics, Engineering Mechanics, statics, dynamics, kinematics, kinetics, body, rigid body, mass, weight, length, time, scalar and vector, S.I. units. **1.2 Force**: - Definition of a force, S.I. unit of a force, representation of a force by vector and by Bow's notation method. **1.3 Force system: -** Definition, classification of force system according to plane and line of action Characteristics of a force, effects of a force, principle of transmissibility. **1.4 Resolution of a force:** Definition, Method of resolution, Types of Component of a force - Perpendicular component and Non-perpendicular component. **1.5 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. **1.6 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) for calculation of resultant for all force systems. II - Graphical method: - Introduction, space diagram, vector diagram, polar diagram, and funicular polygon. Resultant of concurrent, non-concurrent and parallel force system.	12	24
02	**Equilibrium:** 2.1 Definition, conditions of equilibrium- analytical and graphical conditions of equilibrium for concurrent, parallel force system, non-concurrent non 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 having two unknowns only. 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, fixed), classification of loads(point load,	10	20

	inclined point load, uniformly distributed load), Reactions of a simply supported and over hanging beam by analytical and graphical method.		
03	**Friction:** 3.1 Definition of friction, force of friction, limiting frictional force, coefficient of friction, angle of friction, angle of repose, relation among angle of friction, angle of repose and coefficient of friction. Cone of friction, types of friction, laws of friction, advantages and disadvantages of friction. 3.2 Equilibrium of bodies on level plane –external force applied horizontal and inclined (Pull & Push) 3.3 Equilibrium of bodies on inclined plane – external forces is applied parallel to the plane. 3.4 Ladder friction.	08	20
04	**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 geometrical figures. 4.2 **Centre of gravity:** Definition, centre of gravity of simple solids such as cylinder, sphere, hemisphere, cone, cube, and rectangular block. centre of gravity of composite solids.(No hollow solids shall be considered)	08	16
05	**Simple Machines:** 5.1 Definitions of simple machine & compound machine , load , effort , mechanical advantage , velocity ratio , input of a machine ,output of a machine ,efficiency of a machine , relation among mechanical advantage , velocity ratio and efficiency of a machine. Ideal machine, ideal effort and ideal load, friction in machines, effort lost in friction and load lost in friction. 5.2 Law of machine, maximum mechanical advantage and maximum efficiency of a machine, reversibility of a machine, condition for reversibility of a machine (no derivation) and 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, Two sheave & Three sheave pulley block.	10	20
	Total	**48**	**100**

Practical:

Skills to be developed:

Intellectual Skill:

1. Calculate the forces on given structure
2. Interpret the results

Motor Skills:

1. Handle the equipment carefully
2. Draw graph

The term work consists of any five experiments from Group A & any three experiments from group B and graphical solution of Group C.

Group A:

1) To verify law of polygon of forces.

2) To verify law of moments.

3) To verification of Lami's theorem.

4) To determine the forces in members of a jib crane.

5) Comparison of coefficient of friction of various pair of surfaces and

   determination of angle of repose.

6) To verify equilibrium of parallel forces – simply supported beam reactions.

7) 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

   1) Worm and worm wheel or Differential axle and wheel

   2) Weston's differential pulley block or Geared pulley block

   3) Single purchase crab or Double purchase crab

   4) Simple screw jack.

   5) Two sheave and three sheave pulley block

**Group C:** Graphical solutions on graph paper of the following :

1) Concurrent force system   :Two problems

2) Parallel force system   :Two problems

3) Reactions of a beam having vertical point loads & UDL :Two problems

Learning Resources:

Books:

Sr. No.	Author	Title	Publisher
01	Beer – Johnson	Engineering Mechanics	Tata McGraw Hill, Delhi
02	Basu	Engineering Mechanics	Tata McGraw Hill, Delhi
03	R. S. Khurmi	Applied Mechanics	Dhanpat Rai & sons, Delhi
04	Dhade, Jamdar & Walawalkar	Fundamental of Applied Mechanics	Pune Vidhyarthi Gruh Prakashion, Pune
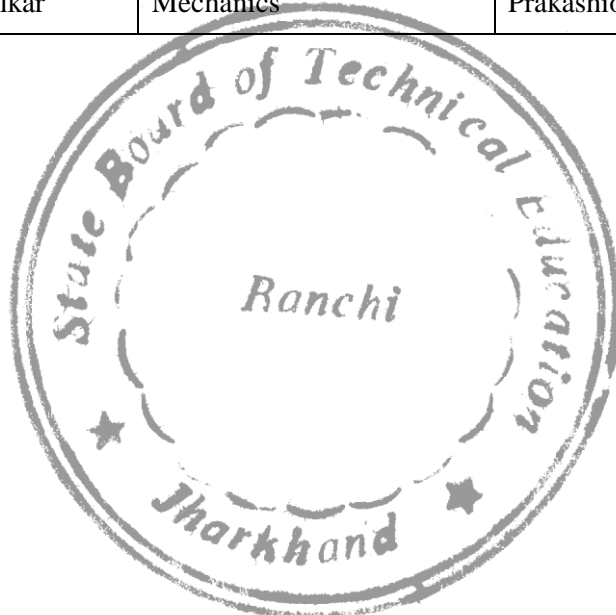
Course Name : **Electrical Engineering Group**

Semester : **Second**

Subject Title : **Fundamentals of Electrical Engineering.**

Subject Code : **12022**

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
03	--	02	03	100	50@	--	--	150

NOTE:

➢ **Two tests each of 25 marks to be conducted as per the schedule given by SBTE.**

➢ **Total of tests marks for all theory subjects are to be converted out of 50 and to be entered in mark sheet under the head Sessional Work. (SW)**

Rationale:

The Diploma Course in Electrical Engineering mainly involves the study of Electrical machines, equipments and instruments. In order to understand the working principle, construction, operation and applications of the various Electrical machines, equipments and instruments; the basic concepts, rules and laws of Electric and Magnetic Circuits must be studied and understood by the students of Electrical Engineering Course.

This subject will help the students to study, understand and comprehend the fundamentals of various facts, the basic concepts, rules and laws of Electric and Magnetic Circuits. This subject is classified as Engineering Science subject.

Objectives: The students will be able to,

1. State the definitions and units of various quantities used in Electricity, Magnetism and Electromagnetic Induction.

2. State and explain the various rules, laws of Electric and Magnetic circuits and Electromagnetic Induction.

3. Apply the laws of Electrical circuits to analyse Electrical circuits (DC).

4. Apply the laws of Magnetic Circuits to solve problems on Magnetic circuits.

5. Select and maintain the storage batteries.

LEARNING STRUCTURE:

Application

To understand the basic concepts & principles of Electrical Engg.

Procedure

| Analysis of DC Circuits. | Analysis of Magnetic Circuits | Self & Mutual Inductance | Selection & Maintenance of Storage Batteries |

Ohm's Law, Laws of Resistance, Kirchhoff's Laws.

Ohm's Law for Magnetic Circuit, Magnetic hysteresis.

Faraday's Laws of Electromagnetic Induction, Flemings Right Hand Rule, Lenz's Law**.**

Concept

Electric Current, EMF, Resistance, Capacitors, Electric Circuit.

Magnetic Flux, MMF, Reluctance, Magnetic Circuit.

Relationship Between Electricity & Magnetism.

Facts

Fundamentals of Electrical Engg. Machines, Equipments, Instruments and Storage Batteries.

Contents: Theory

Chapter	Name of the Topics	Hours	Marks

01	**Basic Concepts:**
	1.1 Concept of Electric Current.
	1.2 Concept of Electric Potential, Potential Difference (P D) and Electro-Motive-Force (EMF).
	1.3 Concept of Resistance,
	   - Laws of Resistance,
	   - Concept of Resistivity and Conductivity,
	   - Effect of Temperature on Resistance, Temp. co-efficient of Resistance (simple numerical)
	1.4 Classification of Electric Current:
	   - Direct Current (DC)
	   - Alternating Current (AC)
	1.5 Sources of Electric Current (DC)
	   - Concept of Voltage Source: Ideal and Practical
	   - Concept of Current Source: Ideal and Practical
	   - Source Conversion. (simple numerical)
	1.6 Effects of Electric Current (Only Introduction) Heating Effect, Magnetic Effect, Chemical Effect
	1.7 Concept of Electrical Work, Power and Energy.
	   - Their SI units (simple numerical)
	1.8 Types of Resistors and their Applications.
	   - Carbon Composition
	   - Deposited Carbon
	   - High Voltage Ink Film
	   - Metal Film
	   - Metal Glaze
	   - Wire Wound
	   - Cermet
		08	**12**

02	**D.C. Circuits:**
	2.1 Ohm's Law, Concept of Voltage drop and Terminal Voltage.
	2.2 Resistance in Series, Voltage Division Formula.
	2.3 Resistance in Parallel, Current Division Formula.
	2.4 Calculations of Equivalent Resistance of simple Series, Parallel and Series Parallel Circuits.(Simple Numerical)
	2.5 Duality Between Series and Parallel Circuits.
	2.6 Definitions of terms Related to Electric Circuits, Circuit Parameters, Linear Circuit, Non-linear Circuit, Bi-lateral Circuit, Uni-lateral Circuit, Electric Network, Passive Network, Active Network, Node, Branch, Loop, Mesh.
	2.7 Kirchhoff's Laws
	   - Kirchhoff's Current Law
	   - Kirchhoff's Voltage Law **(Simple Numerical with maximum two equations)**
	   - 2.8 Mesh Analysis - **(Simple Numerical with maximum two equations)**
		12	**24**

	- 2.9 Nodal Analysis **(Simple Numerical with maximum two equations)** 2.10 Star/Delta and Delta/Star Transformation. (Simple Numerical)		
03	**Capacitors:** 3.1 Concept and Definition of Capacitor 3.2 Parallel Plate Capacitor: - Uniform Di-electric Medium - Medium Partly Air. - Composite Medium. (Simple Numerical) 3.3 Capacitors in Series, Capacitors in Parallel 3.4 Calculations of Equivalent Capacitance of simple Series, Parallel and Series Parallel Combinations of Capacitors. (Simple Numerical) 3.6 Energy Stored in Capacitor. (No Derivation and Simple Numerical) 3.7 Charging and Discharging of Capacitor (No Derivation and Simple Numerical) 3.8 Concept of Breakdown Voltage and Di-electric strength 3.9 Types of Capacitors and their Applications. - Electrolytic , Non-Electrolytic (Paper, Mica, Plastic Film, Ceramic, Glass)	**07**	**16**
04	**Magnetic Circuits:** 4.1 Magnetic Circuit - Ohm's law of Magnetic Circuit. 4.2 Definitions Concerning Magnetic Circuit. - Magneto-Motive-Force (MMF), Ampere Turns (AT), Reluctance, Permeance, Reluctivity. 4.3 Comparison Between Electric and Magnetic circuit. 4.4 Composite Series Magnetic Circuit. 4.5 Parallel Magnetic Circuit. 4.6 Calculations of Amp.-Turns for simple Series, . (Simple Numerical) 4.7 Concept of Leakage Flux, Useful Flux & Fringing. 4.8 Magnetisation Curve (B - H Curve) - Magnetisation Curve for Magnetic and Non-Magnetic Materials. - Magnetic Hysteresis, Hysteresis Loop. - Hysteresis Loops for Hard & Soft Magnetic Materials. - Area of Hysteresis Loop, Hysteresis Loss. (No Derivation and No Numerical) 4.9 Types of Magnets and their applications. - Permanent Magnet, Electromagnet.	**07**	**16**
05	**Electromagnetic Induction:** 5.1- Relation Between Magnetism and Electricity. 5.2- Production of Induced E.M.F. and Current. 5.3- Faraday's Laws of Electromagnetic Induction. Faraday's First Law, Faraday's Second Law	**10**	**24**

| | | Total | 48 | 100 |

	(No Numerical)
	5.4 Induced E.M.F: Statically Induced E.M.F., Dynamically Induced E.M.F. (Simple Numerical)
	5.5 Direction of Induced E.M.F. and Currents.
	      - Fleming's Right Hand Rule
	      - Lenz's Law
	   Self Induced E.M.F., Mutually Induced E.M.F.
	5.6 Self Inductance
	5.7 Coefficient of Self-induction (L), (Simple Numericals)
	5.8 Mutual Inductance
	5.9 Coefficient of Mutual Inductance (M)
	    (Simple Numerical)
	5.10 Coefficient of Coupling (No Derivation and No Numerical)
	5.11 Inductances in Series. (No Derivation and No Numerical)
	5.12 Inductances in Parallel. (No Derivation and No Numerical)
	5.13 Types of Inductors and their Applications.
	      - Air Cored Inductors
	      - Iron Cored Inductors
	      - Ferrite Cored Inductors.
	5.14 Energy Stored in Magnetic Field
	   (No Derivation and No Numerical)			

06	**Storage Batteries:**
	6.1 Concept of Cell and Battery
	6.2 Electrical Characteristics of Batteries.
	     E.M.F., Terminal Voltage, Internal Resistance, Amp.Hour Capacity, Efficiency: AH Efficiency and Watt Hr Efficiency
	6.3 Necessity of Series Connection of Batteries
	6.4 Necessity of Parallel Connection of Batteries
	6.5 Charging of Batteries
	     - Constant Current Charging Method
	     - Constant Voltage Charging Method
	     - Precautions During Charging
	     - Indications of Fully Charged Cells
	6.6 Maintenance of Lead Acid Batteries.
	6.7 Applications of Storage Batteries.
		04	08

	Total	48	100

LIST OF PRACTICALS:

Skills to be developed

Intellectual Skills:

1. Identify ranges of instruments

2. Recollection of Laws & Rules of Elect. Engineering

Motor Skills:

1. Accuracy in measurement

2. Proper connections

(1)   To determine the temperature coefficient of resistance of copper.
(2)   To identify the nature of D.C. and A.C. Voltage.
(3)   To Verify Kirchhoff's Laws (KCL and KVL)
(4)   To determine the equivalent resistance (R_{eq}) of:
      (a) Series connected resistances.
      (b) Parallel-connected resistances.
(5)   To plot the charging and discharging curves of a capacitor and determine the time constant.
(6)   To plot the B H curve for magnetic material and determine the relative Permeability.
(7)   To plot the hysteresis loop for magnetic material and determine hysteresis loss. (8) To verify Faraday's First Law of Electromagnetic Induction (For Dynamically & Statically Induced EMF)

Learning Resources:

Books:

Sr. No.	Name of Book	Author	Publisher
1.	A Text Book of Electrical Technology Vol-I (Basic Electrical Engg.)	B. L. Theraja A. K. Theraja	S. Chand and Co.
2.	Basic Electrical Engg.	V. N. Mittle	Tata McGraw-Hill
3.	Electrical Technology	Edward Hughes	Pearson Education, New Delhi
4	Electrical Technology	V.K.Mehta	S. Chand and Co.

Course Name : All Branches of Diploma in Engineering and Technology

Semester   : SECOND

Subject Title   : Development of Life Skills-I

Subject Code : 12018

TEACHING AND EXAMINATION SCHEME:

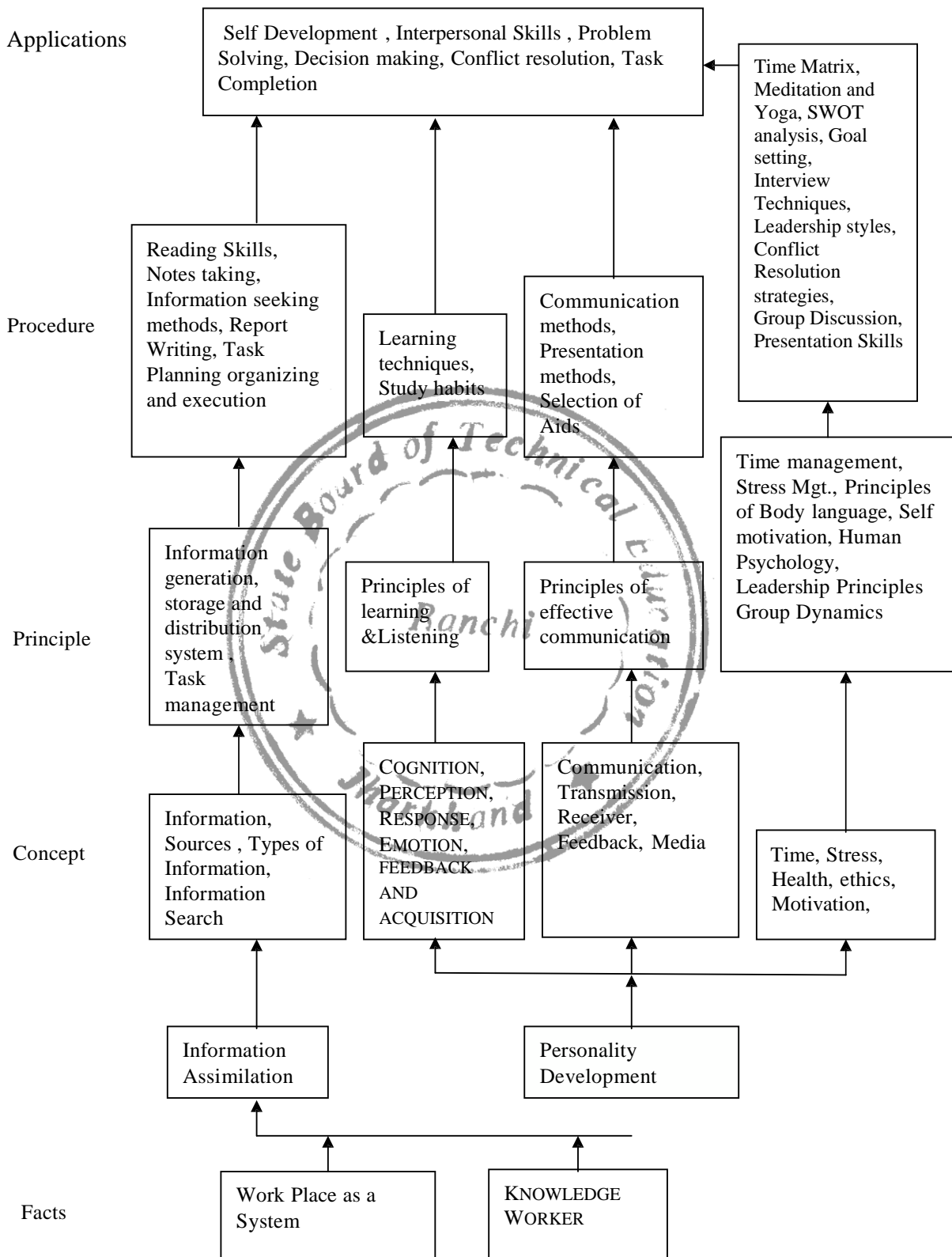| Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
01	--	02	--	--	--	25#	25@	50

Rationale:

In today's competitive world, the nature of organizations is changing at very rapid speed. In this situation the responsibility of diploma holder is not unique. He will be a part of a team in the organization. As such the individual skills are not sufficient to work at his best.

This subject will develop the student as an effective member of the team. 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. Such skills will enhance his capabilities in the field of searching, assimilating information, managing the given task, handling people effectively, solving challenging problems**.** The Subject Is Classified Under Human Science.

Objectives: The students will be able to:

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. Prepare report on industrial visit.
7. Apply techniques of effective time management.
8. Set the goal for personal development.
9. Enhance creativity skills.
10. Develop good habits to overcome stress.
11. Face problems with confidence.

LEARNING STRUCTURE:

Applications

Self Development , Interpersonal Skills , Problem Solving, Decision making, Conflict resolution, Task Completion

Time Matrix, Meditation and Yoga, SWOT analysis, Goal setting, Interview Techniques, Leadership styles, Conflict Resolution strategies, Group Discussion, Presentation Skills

Procedure

Reading Skills, Notes taking, Information seeking methods, Report Writing, Task Planning organizing and execution

Learning techniques, Study habits

Communication methods, Presentation methods, Selection of Aids

Principle

Information generation, storage and distribution system , Task management

Principles of learning &Listening

Principles of effective communication

Time management, Stress Mgt., Principles of Body language, Self motivation, Human Psychology, Leadership Principles Group Dynamics

Concept

Information, Sources , Types of Information, Information Search

COGNITION, PERCEPTION, RESPONSE, EMOTION, FEEDBACK AND ACQUISITION

Communication, Transmission, Receiver, Feedback, Media

Time, Stress, Health, ethics, Motivation,

Information Assimilation

Personality Development

Facts

Work Place as a System

KNOWLEDGE WORKER

Contents: Theory

Topic No	Contents	Hours
1	**Importance of DGS,** Introduction to subject, importance in present context ,application	01
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.	02

3	**Written communication**
	  METHOD OF NOTE TAKING
	   Report writing –Concept, types and format.
		01

4	**Self Analysis**
	Understanding self—
	   Attitude, aptitude, assertiveness, self esteem,
	   Confidence buildings. Concept of motivation.
		02

5	**Self Development** Stress Management –Concept, causes, effects ,remedies to void/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.	07

6	**Study habits**
	  Ways to enhance memory and concentration.
	  Developing reading skill.
	  Organisation of knowledge.
	  Model and methods of learning.
		03

	Total	**16**

LIST OF ASSIGNMENTS:
The Term Work Will Consist Of Following Assignments.
1) Self Awareness.
2) Techniques of developing positive attitude.
3) Learning, Memory and Concentration.
4) To understand the concept of study techniques and participate in a panel discussion on it.
5) To understand the concept of motivation and emotional intelligence.
6) Goal Setting.
7) Information search in library.
8) Information search through internet.
9) Time Management.
10) Health and stress Management
11) Assertiveness and confidence building
12) Creativity

w.ef. Academic Year 2011-12

*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.*

Learning Resources:

Books:

Sr. No	Author	Title of the book	Publisher
1	Marshall Cooks	Adams Time management	Viva Books
2	E.H. Mc Grath , S.J.	Basic Managerial Skills for All	Pretice Hall of India, Pvt Ltd
3	Allen Pease	Body Language	Sudha Publications Pvt. Ltd.
4	Lowe and Phil	Creativity and problem solving	Kogan Page (I) P Ltd
5	Adair, J	Decision making & Problem Solving	Orient Longman
6	Bishop , Sue	Develop Your Assertiveness	Kogan Page India
7	Marion E Haynes	Make Every Minute Count	Kogan page India
8	Pearson Education Asia	Organizational Behavior	Tata McGraw Hill
9	Michael Hatton (Canada – India Project)	Presentation Skills	ISTE New Delhi
10	--	Stress Management Through Yoga and Meditation	Sterling Publisher Pvt Ltd.
11	Richard Hale ,Peter Whilom	Target setting and Goal Achievement	Kogan page India
11	Chakravarty, Ajanta	Time management	Rupa and Company
12	Harding ham .A	Working in Teams	Orient Longman

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/

Course Name : Electrical Engineering Group

Semester   : Second

Subject Title : Computer Applications

Subject Code : 12023

Teaching and Examination Scheme:

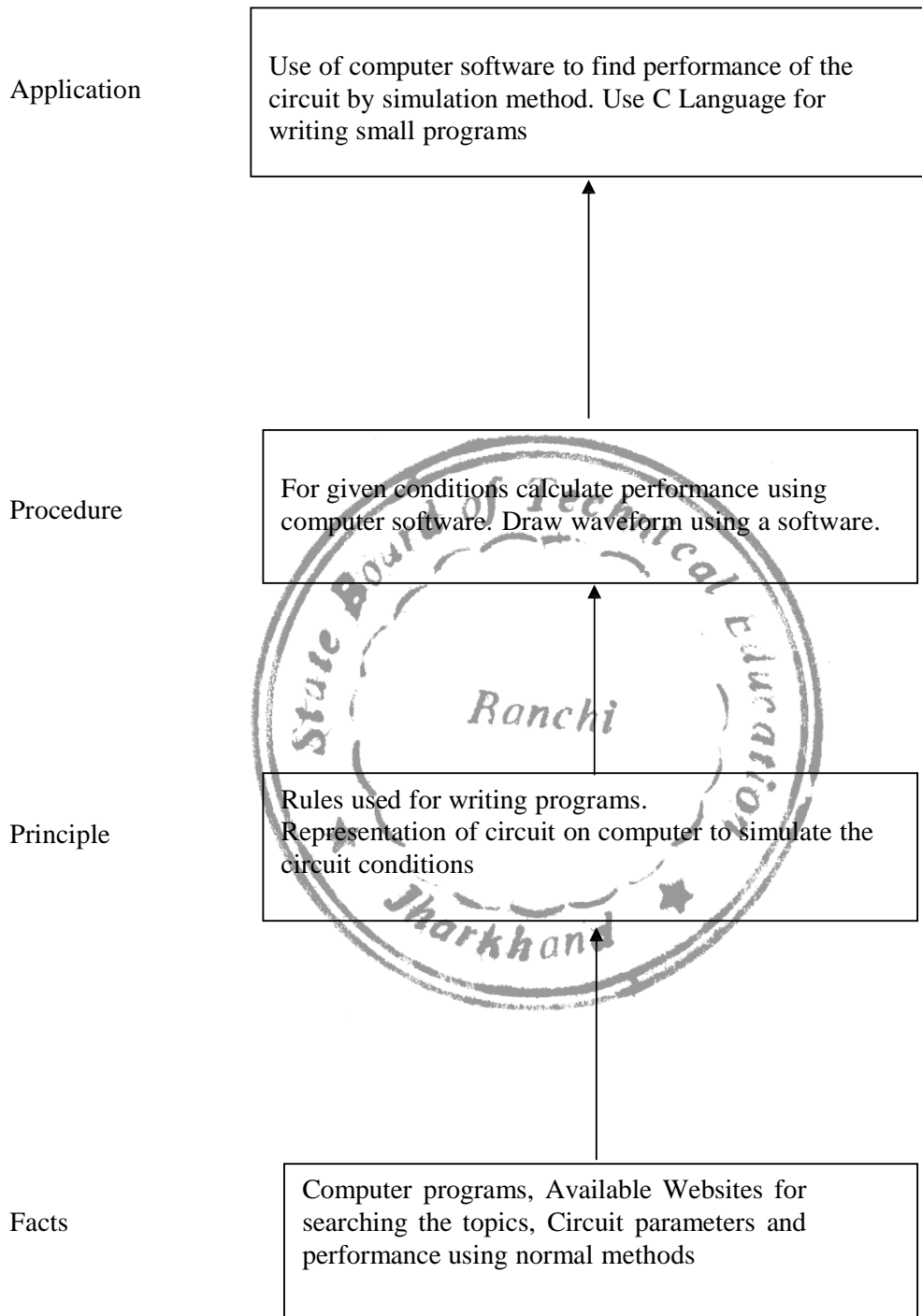| Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
--	--	04	--	--	50#	--	25@	75

Rationale:

Computer has becomes an important part in learning process. There number of Computer programs which help in designing, manufacturing, testing and operation of machines and equipment. It is therefore necessary that student learn the basics of the programs and are able to use/operate the program for given specific objectives.

Student should have good idea about the software available for their discipline and should able to use them. It not necessary that student should know the complete theory of development of the software and should beable to operate the soft ware.

Objectives: Student should be able to:

1. Use the software related to electrical engineering.
2. Able to write small programs.
3. Idnetify the use of computer Program for certain programs.
4. Simulate the circuits to judge performance of the circuit parameters.

Learning Structure:

Application

Use of computer software to find performance of the circuit by simulation method. Use C Language for writing small programs

Procedure

For given conditions calculate performance using computer software. Draw waveform using a software.

Principle

Rules used for writing programs.
Representation of circuit on computer to simulate the circuit conditions

Facts

Computer programs, Available Websites for searching the topics, Circuit parameters and performance using normal methods

Contents: Theory

Sr. No.	Name of the Topic	Hours
1	**Basics of C** 1.1 History of C, where C stands 1.2 C character set, tokens, constants, variables, keywords 1.3 C operators (arithmetic, Logical, assignment, relational, increment and decrement, conditional, bit wise, special, operator precedence), C expressions data types. 1.4 Formatted input, formatted output.	10

2	**Decision making**
	2.1 Decision making and branching
	    if statement (if, if-else, else-if ladder, nested if-else)
	    Switch case statement, break statement.
	2.2 Decision making and looping while, do, do-while statements for loop, continue statement.
		12

3	**Functions, Structures**
	4.1 Functions
	    Need of functions, scope and lifetime of variables, defining functions, function call (call by value, call by reference), return values, storage classes.
	    category of function (No argument No return value, No argument with return value, argument with return value), recursion.
	4.2 Structures
	    Defining structure, declaring and accessing structure members, initialization of structure, arrays of structure.
		12

4	**Pointers** 5.1 Understanding pointers, declaring and accessing pointers, Pointers arithmetic, pointers and arrays.	12
5	**P Spice** P Spice student version available free on internet. Use of this software to simulate circuit and network experiments and comparing the results with laboratory experiment results.	12
6	**Introduction to SCADA, Matlab software**	06
	Total	**64**

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

  Motor skills

- Proper handling of Computer System

List of Practical:

Write a C program

Any One

1) To display hexadecimal, decimal, octal format of the entered numbers.
2) To display entered number with leading zeros and trailing zeros.
3) To display entered numbers with right justification and left justification.

Any one

4) To demonstrate all possible formatting specifiers.

Any one

5) To find greatest/ smallest of 3 numbers.
6) To display pass class, second-class, distinction according to the marks entered.

Any one

7) To find even or odd numbers.
8) To display spellings of number 1-10 on entry.

Any one

9) To enter elements for 3X3 matrix and display them.
10) To calculate addition / subtraction of 2 dimensional matrix.
11) To calculate multiplication of 2 dimensional matrix.

Any one

12) To demonstrate output of standard library functions
Strlen(), strcpy(), strcat(),strcmp().

Any one

13) To calculate area of circle using function.
14) To calculate factorial of any given number using recursion.
15 to 18 Simulation of any four circuit and network experiments on P Spice

Learning Resources:
Books:

Sr.No.	Book Title	Author	Edition	Publication
1	Let's 'C'	Kanetkar	3rd	BPB
2	Programming in 'C'	Balgurusamy	3rd	Tata Mc-Graw Hill

'P- Spice' Student edition available on Internet.

Course Name : Electrical Engineering Group

Semester   : Second

Subject Title : Professional Practices-II

Subject Code : 12024

Teaching and Examination Scheme:

Teaching Scheme			Examination Scheme					
TH	TU	PR	PAPER HRS	TH	PR	OR	TW	TOTAL
--	--	02	--	--	--	--	50@	50

Rationale:

Most of the diploma holders jin industries. Due to globalization and competition in the industrial and service sectors the selection for the job is based on campus interviews or competitive tests.

While selecting candidates a normal practice adopted is to see general confidence, ability to communicate and attitude, in addition to basic technological concepts.
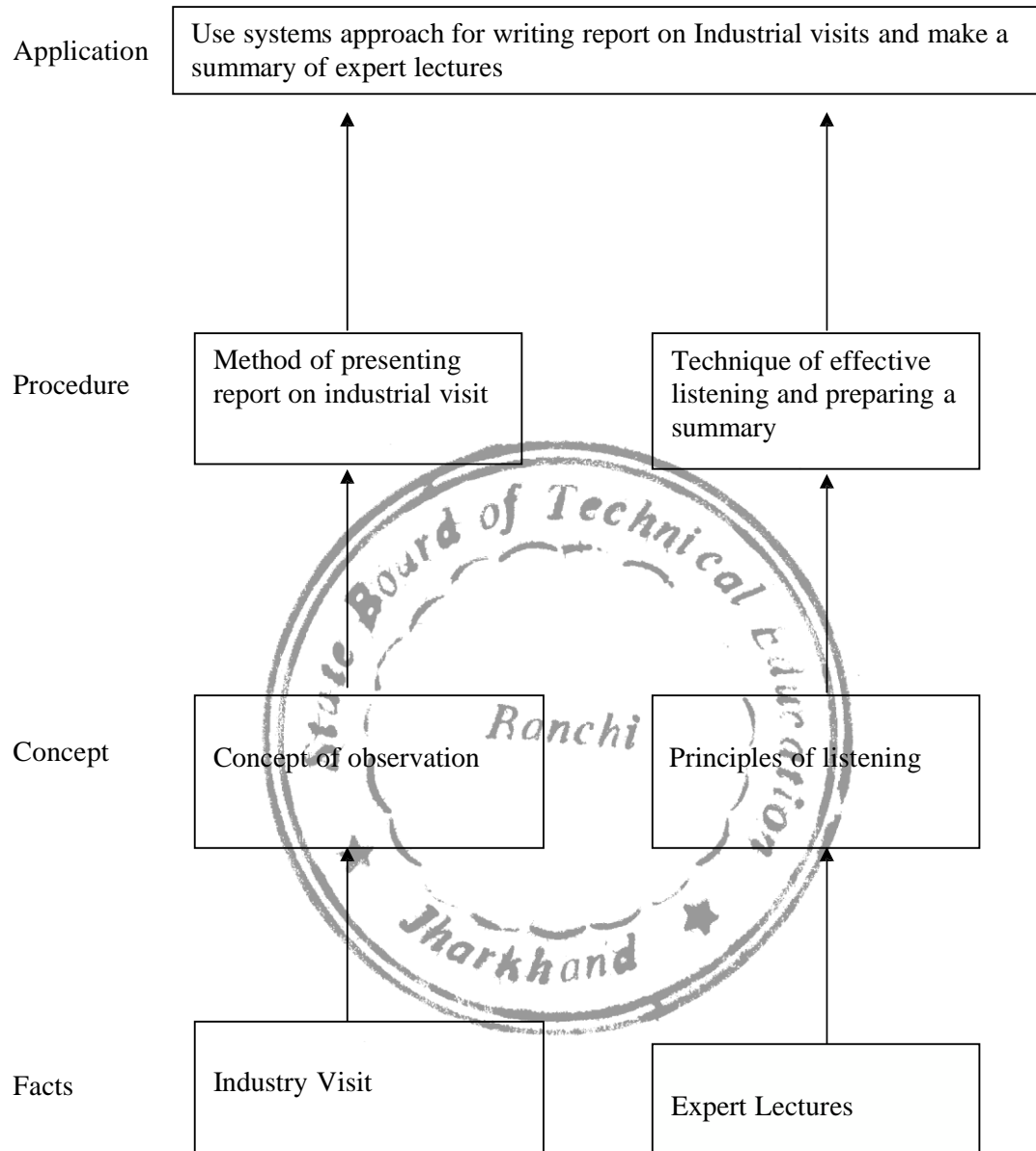
The purpose of introducing professional practices is to provide opportunity to students to undergo activities which will enable them to develop confidence. Industrial visits, expert lectures, seminars on technical topics and group discussion are planned in a semester so that there will be increased participation of students in learning process.

Objectives:

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.

LEARNING STRUCTURE:

Application

| Use systems approach for writing report on Industrial visits and make a summary of expert lectures |

Procedure

| Method of presenting report on industrial visit | | Technique of effective listening and preparing a summary |

Concept

| Concept of observation | | Principles of listening |

Facts

| Industry Visit | | Expert Lectures |

Sr. No.	Activity	Hours
1	**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. Visits to any two of the following : i) Construction site for residential / Public building for Electrical Installations ii) Petrol Pump iii) Distribution Sub station iv) Small Scale industry manufacturing Chokes, Small Transformers etc. v) Domestic Appliances repair centre	14
2	**Lectures by Professional / Industrial Expert to be organized on any three topics of the following suggested areas or any other suitable topics:** i) Pollution control. ii) Fire hazards due to short circuts iii) Fire Fighting / Safety Precautions and First aids. iv) Vedic Mathematics. v) Topics related to Social Awareness such as –Trafic Control System, Career opportunities , Communication in Industry, Yoga Meditation, Aids awareness and health awareness	10
3	**Group Discussion :** The students should discuss in group of six to eight students and write a brief report on the same as part of term work. The topic for group discussions may be selected by the faculty members. Some of the suggested topics are - i) Sports ii) Cultural iii) Discipline and House Keeping iv) Current topic related to Electrical Engineering field.	08
	Total	32