

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

Course of study and Scheme Examination of Diploma First Semester (2005-06) in
Electronics & Tele-communication

SEMESTER - I

S. No	Subject Code	Board of Study	Subject	Periods Per Week			Scheme of Examination					Total Marks	Credit [L+[T+P]] 2
				L	T	P	Theory			Practical			
							ESE	CT	TA	ESE	TA		
1	200111 (46)	Humanities	Communication Skills-I	3	1	-	100	20	20	-	-	140	4
2	200112 (14)	Basic Science	Applied Maths-I	3	2	-	100	20	20	-	-	140	4
3	200113 (15)	Basic Science	Applied Physics	3	1	-	100	20	20	-	-	140	4
4	200114 (11)	Basic Science	Applied Chemistry	3	1	-	100	20	20	-	-	140	4
5	228115 (37)	Mechanical Engg.	Basic Engg. Drawing	3	1	-	100	20-	20	-	-	140	4
6	228121 (26)	Electronics	Electronics Materials & Workshop	1	-	6	-	20	-	50	50	120	4
7	200121 (15)	Basic Science	Applied Physics Lab	-	-	3	-	-	-	50	20	70	2
8	200122 (11)	Basic Science	Applied Chemistry Lab	-	-	3	-	-	-	50	20	70	2
9	200125 (46)	Humanities	Group Discussion	-	-	2	-	-	-	-	40	40	1
Total				16	6	14	500	120	100	150	130	1000	29

L – Lecturer,

ESE – End Semester Exam,

T – Tutorial,

CT – Class Test, TA – Teachers Assessment

P – Practical,

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

Semester – 1st Semester

SUBJECT - COMMUNICATION SKILL-I

Code 200111(46)

Branch / Discipline - Computer Science & Engineering / Electronics & Telecommunication / Information Technology / Civil / Mechanical / Electrical / Metallurgy/ Costume Design & Dress Making / Modern Office Management / Architecture/ Interior Decoration & Design / Instrumentation / Mining & Mine Surveying

Minimum Number of class tests to be conducted -2

SCHEME OF STUDY

S.No.	Topic	No. of Hours / Period of Study	Marks Allotted
		Theory	
1.	Passages for comprehension	16	30
2.	Short Stories	08	15
3.	Applied Grammar	16	25
4.	Letter Writing	08	20
5.	Report Writing	08	10
	TOTAL	56	100

Note: For spoken English integrated approach may be adopted .

COURSE CONTENTS

S.No.	Topics	Sub Topic
	Section -A	
1.	Passage for Comprehension	(1)Language of Science (2) Robotic Revolution (3) Designing a Car (4)New Wonders of camera (5)Non-conventional sources of Energy (6)Our Environment (7)Enterpreneurship (8)Safety practices
2.	Short-Stories	(1)Selfish Giant-Oscar Wilde (2)A Letter to God-Gregario Lapex Y-Fuentes An astrologer’s Day –R.K. Naragyan

3.	Applied Grammar	(1)Determiners (2)Auxiliaries (3)Tenses (4)Conditional (5)Passive (6)Prepositions (7)Subject-verb Agreement (8)Clauses & Connectors
SECTION-B		
4.	Letter Writing	(1)Application (For Job/Leave) (2)Letter of Enquiry and replies (3)Letter for Order Placement (4)Letter of Complaints (To Editor/ Appropriate Authorities)
5.	Report Writing	(1)Writing Progress – Report of a job (2)General outline for preparing A Project Report.

LIST OF REFERENCE BOOKS

- 1.Communication Skill for Teaching Students Book-I. M/s Somaiya Publications. Pvt. Ltd., Bhopal.
- 2.Living English Structure –W.S. Allen
- 3.Practical English Grammar (Exercises I by Thomson & Martinet)
- 4.English conversation practice by Grant Taylor.

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

Semester – 1st Semester

SUBJECT - APPLIED MATHEMATICS-I

Code - 200112(14)

Branch / Discipline - Computer Science and Engineering / Electronic & Telecommunication / Information Technology / Civil /Mechanical / Electrical / Metallurgy / Mining and Mine Surveying / Instrumentation.

Minimum number of class tests to be conducted - 2

SCHEME OF STUDY

S. No.	Unit	Topic	No. of Hours/ Periods	Marks Allotted
1.	Unit -01	Algebra	06	10
2.	Unit -02	Trigonometry	08	10
3.	Unit -03	Coordinate Geometry	08	10
4.	Unit -04	Conic Section	08	10
5.	Unit -05	Differential Calculus	06	10
6.	Unit -06	Methods of Differentiation	08	10
7.	Unit -07	Vector Algebra	08	10
8.	Unit 08	Multiplication of Vector	07	10
9.	Unit -09	Statistics	06	10
10.	Unit -10	Dispersions & Deviation	07	10
TOTAL			70	100

COURSE CONTENTS

S. No.	Topic	Topic/ Sub Topic	Contents
1.	Topic-01	Algebra- Determents Mean and R.M.S. VALUE quadratic Equation Partial Fraction	Concept and principles of determents. Properties of determents Computation of Mean and R.M.S. Value General equation of second degree, Nature of roots, Formation of Equation Class- I, II,III, IV
2.	Topic-02	Trigonometry Trigonometrically ratios of multiple and submultiples	Half angles, Double Angles, Triple angles General solution of Trigonometrically equation

		angles Trigonometrically Equations	
3.	Topic-03	Coordinate Geometry Coordinate S/systems Distance Division	Cartesian and Polar coordinates distance between two points, Division of a line segment
		Standard form of the equation of a straight line Change of Axes	Locus standard forms. General equation of a straight line and its rotation to the structural forms, Straight line through one and two point Transformation of coordinates when the origin is shifted or the axes are rotated
4.	Topic-04	Conic Section Circle Conic Section	Definition, Standard forms, General equation, Center and radius. Parabola Ellipse
5.	Topic-05	Differential Calculus Functions Limit	Independent and dependent variables, different type of functions, Concept of limit and its valuation
6.	Topic-06	Method of Differentiation Differentiation by first principle	Differentiation by first principle of Algebra, Trigonometrical, Exponential and Logarithmic functions. Differentiation of sum, Product and quotient of two functions and functions of a function
7.	Topic-07	Vector Algebra Introductions Vector Addition of Vector Component of Vector	Concept of Vector and Scalar Quantities Understand the Principle of addition, subtraction of Vector Component of Vector, Standard unit Vectors i, j, k
8.	Topic-08	Multiplication of Vector	Scalar product and its applications, Vector products and application
9.	Topic-09	Statistics Frequency Distribution central Tendency	Introduction , Graphical representation , Histogram, France polygon, Frequency , Curve, Central Tendency Mean, Median , Mode

10	Topic-10	Dispersions & Deviation	Measure of dispersion Range Quartile deviation Standard, Deviation Rood Mean square deviation

LIST OF REFERENCE BOOKS

- Mathematics for Polytechnic Volume I, TTTI Publication
- Applied Mathematics, EEB Publication , Bhopal
- Differential Calculus, By Gorakh Prasad
- Integral Calculus, By Gorakh Prasad
- Coordinate Geometry, By. S.L. Loney

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

Semester – 1st Semester

SUBJECT - APPLIED PHYSICS

Theory Code – 200113(15)

Branch / Discipline- Computer Science and Engineering / Electronics and Telecommunication/ Information Technology / Civil / Mechanical/ Electrical / Metallurgy / Mining and Mine surveying / Instrumentation

Minimum number of class tests to be conducted - 2

SCHEME OF STUDY

S.No.	Unit Topic/ Sub Topic		No. of Hours/Periods		Marks Allotted
			Theory	Practical	
	General Properties of Matter				
1.	Unit -01	Unit , Measurement & Vector	05	42	10
2.	Unit –02	Force, Motion & Gravitation	08		10
3.	Unit -03	Elasticity, Surface Tension & Viscosity	07		10
	Sound				
4.	Unit –04	Periodic Motion & Waves, Ultrasonic	05		10
	Heat				
5.	Unit –05	High Temperature Measurement , Kinetic theory of Gases	06		10
6.	Unit -06	Thermodynamics	03		10
	Light				
7.	Unit –07	Reflection, Refraction & Dispersion of Light	05		10
8.	Unit -08	Optical Instruments	05	10	
	Electricity & Magnetism				
9.	Unit -09	Magnetism	05	10	
	Modern Physics				
10.	Unit –10	Photoelectric effect, x-rays, laser, fiber optics, Microwaves, Electron Microscope	07	10	
	TOTAL		56	42	100

COURSE CONTENTS -

GENERAL PROPERTIES OF MATTER :-

1.Units, Measurement & Vectors :-

Fundamental units, Derived units, unit system, S.I. units – Their impotence & notation, Base, S.I. units system & Abbreviations, Principle of vernier calipers, screw gauge & Speedometer.

Scalar & Vector quantities, Representation of Vectors, kinds of Vectors, addition & Subtraction of vectors, multiplication of a vector by a scalar, linear combination of vectors, Resolution of vector, position vector, scalar products & vector product.

2.Force, Motion & Gravitation

2.1Classification of motion– Characteristic of different types of motion, Newton’s laws of motion, Conservative & non-conservative force, speed & Velocity , Acceleration, equation of motion, concept of mass, weight & weightlessness, Friction, limiting friction, Angle of friction and coefficient of friction, Static & dynamic friction, Friction-a necessity and an evil.

2.2Circular motionMotion of a particle on the circle with constant speed, Related Physical quantities, Relation between linear & angular velocities, centripetal & centrifugal forces, Banking of Road and bending of cyclist.

2.3Rotatory motionAxis of motion, moment of inertia, Radius of gyration , Kinetic energy of rotation, derivation of equation of kinetic energy of a rotating body. Torque acting on a particle, angular momentum, relation between torque and angular acceleration.

Newton’s law of Gravitation, Basic forces in nature, Gravitational field, Potential, Relation between “g” & “G” , factors influencing “g” escape velocity, kepler’s Laws of planetary motion, satellites, Time period of satellites , simple pendulum.

3.Elasticity, Surface Tension & Viscosity :-

Concept of elasticity , Deformation, Stress, Strain- its kinds and units, Hooke’s law, elastic unit , elastic fatigue, Moduli of elasticity’s, Young’s Modulus and its determination by Searl’s method.

Molecular forces, cohesive and adhesive forces, surface tension & surface energy, Reason for spherical shape of Rain Drops, Angle of contact, pressure difference a liquid surface excess pressure inside a liquid drop & soap bubble, shape of liquid surface In a capillary tube, Rise of liquids in a capillary tube, Determination of surface tension by capillary rise method. ‘Effect of temperature on surface tension, examples of surface tension.

Concept of viscosity & coefficient of viscosity, streamline and Turbulent flow, Reynolds number, Poiseuille's equation for the flow of liquid through a tube, Stoke's law & Terminal velocity, Determination of "n" by falling sphere method.

Sound

4. Periodic motion & waves, Ultrasonic :-

Necessary conditions for the appearance & pursuance of periodic motion, classification of periodic motion based on forces acting on the source, necessary condition for the motion to be simple harmonic, characteristics of simple harmonic motion, Energy of a particle executing simple harmonic motion, Types of wave motion, equation of a plane progressive wave, Particle velocity & wave velocity.

Ultrasonic waves, production of Ultrasonic waves, applications of Ultrasonic waves.

Heat

5. High Temperature Measurement, Kinetic theory of Gases :-

Principle of Resistance Thermometer, Platinum resistance Thermometer, See back Effect and Thermoelectric Thermometer, Thermocouple, Temperature of inversion and neutral temperature, Relate Thermos e.m.f. with temperature, Optical pyrometer, Comparative study for range and accuracy of above Thermometers.

Concepts of a perfect gas, Postulates of kinetic Theory of gases, Pressure exerted by a perfect gas (no derivation of formula) Kinetic interpretation of temperature and Absolute Zero, deduction of gas laws.

6. Thermodynamics :-

First law of Thermodynamics, Mechanical equivalent of heat, specific heat of gases, Relation $C_p - C_v = R/J$, Isothermal & Adiabatic changes, concept of Latent heat of fusion of ice and vaporization of water.

Light

7. Reflection, Refraction & Dispersion of light: -

Laws of reflection at plane & spherical surface. Definition of center of curvature, radius of curvature, principle axis, principal focus and focal length, engineering application of laws of reflection.

Refraction at a plane surface, laws of refraction, Absolute and relative refractive index, critical angle and total internal reflection of light, refraction through lens (no

derivation of formula), Magnification combination of Lenses and power of lens.

Refraction through prism, angle of minimum deviation and their relation, Dispersion and Dispersive power, pure and impure spectrum, Electromagnetic spectrum and its visible range.

8 Optical Instruments :-

Simple microscope, compound microscope, Astronomical telescope , Terrestrial telescope , Kaleidoscope.

Electricity & Magnetism

Electrostatics :-

Electric Charge, Coulomb's Law , Electric Field & Potential, Potential Difference Between Two Points, Equipotential Surfaces, dielectric Strength, Capacity, Units, Principle of Capacitor, Factors Affecting Capacity, Type of Capacitors.

Magnetism:-

Magnetic lines of force, lines of induction, Magnetic induction, magnetic field around a current carrying conductor, direction of magnetic field and current, magnetic field due to a circular loop, Biot Savarts law field due to a long linear conductor, force experienced by a current carrying conductor in a magnetic field, definition of unit current, force between two long parallel conductors.

Magnetic materials, molecular theory & magnetism, Di. Para and ferromagnetic substances. Fleming's Right hand & Left Hand Thumb Rule, Maxwell's Screw Rule, Hysteresis Loop, Electromagnetic Induction, Introduction, Faraday's law of Electromagnetic Induction, Induced E.M.F., Lenz's law , Self & Mutual Induction.

9 Modern Physics :-

Photoelectric effect : Photoelectron, laws of photoelectric emission, Planck's quantum law , Einstein's photoelectric equation, Threshold frequency , Photo cell.

X-rays : production properties & uses.

Laser : Spontaneous and stimulated emission, population inversion, pumping and active system , method of production, ruby and semi conductor laser, uses.

Fiber optics : Principle, application & uses.

Electron microscope its principle & construction .

LIST OF EXPERIMENTS

- 1.To measure radius of curvature of given curved surface using .
- 2.To determine the value of “g” using simple pendulum.
- 3.To determine Young’s modulus of elasticity of the material of given wire using Searl’s apparatus.
- 4.To determine surface tension of water by capillary rise method.
- 5.To determine coefficient of viscosity of a fluid by Poiseuille’s method.
- 6.To determine refractive index of the material of prism using graph.
- 7.To determine focal length of concave mirror & convex lens.
- 8.To determine focal length of combination of two lenses.
- 9.To determine mechanical equivalent of heat by using Joules colorimeter.
- 10.To plot magnetic lines of force in N-N and N-S condition.

REFERENCE BOOKS -

- 1.Applied Physics Vol. I&II H.C. Saxena & Prabhakar Singh
- 2.Applied Physics Vol. I&II D.Halliday & R.Rasnick
- 3.Engineering Physics – BVN Rao
- 4.Principles of Physics – K.K. Mohindroo
- 5.Basic Principles of Physics – Brij Lal Subramanyam .

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

Semester – 1st Semester

SUBJECT - APPLIED CHEMISTRY

Theory Code – 200114(11)

Branch / Discipline - Computer Science and Engineering /Electronics & Telecommunication /Information Technology/Civil/ Mechanical / Electrical /Metallurgy/Mining and Mine surveying/Instrumentation.

Minimum number of class tests to be conducted – 2

SCHEME OF STUDY

S. No.	Chapter	Topics	No. of Theory hours / Periods	No. of Practical Hours/ Periods	Marks Allotted
1.	Chapter -1	(a)Atomic structure (b)Nuclear Chemistry	08	42	10
2.	Chapter – 2	(a)Periodic Table and periodic properties. (b)Chemical Bonding	07		10
3	Chapter – 3	(a)Electrochemistry (b)Colloids	07		10
4	Chapter – 4	Metals and metallurgy	04		10
5	Chapter – 5	(a)Metal alloys (b)Corrosion and protection	07		10
6	Chapter – 6	Polymers and Polymerisation	05		10
7	Chapter – 7	Fuels & Explosives	05		10
8	Chapter – 8	Lubricants paints and varnishes	04		10
9	Chapter – 9	Water Treatment	04		10
10	Chapter – 10	Pollution	05		10
		Total	56	42	100

COURSE CONTENTS -

S. No.	Chapter	Topics	Contents Details
1	Chapter – 1	(a) Atomic Structure	Electronic structure of atoms, Discovery of electrons, protons and neutrons. Rutherford, model and Bohr's, Bohr's – Burry scheme of distributions of electrons. Dual nature of matter and Radiations, De-Broglie's Equation, Heisenber's uncertainty principle, quantum numbers, sub energy level and distribution of electrons in sub-shells and concept of Electronic configuration of atoms, Auffbaus's rule, Pauli's exclusion principle. Hund's rule of maximum multiplicity.
		(b) Nuclear Chemistry	Nuclear rays, method of Detection, properties, disintegration theory of radio activity Nuclear reactions, Mass defect and Binding energy, Nuclear Fission, Nuclear Fussion
2	Chapter – 2	(a) Periodic Table and Periodic properties	Introduction, modern Periodic law classification of elements In to s-, p, d & f- block elements Periodic properties of elements, Periodicity atomic and ionic radii, ionization potential, electron affinity, Electronegativity.
		(b) Chemical Bonding	Theory of Chemical Bonding, Types of Bonds, Ionic or electrovalent bonds, Covalent bond, coordination bond, Hydrogen bonding concept of resonance.
3	Chapter – 3	(a) Electro Chemistry	Electrolytes and conductors, strong and weak electrolyte, conductivity, Arrhinus theory of electrolysis, Kohlrausch law, Ostwald dilution laws, Transport no. Faraday's Law of Electrolysis

			Electrochemical equivalent, Definition of pH, Law of mass action, Buffer solutions, calculation of Ph. Value of a Buffer solution, Acid Base Concept.
		(b) Colloids	Types of colloidal solution, preparation of colloids, properties of colloidal solutions, Origin of change on colloidal particles, precipitation of Coagulation of colloidal solution. Protective colloids and Gold number, Emulsions cleansing action of soaps, Detergents, Gels.
4	Chapter – 4	Metal and metallurgy	Occurrence, extraction, properties and engineering uses of heavy metals with special reference to Cu, Fe, Zn, Al, Si, Ge, C Electro magnetic properties of Fe, Ni, Co, Cr.
5	Chapter – 5	(a) Metal & Its Alloys (b) corrosion and protection	Properties, constitution and Engineering uses of common alloys like Brass, Bronze, German Silver, Duralumin, Solder, stainless steel pressure and die casting alloy, Bearing alloys. Corrosion of metals, Types of corrosion, Galvanic Series, corrosion control, protective coatings. Coating processes with special emphasis on electroplating and electro typing .
06.	Chapter -06	Polymers & Polymerization	Physical properties of the polymers condensation and addition polymerization. Copolymers, effect of structure of polymer on properties, classification of polymers, Rubber –Vulcanization and compounding reclaimed rubber , Buna SBR Neoprene ,Polyurethanes silicons, Fibers- Nylon, Dacron, orlon, polyester, Plastics and Resins – Thermoplastics and Thermosetting resins, Thermo cole and glass wool. Adhesives
07.	Chapter -07	Fuels and Explosives	Classification of fuels, solid fuels, liquid fuels, gaseous fuels, characteristics of a good fuel, calorific value, Determination of calorific value by Bomb calorimeter, Explosives- classification and application.

08.	Chapter -08	Lubricants , Paints and Varnishes	Lubricant- meaning types, theory of lubrication, properties of a good lubricants with special emphasis on Flash, Fire point, pour point and cloud point. Specification number and viscosity, Paints and Varnish – Constituents, properties and uses. 05
09.	Chapter –09	Water Treatment	Water hardness, types and units, Determination of hardness of water by E.D.T.A. method and O Hehners method. Softening of hard water , lime soda process and Permutit process.
10	Chapter –10	Pollution	Pollution – meaning, causes of Pollution, air pollution, pollutants, causes of depletion of ozone layer, influence of ozone layer depletion. Acid rain, Water pollution, sources of Water pollution BOD, COD, Soil pollution, Green house effect, Radioactive Pollution, Effects and preventive measures of pollution.

PRACT. CODE – 200122(11)

PRACTICALS/EXPERIMENTS

1. Identification of two cations and two anions in a given sample of ore/powder/mixture.
2. To determine percentage of copper in a given sample by Brass titration.
3. To determine percentage of Iron in a iron salt by redox titration.
4. Calorimetric estimation of metals in a given sample of a alloy.
5. Measurement of Ph of different solutions.
6. To find out the hardness of water by EDTA method.
7. Proximate analysis of a sample of coal.
8. To find out the Flash point/Fire point of dry/non drying oils.
9. Determination of Viscosity by Red wood Viscometer.
10. Determination of Calorific value (C.V.) of solid fuel by Bomb Calorimeter.

LIST OF REFERENCE BOOKS

1. Engineering Chemistry by O. P. Agrawal.
2. Engineering Chemistry by Jain and Jain.
3. Physical Chemistry by Glosstone.
4. Organic Chemistry by Sarkar and Rakshit.
5. Engineering Chemistry by M. M. Uppal Revised by S. C. Bhatia.
6. Modern Text Book of Applied Chemistry by P.C. Jain, Dr. G. C. Saxena and Dr.A. K. Goswami.

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

Semester – 1st Semester

SUBJECT - BASIC ENGINEERING DRAWING

Code – 228115(37)

Branch / Discipline – Electronics and Tele-communication

Minimum number of class tests to be conducted – 2

SCHEME OF STUDY -

S. No.	Chapter Name	No. of Hours/ Periods	Marks Allotted
1	Introduction	3	6
2	Planning and layout of drawing	4	6
3	Lines and lettering	4	6
4	Dimension techniques	3	4
5	Projection of Points and Lines	4	6
6	Projection of Planes and Solids	9	16
7	Orthographic Projection	10	16
8	Isometric Projection	10	17
9	Sectional-views	5	15
10	Freehand Sketching	4	8
		56	100

COURSE CONTENTS -

Chapter – 1 INTRODUCTION

- PURPOSE OF DRAWING

- INSTRUMENTS AND THEIR USES
 - Drawing board.
 - T-Square.
 - Mini drafter.
 - Protractor.
 - French curve.
 - Template.

- Stencils.
- Instrument box containing precision compass, divider and ink pen etc.
- Different types of pencils HB, H, 2H, 3H, etc.
- Eraser (Rubber) (soft)
- Drawing Sheets.

- PROPER HANDLING OF DRAWING INSTRUMENTS AND MATERIALS
- PRACTICE PROBLEMS OF SIMPLE GEOMETRICAL CONSTRUCTION
 - Construction of circle.
 - Bi-section of line.
 - Bi-section of an angle.
 - Construction of a regular polygon.
 - Connecting circles and straight lines.

Chapter – 2 PLANNING AND LAYOUT OF DRAWING

Planning and layout of drawing, Planning of drawing sheet as per Indian standard, Standard sizes of drawing sheet A0 to A5, Marginal space & Title block, Folding of drawing sheet; Standard scale, Enlarging scale. Reducing scale, Practice of drawing enlarging and reducing scale (Engineering scale). Form associated with engineering curves. Types of engineering curves. Method of construction of engineering curves.

Chapter – 3 LINES AND LETTERING

- TYPES OF LINES AND THEIR APPLICATIONS
 - Out line.
 - Dimension line.
 - Extension line.
 - Construction line.
 - Hatching line.
 - Hidden line.
 - Centre and locus line.
 - Cutting plane line.
 - Short break line.
 - Long break line.
 - Cutting plane line.
- PRACTICE PROBLEM FOR REPRESENTING OF EACH TYPE OF LINE
- SINGLE STROKE VERTICAL CAPITAL LETTERS AND LINEAR CASE LETTERS
- STANDARDIZED LETTERING SIZES (NOMINAL SIZES)
- DIMENSION AND SPACES
 - Height of capital letter.
 - Height of small letter.

- Bottom length.
- Smallest space between letters.
- Line thickness.
- Slope of lettering.
-

- PRACTICE PROBLEM OF WRITING SINGLE STROKE VERTICAL CAPITAL AND LOWER CASES LETTERS
- STANDARD PRACTICE OF WRITING NUMERALS
 - Single stroke vertical.

Chapter – 4 DIMENSION TECHNIQUES

- NEED OF DIMENSIONING
 - Arrow head.
 - Extension line.
 - Dimension line.
 - Leader line.
- SYSTEMS OF DIMENSIONING ALIGNED SYSTEM
 - Uni-directional system.
- CORRECT METHOD OF DRAWING
 - Arrow heads.
 - Extension or projection lines.
 - Dimension lines.
 - Leader line.

Chapter – 5 PROJECTION OF POINTS AND LINES

- DEFINITION OF PROJECTION, PROJECTION OF POINTS & LINES
- CLASSIFICATION OF PROJECTION
- PROJECTION OF POINTS IN DIFFERENT PLANES
- PROJECTION OF LINES IN DIFFERENT PLANE
- LINES INCLINED TO ONE REFERENCE PLANE

Chapter – 6 PROJECTION OF PLANES AND SOLIDS

- PROJECTION OF PLANES OF FOLLOWING SHAPES
 - Circular.
 - Rectangular.

- Pentagonal.
- Hexagonal.

- PROJECTIONS FOR ABOVE PLANES FOR INCLINED TO ONE PLANE
 - For a Cube, Prism, Pyramid, Cons etc.
- PROJECTION OF FOLLOWING SOLIDS, INCLINED TO ONE REFERENCE PLANE
 - Prism.
 - Cube.
 - Pyramid.
 - Cylinder.
- PROJECTION OF ABOVE SOLIDS WHEN SECTION RESTING ON BASE AND GROUND

Chapter – 7 ORTHOGRAPHIC PROJECTION

- VARIOUS TERMS ASSOCIATED WITH ORTHOGRAPHIC PROJECTION
 - Object.
 - Projectors.
 - Plane of projection (views.
 - Direction of Vision.
 - Horizontal plane (H.P.)
 - Vertical plane (V.P.)
- ANGLE PROJECTION METHOD
- SYMBOLIC REPRESENTATION OF FIRST ANGLE PROJECTION
- METHOD OF DRAWING THREE VIEWS
- THIRD ANGLE PROJECTION METHOD
- DESIGNATION OF VIEWS
 - Front view (Front elevation)
 - Top view (Plan).
- SIDE VIEW (SIDE ELEVATION)
- METHOD OF DRAWING THREE VIEWS
- DIFFERENCE BETWEEN FIRST ANGLE & THIRD ANGLE METHODS OF PROJECTION
- PRACTICE PROBLEM FOR DRAWING PROJECTION OF CUBE, CONE SPHERE, CYLINDER AND VARIOUS ELECTRICAL/ELECTRONIC COMPONENTS

Chapter – 8 ISOMETRIC PROJECTION

- MEANING OF ISOMETRIC PROJECTION
- CONSTRUCTION OF AN ISOMETRIC SCALE AND RULES OF DIMENSIONING AN ISOMETRIC VIEW
- METHOD OF CONSTRUCTING ISOMETRIC VIEWS OF RECTANGULAR BLOCK, HEXAGONAL PRISM, PENTAGONAL PYRAMID AND CYLINDRICAL BLOCK
- EXERCISE PROBLEMS FOR DRAWING ISOMETRIC PROJECTION OF MECHANICAL, ELECTRICAL AND ELECTRONICS COMPONENTS LIKE

Chapter – 9 SECTIONAL-VIEWS

- GENERAL CONCEPT OF SECTIONING
- EXERCISE PROBLEM OF PROJECTION AND SECTIONING OF MECAHNICAL, ELECTRICAL AND ELECTRONICS COMPONENTS
- CONIC SECTION

Chapter – 10 FREEHAND SKETCHING

- ITEMS FOR FREE HAND SKETCHING
 - Sketch paper.
 - Pencil.
 - Eraser (Rubber)
- PRACTICE OF FREE HAND SKETCHING OF ORTHOGRAPHIC VIEWS OF REGULAR SOLIDS
 - Cube.
 - Prism.
 - Cylinder, Nut & Bolt and Regular Solids.
- FREE-HAND ISOMETRIC DRAWING OF RECTANGULAR PENTAGONAL, HEXAGONAL PRISMS & PYRAMIDS, CYLINDER AND CONE, ELECTRICAL ELECTRONIC COMPONENTS

DURATION OF END SEMESTER THEORY EXAMINATION: 4 Hours

SUGGESTED LIST OF PRACTICALS/TUTORIALS

- PROBLEMS ON SCALES AND LETTERINGS (ONE SHEET).
- PROBLEMS ON CURVES (ONE SHEET).
- SIMPLE ORTHOGRAPHIC PROJECTIONS –ONE FOR FIRST ANGLE AND

ONE FOR THIRD ANGLE PROJECTION (TWO SHEETS).

- ORTHOGRAPHIC PROJECTIONS WITH SECTIONS (ONE SHEET).
- ISOMETRIC PROJECTION FOR TWO OBJECTS (ONE SHEET).
- PROJECTION OF POINTS AND LINES (ONE SHEET).
- PROJECTION OF SOLIDS (TWO SHEETS).
- PROJECTION OF PLANES (ONE SHEET).

SUGGESTED INSTRUCTIONAL STRATEGIES

- CHALK & TALK METHOD TO EXPLAIN THE VARIOUS PRINCIPLES
- DEMONSTRATION AND USE OF INSTRUMENT USED IN DRAWING
- CLASSROOM PRACTICES FOR DIFFERENT TYPICAL EXERCISES
- OHP TRANSPARENCIES FOR COMPLICATED DRAWING OBJECTS

SUGGESTED LEARNING RESOURCES

- CHARTS
- WORKBOOK
- PRACTICE SHEETS
- ENGINEERING DRAWING TOOLS

REFERENCE BOOKS

S. No.	Title	Author, Publisher, Edition & Year
1	Elementary Engineering Drawing	Shri. N. D. Bhatt, Charoter Publisher, Anand
2	Engineering Drawing	Shri. Gujral and Shende, Khanna Publications, New Delhi
3	Engineering Drawing	Shri. R. B. Gupta, Satya Prakashan, Delhi
4	Work book in Mechanical Drafting	TTTI (Now NITTTR), Bhopal

LAB-MANUAL

NON-PRINT MATERIAL

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

Semester – 1st Semester

SUBJECT - ELECTRONICS MATERIALS & WORKSHOP

Code -228121(26)

Branch / Discipline – Electronics and Tele-communication

Minimum number of class tests to be conducted – 2

SCHEME OF STUDY

S. No.	Topic	No. of Hours/ Periods		Total No. of Periods
		Lecture	Practical	
1	Electronics Components identification	2	12	14
2	Common and Accessories	2	12	14
3	Soldering Techniques	2	12	14
4	Common measuring instruments	2	12	14
5	Cables and connectors	1	6	7
6	Connectors	2	12	14
7	Engineering materials symbols and circuit Diagram	3	18	21
	Total	14	84	98

DURATION OF END SEMESTER PRACTICAL EXAMINATION : 3 Hours.

COURSE CONTENTS :

Chapter – 1 ELECTRONICS COMPONENTS & IDENTIFICATION

- **RESISTORS:**
 - Various types of Carbon Resistors & their Application.
 - Wire-wound Resistors & their Application.
 - Metal Resistors & their Application.
 - Printed Circuit Resistors & their Application.
 - Linear & Logarithmic Potentiometer.
 - Preset.
- **CAPACITORS:**
 - Electrolytic Capacitor & their Application.
 - Paper Capacitor & their Application.
 - Ceramic Capacitor & their Application.
 - Mica Capacitor & their Application.
 - Polystyrene.
 - Variable Capacitor.

- Trimmer.
- COILS:
 - Transformers.
 - Relays.
 - Radio, RF and Antenna Coils.

- DISPLAYS:
 - Light Emitting Displays (LED), 7- Segment LED, Matrix LED.
 - Alpha-Numeric Display.
 - Liquid Crystal Displays (LCD).
 - Nixie Tubes.
 - Cathode Ray Tube (CRT).

- ACTIVE DEVICES:
 - Diodes.
 - P-n Junction Diode, Zener-Diode, Photo-Diode, IR Diode.
 - Transistors.
 - BJT, UJT, FET, MOSFET, P-MOS, N-MOS, C-MOS.
 - Ics.
 - Type of IC-Packaging (Metal Can/DIL/Flat etc.)
 - Various Series of Linear/Analog & Digital Series.

Chapter – 2 COMMON TOOLS & ACCESSORIES

- CUTTING & BENDING TOOLS
 - Wire Cutter.
 - Wire Stripper.
 - Wire Lead Bender.
 - Various types of Pliers.
 - Vice.
 - Crimping Tools (RJ-11/RJ-45)
 - Tongs & Tweezers.
 - Screw-Drivers.

- DRILL MACHINE
 - Hand Drill Machine (Electric & Manual)
 - Bench-Drill Machine

- SOLDERING TOOL
 - Soldering Iron.
 - Soldering Gun.
 - De-soldering Pump.
 - Soldering Work Station.

Chapter – 3 SOLDERING TECHNIQUES

- SOLDER MATERIALS
 - Composition of Solder-Wire.

-Flux & Flux-Material.

- **SOLDERING METHODS**
 - General Soldering Procedures.
 - Bits used for various type of soldering.
 - Measures for Good Soldering.
 - Identification of Faculty Solder Joints.
- **PRINTED CIRCUIT BOARDS**
 - Various types of PCB Materials & their uses.
 - General Purpose PCBs.
 - General concept of PCB Lay-out Design.

Chapter – 4 COMMON MEASURING INSTRUMENTS

- **MULTIMETER**
 - Analog Multi-meters & Its Features.
 - Digital Multi-Meter & Its Features and Limitations.
 - Measurement of Resistance.
 - Measurement of Voltage.
 - Measurement of Current.
 - Continuity Testing.
 - Diode Terminal Identification.
 - Transistor Terminal Identification.
- **PANEL METERS**
 - Various Types Panel Meter.
 - Use & Need of Panel Meters.
 - Connection of Panel-Volt Meter / Panel Ammeter.
- **LCR-METER**
 - Introduction to LCR-Meter.
 - Measurement of Resistance.
 - Measurement of Inductance.
 - Measurement of Capacitance.
 - Measurement of Q-Factor.
- **REGULATED POWER SUPPLY**
 - Coarse Voltage /Current Control.
 - Fine Voltage/Current Control.
- **FUNCTION GENERATOR & CRO**
 - Use & Application of Function Generator.
 - Use of CRO for viewing Wave-forms.
 - Measurement of Amplitude & Calculating Frequency with CRO.

Chapter – 5 CABLES & CONNECTORS

- IDENTIFICATION OF CABLES
 - Twisted Pair Cable.
 - Flat Ribbon.
 - Co-Axial Cable.
 - 3-Core Power Cable.
 - Fiber Optic Cable.

- IDENTIFICATION OF CONNECTORS
 - BNC
 - Banana.
 - Crocodile.
 - D-Type Male Female.
 - Flat Cable Connector.
 - Various Types of PCB Connector.
 - UTP.

Chapter – 6 ENGINEERING MATERIALS

- CLASSIFICATION OF MATERIALS
 - Conductors.
 - Insulators.
 - Semi-Conductor.
 - Energy Band Diagram.
 - Atomic Structure.

- SEMICONDUCTOR
 - Semiconductor Materials.
 - P-type & n-type Semiconductor.

- CLASSIFICATION OF MAGNETIC MATERIAL
 - Ferro-Magnetic.
 - Dia-Magnetic.
 - Para-Magnetic.
 - Ferri-Magnetic.

Chapter – 7 SYMBOLES & CIRCUIT DIAGRAM : L

- SYMBOLS FOR ELECTRICAL CIRCUIT-ELEMENTS.
- SYMBOLES FOR ELECTRONIC DEVICES & CIRCUIT ELEMENTS.
- SYMBOLS FOR PROGRAMMING FLOW-CHART.
- SYMBOLS FOR COMMONLY USED CIRCUIT BLOCKS.
- CIRCUIT DRAWING TECHNIQUES.
- LABELLING OF CIRCUIT ELEMENTS.
- SPECIFICATION OF ELECTRONIC COMPONENT.

LIST OF PRACTICALS:

1. Identify the various types of resistances and Find out the values from color bands on/written values them.
2. Find out the value of a resistance with the help of Color-Bands & by use of Multi-meter and the difference in values.
3. Identify the various types of Capacitances and Find out the values using Color Code/written values on them.
4. Identify the type of Components and find out the values using LCR-Meter.
5. Identify the terminals of a Diode and its Polarity.
6. Identify the terminals of a Transistor and its Type (n-p-n or p-n-p)
7. Check the continuity of a printed line on a PCB using Multi-meter.
8. Identify the various tools & write down their uses.
9. Identify the various type of connector used in various Gadgets & Instruments/Equipments.
10. Identify the various types of Copper-Clads and write down their application.
11. Draft a design lay-out for a FW-Rectifier (On Paper/Graph) using Pen/Pencil/Drafting Aid.
12. Solder the joint connection of wires and check it. De-solder it and Re-solder.

INSTRUCTIONAL STRATEGIES:

1. Available resources in the institution may be used for the identification of type of Tools & Tackles, commonly used in Electrical/Electronics Workshop.
2. Visits in the nearby industries may be organized for viewing the production line and the use of Tools & Tackles, Instruments.
3. Explanation of the method for the selection of Materials (Type, Quality, Quantity, Size etc.)
4. Motivating to adopt Safety Precautions & Procedure for developing Safety Awareness towards the handling of Tools, Equipments, Chemical Hazards etc.
5. Retracing the PCB Lay-out of Electronic Gadget to understand the procedure of PCB Lay-out drafting.

LEARNING RESOURCES:

(a) REFERENCE BOOKS

1. Printed Circuit Board, Design & Technology,
by Collin Boschart, Tata mcgrow Hill New Delhi.
2. Basic Electronics & Linear circuits,
by Bargava & Gupta, Tata mcgrow Hill.
3. Practical Semiconductor Data Manuals,
by BPB Publication New Delhi.
4. Transistor Selector Data Manual,
by Towers International BPB Publications, New Delhi.
5. A course in Electrical Engg. Materials,
by S P Seth & A. V. Gupta, Dhanpat Rai & Sons.
6. Electronic Computer & Materials,

by M. V. Jarhi A. H. Wheeler & Co., Allahabad.
7.Electrical Engg. Materials,
by A. J. Dekker.

(b) LAB MANUAL

Lab. Manual & Teacher Guide in Basic Electronics,
by TTTI Bhopal & DTE Goa.

(c) NON PRINT MATERIAL

**CHHATTISGARH SWAMI VIVEKANAND TECHNICAL
UNIVERSITY, BHILAI**

Semester – 1st Semester

Subject – Group Discussion

Code – 200125(46)

Branch /Discipline – Electronics and Tele communication / Computer Science and Engineering /Information Technology

Total Practical Periods - 28

Topics to be covered in tutorial:

- Myths connected with GD
- How to deal with GD topics
- Interpersonal Skills
- Problem Solving Skills
- Individual Behaviour and Personality
- Group Behaviour
- Functional and Dysfunctional Behaviour
- Leadership & Display of Leadership Qualities
- Effective Intervention
- Do's and Don'ts
- Common Mistakes in GD
- Practical Tips

Suggested References:

- Krishna Mohan & Meera Banerjee-“Developing Communication Skills”, Mac Millan India Ltd. New Delhi, 2001.
- Rajendra Pal and JS Korlahalli – “Essentials of Business Communication”, Sultan Chand and Sons, 1997.