DIPLOMA WING

# RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA,BHOPAL

SCHEME OF STUDIES & EXAMINATIONS ( IMPLEMENTED FROM SESSION : JULY-2023)

**FIRST SEMESTER - GROUP 'A'**

: NAME OF THE PROGRAMME :

Agriculture,Aircraft Maintenance,Automobile,Chemical,CSE,CHM,Electronics & Tele.,Electronics & Inst., Electrical & Electronics Engg.,Electrical & Mech.Engg.,Electronics Engg.,IT,Mechanical,Opto Electronics,RAC

| S.N. | PAPER CODE | SUBJECT CODE | SUBJECT NAME | THEORY COMPONENT | | | | | | | | PRACTICAL COMPONENT | | | | | TOTAL CREDITS | TOTAL MARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | HRS PER WEEK | CREDITS | TERM WORK | | | | THEORY PAPER | | HRS PER WEEK | CREDITS | LAB WORK | PRACTICAL EXAM/VIVA | | | |
| | | | | | | QUIZ/ASSIGNMENT | MID TERM TEST* | | TOTAL | MARKS | DURATION | | | | MARKS | DURATION | | |
| | | | | | | | I | II | | | | | | | | | | |
| 1 | 7350 | 101 | MATHEMATICS - I | 4 | 4 | 10 | 10 | 10 | 30 | 70 | 03 Hrs. | 0 | 0 | 0 | 0 | 0 | 4 | 100 |
| 2 | 7351 | 102 | APPLIED PHYSICS - I | 3 | 3 | 10 | 10 | 10 | 30 | 70 | 03 Hrs. | 4 | 2 | 20 | 30 | 3 Hrs. | 5 | 150 |
| 3 | 7352 | 103 | APPLIED CHEMISTRY | 4 | 4 | 10 | 10 | 10 | 30 | 70 | 03 Hrs. | 4 | 2 | 20 | 30 | 3 Hrs. | 6 | 150 |
| 4 | 7353 | 104 | COMMUNICATION SKILLS IN ENGLISH | 4 | 4 | 10 | 10 | 10 | 30 | 70 | 03 Hrs. | 2 | 1 | 20 | 30 | 3 Hrs. | 5 | 150 |
| 5 | | | ENGINEERING GRAPHICS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 40 | 60 | 3 Hrs. | 2 | 100 |
| 6 | | | ENGINEERING WORKSHOP PRACTICE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 40 | 60 | 3 Hrs. | 2 | 100 |
| 7 | | | SPORTS AND YOGA | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 20 | 30 | 3 Hrs. | 1 | 50 |
| 8 | | | LIBERARY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | | | | 15 | 15 | | | | 120 | 280 | | 21 | 10 | 160 | 240 | | 25 | 800 |

**NOTE -** (1)* Two Best, out of Three Mid Term Tests (Progressive Tests) Marks should be entered here.

(2) Mandatory Induction Program, right at the start of the first year.

| GRAND TOTAL OF CREDITS |
|---|
| 25 |

| GRAND TOTAL OF MARKS |
|---|
| 800 |

**DIPLOMA WING**
**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

*SEMESTER I – GROUP 'A'*

| | | |
|---|---|---|
| COURSE TITLE | : | MATHEMATICS - I |
| PAPER CODE | : | 7350 |
| SUBJECT CODE | : | 101 |
| TREORY CREDITS | : | 04 |
| PRACTICAL CREDITS | : | 00 |

**Course Objectives:**

This course is designed to give a comprehensive coverage at an introductory level to the subject of Trigonometry, Differential Calculus and Basic elements of algebra.

**Course Content:**

**UNIT - I: Trigonometry**

Concept of angles, measurement of angles in degrees, grades and radians and their conversions, T-Ratios of Allied angles (without proof), Sum, difference formulae and their applications (without proof). Product formulae (Transformation of product to sum, difference and vice versa). T- Ratios ofmultiple angles, sub-multiple angles (2A, 3A, A/2). Graphs of sin x, cos x, tan x and $e^x$ .

**Differential Calculus**

Definition of function; Concept of limits. Four standard limits $\lim_{x \to a} \frac{x^n - a^n}{x-a}$, $\lim_{x \to 0} \frac{\sin x}{x}$, $\lim_{x \to a} \left(\frac{a^x - 1}{x}\right)$ and $\lim_{x \to a} \left(\frac{a^x - 1}{x}\right)$

Differentiation by definition of $x^n$, sin x cos x, tan x, $e^x$ and $\log_a x$. Differentiation of sum, prod-uct and quotient of functions. Differentiation of function of a function. Differentiation of trig- onometric and inverse trigonometric functions, Logarithmic differentiation, Exponential functions.

**UNIT - III: Algebra**

**Complex Numbers:** Definition, real and imaginary parts of a Complex number, polar and Cartesian, representation of a complex number and its conversion from one form to other, conjugate of a com-plex number, modulus and amplitude of a complex number Addition, Subtraction, Multiplication and Division of a complex number. De-movier's theorem, its application.

**Partial fractions:** Definition of polynomial fraction proper & improper fractions and definition of partial fractions. To resolve proper fraction into partial fraction with denominator containing non-repeated linear factors, repeated linear factors and irreducible non-repeated quadratic factors.To resolve improper fraction into partial fraction.

**Permutations and Combinations:** Value of ${}^nP_r$ and ${}^nC_r$.

**Binomial theorem:** Binomial theorem (without proof ) for positive integral index (expansion and general form); binomial theorem for any index (expansion without proof) first and second binomial approximation with applications to engineering problems

**References:**


1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, New Delhi, 40th Edition, 2007.
2. G. B. Thomas, R. L. Finney, Calculus and Analytic Geometry, Addison Wesley, 9th Edition, 1995.
3. Reena Garg, Engineering Mathematics, Khanna Publishing House, New Delhi (Revised Ed. 2018)
4. V. Sundaram, R. Balasubramanian, K.A. Lakshminarayanan, Engineering Mathematics, 6/e., Vikas Publishing House.
5. Reena Garg & Chandrika Prasad, Advanced Engineering Mathematics, Khanna Publishing House,New Delhi


**Course Outcomes:**

By the end of the course, the students are expected to learn

(i) The students are expected to acquire necessary background in Trigonometry to appreciate the importance of the geometric study as well as for the calculation and the mathematical analysis.

(ii) The ability to find the effects of changing conditions on a system.

(iii) Complex numbers enter into studies of physical phenomena in ways that most people cannot imagine.

(iv) The partial fraction decomposition lies in the fact that it provides an algorithm for computing the antiderivative of a rational function.

**DIPLOMA WING**
**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

*SEMESTER I – GROUP 'A'*

| | | |
|---|---|---|
| COURSE TITLE | : | APPLIED PHYSICS - I |
| PAPER CODE | : | 7351 |
| SUBJECT CODE | : | 102 |
| TREORY CREDITS | : | 03 |
| PRACTICAL CREDITS | : | 02 |

**Course Objectives:**
Applied Physics includes the study of a large number of diverse topics all related to materials/things that exist in the world around us. It aims to give an understanding of this world both by observation and by prediction of the way in which such objects behave. Concrete use of physical principles and analysis in various fields of engineering and technology are given prominence in the course content. The course will help the diploma engineers to apply the basic concepts and principles to solve broad-based engineering problems and to understand different technology based applications.

**Teaching Approach:**

- Teachers should give examples from daily routine as well as, engineering/technology applications on various concepts and principles in each topic so that students are able to understand and grasp these concepts and principles. In all contents, SI units should be followed.
- Use of demonstration can make the subject interesting and develop scientific temper in the students. Student activities should be planned on all the topics.
- Activity- Theory - Demonstrate/practice approach may be followed throughout the course sothat learning may be outcome and employability based.

**Course Content:**

**Unit 1**: **Physical world, Units and Measurements**

Physical quantities; fundamental and derived, Units and systems of units (FPS, CGS and SI units),

Dimensions and dimensional formulae of physical quantities, Principle of homogeneity of dimensions, Dimensional equations and their applications (conversion from one system of units to other, checking of dimensional equations and derivation of simple equations), Limitations of dimensional analysis.

Measurements: Need, measuring instruments, least count, types of measurement (direct, indirect), Errors in measurements (systematic and random), absolute error, relative error, error propagation, error estimation and significant figures.

**Unit 2: Force and Motion**

Scalar and Vector quantities – examples, representation of vector, types of vectors. Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statement only), Scalar and Vector Product, Resolution of a Vector and its application to inclined plane and lawn roller.

Force, Momentum, Statement and derivation of conservation of linear momentum, its applications such as recoil of gun, rockets, Impulse and its applications.

Circular motion, definition of angular displacement, angular velocity, angular acceleration,

frequency, time period, Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical), Centripetal and Centrifugal forces with live examples, Expression and applications such as banking of roads and bending of cyclist.

**Unit 3: Work, Power and Energy**

Work: Concept and units, examples of zero work, positive work and negative work
Friction: concept, types, laws of limiting friction, coefficient of friction, reducing friction and its engineering applications, Work done in moving an object on horizontal and inclined plane for rough and plane surfaces and related applications.

Energy and its units, kinetic energy, gravitational potential energy with examples and derivations, mechanical energy, conservation of mechanical energy for freely falling bodies, transformation of energy (examples).

Power and its units, power and work relationship, calculation of power (numerical problems).

**Unit 4**: **Rotational Motion**

Translational and rotational motions with examples, Definition of torque and angular momentum and their examples, Conservation of angular momentum (quantitative) and its applications.

Moment of inertia and its physical significance, radius of gyration for rigid body, Theorems of parallel and perpendicular axes (statements only), Moment of inertia of rod, disc, ring and sphere (hollow and solid); (Formulae only).

**Unit 5**: **Properties of Matter**

Elasticity: definition of stress and strain, moduli of elasticity, Hooke's law, significance of stress-strain curve.

Pressure: definition, units, atmospheric pressure, gauge pressure, absolute pressure, Fortin's Barometer and its applications.

Surface tension: concept, units, cohesive and adhesive forces, angle of contact, Ascent Formula (No derivation), applications of surface tension, effect of temperature and impurity onsurface tension.
Viscosity and coefficient of viscosity: Terminal velocity, Stoke's law and effect of temperature on viscosity, application in hydraulic systems.

Hydrodynamics: Fluid motion, stream line and turbulent flow, Reynold's number Equation of continuity, Bernoulli's Theorem (only formula and numericals) and its applications.

**Unit 6: Heat and Thermometry**

Concept of heat and temperature, modes of heat transfer (conduction, convection and radiation with examples), specific heats, scales of temperature and their relationship, Types of Thermometer (Mercury thermometer, Bimetallic thermometer, Platinum resistance ther-mometer, Pyrometer) and their uses.

Expansion of solids, liquids and gases, coefficient of linear, surface and cubical expansions and relation amongst them, Co-efficient of thermal conductivity, engineering applications.

**Learning Outcome:**
After undergoing this subject, the student will be able to:

- Identify physical quantities, select their units for use in engineering solutions, and make measurements with accuracy by minimizing different types of errors.
- Represent physical quantities as scalar and vectors and solve real life relevant problems.
- Analyse type of motions and apply the formulation to understand banking of roads/railway tracks and conservation of momentum principle to describe rocket propulsion, recoil of gunetc.
- Define scientific work, energy and power and their units. Drive relationships for work, energy and power and solve related problems.
- Describe forms of friction and methods to minimize friction between different surfaces.
- State the principle of conservation of energy. Identify various forms of energy, and energytransformations.
- Compare and relate physical properties associated with linear motion and rotational motionand apply conservation of angular momentum principle to known problems.
- Describe the phenomenon of surface tension, effects of temperature on surface tension andsolve statics problems that involve surface tension related forces.
- Describe the viscosity of liquids, coefficient of viscosity and the various factors affecting its value. Determine viscosity of an unknown fluid using Stokes' Law and the terminal velocity.
- Define stress and strain. State Hooke's law and elastic limits, stress–strain diagram, determine; (a) the modulus of elasticity, (b) the yield strength (c) the tensile strength, and (d) estimate the percent elongation.
- Illustrate the terms; heat and temperature, measure temperature in various processes on different scales (Celsius, Fahrenheit, and Kelvin etc.)
- Distinguish between conduction, convection and radiation; identify different methods for re-ducing heat losses and mode of heat transfer between bodies at different temperatures.
- State specific heats and measure the specific heat capacity of solids and liquids.

**References:**


1. Text Book of Physics for Class XI& XII (Part-I, Part-II); N.C.E.R.T., Delhi
2. Applied Physics, Vol. I and Vol. II, TTTI Publications, Tata McGraw Hill, Delhi.
3. Concepts in Physics by HC Verma, Vol. I & II, Bharti Bhawan Ltd. New Delhi
4. Engineering Physics by PV Naik, Pearson Education Pvt. Ltd, New Delhi
5. Engineering Physics by DK Bhhatacharya & PoonamTandan; Oxford University Press, New Delhi.
6. Comprehensive Practical Physics, Vol, I & II, JN Jaiswal, Laxmi Publications (P) Ltd., New Delhi
7. Practical Physics by C. L. Arora, S. Chand Publication.
8. e-books/e-tools/ learning physics software/websites etc.

# APPLIED PHYSICS – I LAB

**Course Objectives**

Study of Applied Physics aims to give an understanding of physical world by observations and predictions. Concrete use of physical principles and analysis in various fields of engineering and technology is very prominence. The course aims to supplement the factual knowledge gained in the lecture by first hand manipulation of apparatus. This will develop scientific temper and help to apply the basic concepts and principles in solving engineering and technology based problems. In addition, students get necessary confidence in handling equipment and thus learn various skills in measurement.

**List of Practical's/Activities** (To perform minimum 10 practical's).

1. To measure length, radius of a given cylinder, a test tube and a beaker using a Vernier caliper and find volume of each object.
2. To determine diameter of a wire, a solid ball and thickness of cardboard using a screwgauge.
3. To determine radius of curvature of a convex and a concave mirror/surface using a spher-ometer.
4. To verify triangle and parallelogram law of forces.
5. To find the co-efficient of friction between wood and glass using a horizontal board.
6. To determine force constant of a spring using Hook's Law.
7. To verify law of conservation of mechanical energy (PE to KE).
8. To find the moment of inertia of a flywheel.
9. To find the viscosity of a given liquid (Glycerin) by Stoke's law.
10. To find the coefficient of linear expansion of the material of a rod.
11. To determine atmospheric pressure at a place using Fortin's barometer.
12. To measure room temperature and temperature of a hot bath using mercury thermometerand convert it into different scales.

**Learning Outcome:**

After undergoing this lab work, the student will be able to:

- Select right kind of measuring tools (Meter scale, Vernier caliper, Screw gauge, Spherometer etc.) for determining dimensions of physical quantities and make measurements with accuracy and precision.
- Differentiate various shapes and determine dimensions of plane, curved and regular surfaces/bodies.
- Apply and Verify laws of forces and determine resultant force acting on a body.
- Appreciate role of friction and measure co-efficient of friction between different surfaces.
- Describe and verify Hook's law and determine force constant of spring body.
- Identify various forms of energy, energy transformations and verify law of conservation ofenergy.
- Understand rotational motion and determine M.I. of a rotating body (flywheel)
- Understand Stoke's law for viscous liquids and determine viscosity of a given liquid.
- Understand how materials expand on heating and determine linear expansion coefficient for a given material rod.
- Understand working and use Fortin's barometers for determining pressure at a place.
- Understand use of thermometers to measure temperature under different conditions anddifferent scales of temperature measurements.

**SUGGESTED STUDENT ACTIVITES & STRATEGIES**

Apart from classroom and laboratory learning following are the suggested student related activitieswhich can be undertaken to accelerate the attainment of various outcomes of the course

a. Make survey of different physical products and compare the following points
    - Measurements of dimensions
    - Properties
    - Applications
b. Library survey regarding engineering materials/products used in different industries
c. Seminar on any relevant topic.

Teachers should use the following strategies to achieve the various outcomes of the course.

- Different methods of teaching and media to be used to attain classroom attention.
- Massive open online courses (MOOCs) may be used to teach various topics/sub topics.
- 15-20% of the topics which are relatively simpler of descriptive in nature should be given to the students for self-learning and assess the development of competency through classroompresentations.
- Micro-projects may be given to group of students for hand-on experiences.

**References:**


1. Text Book of Physics for Class XI& XII (Part-I, Part-II); N.C.E.R.T., Delhi
2. Comprehensive Practical Physics, Vol, I & II, JN Jaiswal, Laxmi Publications (P)Ltd.,
3. Practical Physics by C. L. Arora, S. Chand Publication.

e-books/e-tools/ learning physics software/YouTube videos/websites


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**DIPLOMA WING**
**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

*SEMESTER I – GROUP 'A'*

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|---|---|---|
| COURSE TITLE | : | APPLIED CHEMISTRY |
| PAPER CODE | : | 7352 |
| SUBJECT CODE | : | 103 |
| TREORY CREDITS | : | 04 |
| PRACTICAL CREDITS | : | 02 |

**Course Objectives:**

There are numerous number materials are used in fabricating and manufacturing devices for the comfort of life. The selection, characterization and suitability assessment of natural raw materials essentially requires principles and concepts of Applied Chemistry for technicians. On successful completion of this course content will enable technicians to understand, ascertain and analyse and properties of natural raw materials require for producing economical and eco-friendly finished products.

- Solve various engineering problems applying the basic knowledge of atomic structure andchemical bonding.
- Use relevant water treatment method to solve domestic and industrial problems.
- Solve the engineering problems using knowledge of engineering materials and properties.
- Use relevant fuel and lubricants for domestic and industrial applications
- Solve the engineering problems using concept of Electrochemistry and corrosion.

**Course Content:**

- **Unit 1: Atomic Structure, Chemical Bonding and Solutions**

  Rutherford model of atom, Bohr's theory (expression of energy and radius to be omitted), and hydrogen spectrum explanation based on Bohr's model of atom, Heisenberg uncertainty principle, Quantum numbers – orbital concept. Shapes of s,p and d orbitals, Pauli's exclusion principle, Hund's rule of maximum multiplicity Aufbau rule, electronic configuration.

  Concept of chemical bonding – cause of chemical bonding, types of bonds: ionic bonding (NaCl example), covalent bond ($H_2$, $F_2$, HF hybridization in $BeCl_2$, $BF_3$, $CH_4$, $NH_3$, $H_2O$), coordination bond in $NH_4^+$, and anomalous properties of $NH_3$, $H_2O$ due to hydrogen bonding, and metallic bonding.

  Solution – idea of solute, solvent and solution, methods to express the concentration of solution- molarity (*M* = mole per liter), ppm, mass percentage, volume percentage and mole fraction.

- **Unit 2: Water**

  Graphical presentation of water distribution on Earth (pie or bar diagram). Classification ofsoft and hard water based on soap test, salts causing water hardness, unit of hardness andsimple numerical on water hardness.

  Cause of poor lathering of soap in hard water, problems caused by the use of hard water inboiler (scale and sludge, foaming and priming, corrosion etc), and quantitative measurement of water hardness by ETDA method, total dissolved solids (TDS) alkalinity estimation.

  i). Water softening techniques – soda lime process, zeolite process and ion exchange process.

  ii). Municipal water treatment (in brief only) – sedimentation, coagulation, filtration, sterilization.

Water for human consumption for drinking and cooking purposes from any water sources and enlist Indian standard specification of drinking water (collect data and understand standards).

- **Unit 3: Engineering Materials**

  Natural occurrence of metals – minerals, ores of iron, aluminium and copper, gangue (matrix), flux, slag, metallurgy – brief account of general principles of metallurgy.

  Extraction of - iron from haematite ore using blast furnace, aluminium from bauxite along with reactions. Alloys – definition, purposes of alloying, ferrous alloys and non-ferrous with suitable examples, properties and applications.

  General chemical composition, composition based applications (elementary idea only detailsomitted):

  Port land cement and hardening, Glasses Refractory and Composite materials.

  Polymers – monomer, homo and co polymers, degree of polymerization, simple reactions involved in preparation and their application of thermoplastics and thermosetting plastics (using PVC, PS, PTFE, nylon – 6, nylon-6,6 and Bakelite), rubber and vulcanization of rubber.

- **Unit 4: Chemistry of Fuels and Lubricants**

  Definition of fuel and combustion of fuel, classification of fuels, calorific values (HCV and LCV), calculation of HCV and LCV using Dulong's formula.

  Proximate analysis of coal solid fuel

  petrol and diesel - fuel rating (octane and cetane numbers),

  Chemical composition, calorific values and applications of LPG, CNG, water gas, coal gas, producer gas and biogas.

  Lubrication – function and characteristic properties of good lubricant, classification with examples, lubrication mechanism – hydrodynamic and boundary lubrication, physical proper-ties (viscosity and viscosity index, oiliness, flash and fire point, could and pour point only) and chemical properties (coke number, total acid number saponification value) of lubricants.

- **Unit 5: Electro Chemistry**

  Electronic concept of oxidation, reduction and redox reactions.
  Definition of terms: electrolytes, non-electrolytes with suitable examples, Faradays laws of electrolysis and simple numerical problems.
  Industrial Application of Electrolysis –
    - Electrometallurgy
    - Electroplating
    - Electrolytic refining.

  Application of redox reactions in electrochemical cells –
    - Primary cells – dry cell,
    - Secondary cell - commercially used lead storage battery, fuel and Solar

  cells.Introduction to Corrosion of metals –
    - definition, types of corrosion (chemical and electrochemical), $H_2$ liberation and $O_2$ absorption mechanism of electrochemical corrosion, factors affecting rate of corrosion.

  Internal corrosion preventive measures –
    - Purification, alloying and heat treatment and

  External corrosion preventive measures: a) metal (anodic, cathodic) coatings, b) organic inhibitors.

**Suggested Sessional work:**

- **Unit 1: Atomic Structure, Chemical Bonding and Solutions**

  Assignments: Writing electronic configuration of elements up to atomic number 30 (Z= 30). Numerical on molarity, ppm, mass percentage, volume percentage and mole fractionof given solution.

  Seminar: 1. Quantum numbers,

  2. Discuss the metallic properties such as malleability, ductility, hardness, high melting point, conductance of heat and electricity, magnetic propertiesof metals.

  Projects: Model of molecules $BeCl_2$, $BF_3$, $CH_4$, $NH_3$, $H_2O$.

- **Unit 2: Water**

  Assignments: Simple problems on hardness calculation.

  Seminar: 1. Quality and quantity requirement of water in house and industry.

  2. Quality of control measures of effluents (BOD & COD).

  Projects: Collect water samples from different water sources and measure of hardness of water.

- **Unit 3: Engineering Materials**

  Assignments: Preparation of table showing different ores of iron, copper and aluminium metals along with their chemical compositions and classify in to oxide sulphide halide ores.

  Seminar: Discuss the chemical reactions taking place in blast furnace in extraction of Fe, Cu and Al metals.

  Projects: Make table showing place of availability of different ores in India and show places on India map.

- **Unit 4: Chemistry of Fuels and Lubricants**

  Assignments: Calculation of HCV and LCV of fuel using fuel composition in Dulong's for-mula.

  Seminar: Chemical structure of fuel components influence on fuel rating.

  Projects: Mapping of energy recourses in India. Collection of data of various lubri-cants available in the market.

- **Unit 5: Electro Chemistry**

  Assignments: Simple problems on Faradays laws of electrolysis.Seminar: 1. Corrosion rate and units.

  2. Corrosion preventions.

  Projects: Mapping of area in India prone to corrosion. Collection of data of various electrochemical cells batteries used in equipment and devices and avail-able in market. Visit to sites such as Railway station to watch corrosion area in railways and research establishment in and around the institution.

**Learning Outcomes**

At the end of the course student will be able to

1. Understand the classification and general properties of engineering materials such as metal, alloys, glasses, cement, refractory and composite materials using knowledge of chemicalbonding.
2. Understand and assess the suitability of water source for domestic and industrial application, effluents and minimize water pollution.
3. Qualitatively analyze the engineering materials and understand their properties and appli-cations.
4. Choose fuel and lubricants suitable for economical industrial processing to obtain eco-friendly finished products.
5. a) Ascertain construction, mechanism efficiency of electrochemical cells, solar cell fuel cells

   b) Understand corrosion and develop economical prevention techniques.

**References/Suggested Learning Resources:**

**(a) Books** :


1) Text Book of Chemistry for Class XI& XII (Part-I, Part-II); N.C.E.R.T., Delhi, 2017-18.
2) Agarwal, & Shikha, Engineering Chemistry, Cambridge University Press; New Delhi, 2015.
3) C.N. R. Rao, Understanding Chemistry, Universities Press (India) Pvt. Ltd., 2011.
4) Dara, S. S. & Dr.S.S.Umare, Engineering Chemistry, S.Chand. Publication, New Delhi, New Del-hi, 2015.
5) Jain & Jain, Engineering Chemistry, Dhanpat Rai and Sons; New Delhi, 2015.
6) Dr. Vairam, S., Engineering Chemistry, Wiley India Pvt.Ltd., New Delhi, 2013.
7) Dr. G. H. Hugar & Prof A. N. Pathak, Applied Chemistry Laboratory Practices, Vol. I and Vol. II,NITTTR, Chandigarh, Publications, 2013-14.
8) Agnihotri, Rajesh, Chemistry for Engineers, Wiley India Pvt.Ltd., 2014.


**(b) Open source software and website address:**

1 www.chemguide.co.uk/atommenu.html (Atomic structure and chemical bonding)
2 www.visionlearning.com (Atomic structure and chemical bonding)
3 www.chem1.com (Atomic structure and chemical bonding)
4 https://www.wastewaterelearning.com/elearning/ (Water Treatment)
5 www.capital-refractories.com (Metals, Alloys, Cement, and Refractory Materials)
6 www.em-ea.org/guide%20books/book-2/2.1%20fuels%20and%20combustion.pdf (Fu eland Combustion)
7 www.chemcollective.org (Metals, Alloys)
8 www.wqa.org(Water Treatment)

# APPLIED CHEMISTRY LAB

**Course Objectives:**

There are numerous number of materials used in fabricating and manufacturing devices for the comfort of life. The selection, characterization and suitability assessment of natural raw materials essentially requires principles and concepts of Applied Chemistry for technicians. The course aims to supplement the factual knowledge gained in the lectures by first hand manipulation of processes and apparatus. This will develop scientific temper and help to apply the basic concepts and principles insolving engineering problems.

**LIST OF PRACTICALS:**

Perform any 12 (twelve) Laboratory Practicals.

**Volumetric and Gravimetric analysis:**

1 Preparation of standard solution of oxalic acid or potassium permanganate.

2 To determine strength of given sodium hydroxide solution by titrating against standard oxalic acid solution using phenolphthalein indicator.

3 Standardization of $KMnO_4$ solution using standard oxalic acid and Determine the percentage of iron present in given Hematite ore by $KMnO_4$ solution.

4 Iodometric estimation of copper in the copper pyrite ore.

5 Volumetric estimation of total acid number (TAN) of given oil.

6 Volumetric estimation of

a) Total hardness of given water sample using standard EDTA solution.

b) Alkalinity of given water sample using 0.01M sulphuric acid

7 Proximate analysis of coal

a) Gravimetric estimation moisture in given coal sample

b) Gravimetric estimation ash in given coal sample

**Instrumental analysis**

8. Determine the conductivity of given water sample.
9. Determination of the Iron content in given cement sample using colorimeter.
10. Determination of calorific value of solid or liquid fuel using bomb calorimeter.
11. Determination of viscosity of lubricating oil using Redwood viscometer.
12. Determination of flash and fire point of lubricating oil using Able's flash point apparatus.
13. To verify the first law of electrolysis of copper sulfate using copper electrode.
14. Construction and measurement of emf of elector chemical cell (Daniel cell).
15. To study the effect of dissimilar metal combination.

**Teachers should use the following strategies to achieve the various outcomes of the course.**

- Different methods of teaching and media to be used to attain classroom attention.
- Massive open online courses (MOOCs) may be used to teach various topics/sub topics.
- 15-20% of the topics which are relatively simpler of descriptive in nature should be given to the students for self-learning and assess the development of competency through classroom presentations.
- Micro-projects may be given to group of students for hand-on experiences
- Encouraging students to visit to sites such as Railway station and research establishment around the institution.

**Learning Outcomes:**

At the end of the course student will be able to

- To express quantitative measurements accurately.
- To practice and adapt good measuring techniques.
- To use various apparatus for precise measurements.
- To understand and differentiate different methods of quantitative analysis.
- To know and understand principles of quantitative analysis using instruments.
- To construct different electrochemical cells used in developing batteries.
- To understand and appreciate methods of corrosion abetments.

**Reference Books:**


1. Text Book of Chemistry for Class XI & XII (Part-I, Part-II); N.C.E.R.T., Delhi, 2017-18.
2. Dr. G. H. Hugar and Prof A. N. Pathak, Applied Chemistry Laboratory Practices, Vol. I and Vol. II,NITTTR, Chandigarh, Publications, 2013-14.
3. Agnihotri, Rajesh, Chemistry for Engineers, Wiley India Pvt.Ltd., 2014.
4. Jain & Jain, Engineering Chemistry, Dhanpat Rai and Sons; New Delhi, 2015.

**DIPLOMA WING**
**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

*SEMESTER I – GROUP 'A'*

| | | |
|---|---|---|
| COURSE TITLE | : | COMMUNICATION SKILLS IN ENGLISH |
| PAPER CODE | : | 7353 |
| SUBJECT CODE | : | 104 |
| TREORY CREDITS | : | 04 |
| PRACTICAL CREDITS | : | 01 |

**Course Objectives:**

Communication skills play an important role in career development. This course aims at introducing basic concepts of communication skills with an emphasis on developing personality of the students. Thus, the main objectives of this course are:

1. To develop confidence in speaking English with correct pronunciation.
2. To develop communication skills of the students i.e. Listening, Speaking, Reading and Writing skills.
3. To introduce the need for Personality Development- Focus will be on developing certain qualities which will aid students in handling personal and career challenges like self-awareness, inter personal skills, empathy, motivation, team spirit, leadership skills etc.

**Course Content**

**Unit-I Communication: Theory and Practice (6 lectures) 14 Marks**

1.1 Basics of Communication: Introduction, Meaning and Definition, Process of Communication.

1.2 Types of Communication: **Verbal** (Oral, Written) and **Non-verbal**–Signs, Symbols, Maps, Body Language (Kinesics) Para Language.

1.3 Channels: Formal (Upward, Downward, Horizontal and Diagonal) and Informal (Grapevine).

1.4 Principles of Effective Written and Oral Communication (including 7 C's)

1.5 Barriers to Effective Communication (Semantic, Physical, Psychological, Organizational) and ways toovercome them.

**Unit-II Soft Skills for Professional Excellence (5 lectures) 12 Marks**

2.1 Introduction: Soft Skills and Hard Skills.

2.2Importance of Soft Skills as Life skills : Self-awareness and Self-analysis, Interpersonal effectiveness, Adaptability, Resilience, Emotional Intelligence, Empathy, Assertiveness, Conflict management, Problem Solving, Decision Making, Leadership, Motivation, Time Management and Team spirit.

**Unit-III: Reading Comprehension (14 lectures)** **16 Marks**

Comprehension, vocabulary enhancement and grammar exercises based on reading of the following texts:

**Section-1-Prose**

3.1.1 'An Astrologer's Day' from Malgudi Days by R. K. Narayan
3.1.2 'The Gift of the Magi' by O'Henry
3.1.3 'Uncle Podger Hangs a Picture' by Jerome K. Jerome

**Section-2-Poetry**

3.2.1 'Night of the Scorpion' by Nissim Ezekiel
3.2.2 'Stopping by Woods on a Snowy Evening' by Robert Frost
3.2.3 'Where the Mind is Without Fear' by Rabindranath Tagore

**Unit-IV: Professional Writing and Business Communication (10 lectures)** **14 Marks**

4.1 Précis writing and Comprehension exercises based on Unseen Passages.

4.2 E-mail etiquette, format of e-mail.
- 4.2.1 Draft a short email message requesting for one day leave from your workplace due tosickness.
- 4.2.2 Draft a short email message informing that you have resumed your duty after availing leave.
- 4.2.3 Draft a short email message informing about inferior/defective quality of goods supplied.

4.3 Drafting Letters
- 4.3.1 Parts of letters, mechanics, style and format.
- 4.3.2 Application for Job or Covering letter with Resume
- 4.3.3 Letters related to purchase: Enquiry, Order and Complaints (damaged or defectivegoods or for shortage in supply)

**Unit-V: Vocabulary and Grammar (10** lectures**)** **10 Marks-Grammar + 4 Marks-Vocabulary**

5.1 Vocabulary of commonly used words, Synonyms, Antonyms and usage of same words asdifferent parts of speech.
5.2 One-word substitutions from the prescribed prose and poetry.

5.3 Determiners, Auxiliary verbs, Subject-verb agreement, Tense, Prepositions, Active and Passive Voice.

**Course outcomes:**

At the end of this course, the students will be able to:

1. Formulate grammatically correct sentences in English using appropriate vocabulary, to develop basicSpeaking and Writing skills.
2. Demonstrate Reading skills with correct pronunciation and comprehension.
3. Understand the importance of personality development with reference to soft skills to handle personal andprofessional challenges.
4. Apply principles of effective communication in oral and written professional communication.

**References:**


1. Anjana Tiwari, Communication Skills in English, Khanna Publishing House, New Delhi, 2022.
2. TTTI Bhopal, Communication Skills for Technical Students, Book I, Somaiya Publication Mumbai, New Delhi.
3. Raymond Murphy, Essentials of English Grammar, Cambridge University Press, 2000.
4. Rajendra Pal and J.S. Korlahalli, Essentials of Business Communication, S. Chand & Sons New Delhi, 2019.
5. J. D. O'Connor, Better English Pronunciation, Cambridge University Press, 1980.
6. Lindley Murray, An English Grammar, Comprehending Principles and Rules, Wilson and Sons, London, 1908.
7. Kulbhushan Kumar, Effective Communication Skills, Khanna Publishing House, New Delhi (Revised Edition2018)
8. Margaret M. Maison, Examine your English, Orient Longman, New Delhi, 1964.
9. M. Ashraf Rizvi, Effective Technical Communication, Mc-Graw Hill, Delhi, 2002.
10. John Nielson, Effective Communication Skills, Xlibris, 2008.
11. Oxford Advanced Learners Dictionary
12. Roget's Thesaurus of English Words and Phrases
13. Levine, Levine & Levine, The Joy of Vocabulary
14. Collin's English Dictionary


**Web Sources:**

**https://agendaweb.org/listening-**

**exercises.htmlwww.grammarly.com/**

**Suggested Further Reading (to enhance reading skills of students):**

1. R.K Narayan : "Malgudi Days" (32 Short Stories), "Swami And His Friends"(novel)
2. O Henry : Short Stories : 'The Last Leaf', 'After Twenty Years'
3. Rabindranath Tagore : Poems from "Geetanjali" 'Freedom', 'Last Curtain'
4. Ruskin Bond : Short Stories : 'The Cherry Tree', 'The Thief', 'The Kite Maker'.
   "The Room on the Roof " (novel)

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# COMMUNICATION SKILLS IN ENGLISH LAB

**Course Objectives:**

Communication skills play an important role in career development. This lab/practical course aims at actively involving students in various activities to improve their communication skills with an emphasis on developing personality of the students. Thus, the objectives of this course are:

1. To develop Listening Skills for enhancing communication.
2. To develop Speaking and Reading Skills with a focus on correct pronunciation and fluency.
3. To introduce the need for Personality Development- Focus will be on developing Soft Skills whichwill aid students in handling personal and career challenges. For that purpose group discussion, extempore and other activities to be conducted during practical classes and technology enabled learning should be integrated for effective learning.

**Course Content**:

**Unit I Listening Skills** (6 lectures)

1.1 Listening Process and Practice
1.2 Listening to recorded lectures, conversations, poems, interviews and speeches, Listeningcomprehension tests.

**Unit II Reading Skills with correct Pronunciation** (6 lectures)

2.1 Phonetics :Articulation of Sounds - Consonant, Vowels and Diphthongs.
2.2 Division of Words into Syllables, Practice of Word stress and Intonation.
2.3 Reading the prescribed text with correct pronunciation, intonation and comprehension.

**Unit III Speaking Skills** (6 lectures)

3.1 Introducing self, Introducing others (each student will also have to write the content of this activityduring exam which will be submitted for record purpose)
3.2 Conversation practice in routine situations (greeting, thanking, apologizing, requesting,congratulating, inviting, expressing likes and dislikes, etc.
3.3 Role Play-
  3.3.1 Making Enquiries at important public places.
  3.3.2 Question Tags and giving short answers for ease of conversing.

**Unit IV Professional Skills** (6 lectures)

4.1 Delivering formal short- speech, extempore (of 2 minutes duration)
4.2 Making **Oral presentation** of Mini Project* before external examiner in Practical exam(Written content of presentation (along with tools or aids), also to be submitted by eachStudent / group for the purpose of record)
4.3 Telephonic Conversations, Video Conferencing, Describing Telephone manners and Netiquette.(watching videos, role play and demonstrations)
4.4 Mock interviews for Jobs (videos and demonstrations)
4.5 Group Discussions (videos and demonstrations)

**Unit V Building Vocabulary** (6 lectures)

5.1 Phrasal verbs
5.2 Idioms and phrases, Administrative terms (English and Hindi)
5.3 Word exercises (homonyms), words with silent letters, commonly misspelled andmispronounced words.
5.4 Word games such as crosswords, scrabble, quiz, spell-it, etc. to enhance self-expression andvocabulary of participants.
5.5 Punctuation Exercises

**Note:**

***Mini Project**: Topics of Mini-projects may be assigned individually; or the whole batch of students may bedivided into groups of 4-5 students each. Each student/group has to be assigned a topic for Mini-Project in the beginning of the semester. Each student/group will prepare a short presentation using various aids and tools e.g., charts, graphics, models, flow charts, examples and illustrations, power point, dialogues, role play etc. during the semester and submit it before the last teaching day after planning and rehearsing the oral presentation under supervision of the teacher. Each group will orally deliver this presentation of five to six minutes duration, using the prepared aids and tools during practical exam. Each student individually or as part of a group must participate in oral presentation for at least 1-2 minutes. The suggested topics for Mini- Project are-

1. (i)Describe Process of Communication (ii) Verbal and Non-verbal communication (iii) Oral and Written Communication (iv)Principles of Effective Communication (any four principles) (v) Explain Barriers to Communication (any one category of barriers) and ways to overcome them. Unit 1

2. Explain any three of these soft skills -Time Management, Grooming, Stress Management, Team Work, Self-analysis, Interpersonal effectiveness, Adaptability, Resilience, Emotional Intelligence, Empathy, Assertiveness, Conflict management, Problem Solving, Decision Making, Leadership, Motivation. Unit 2

3. Prepare a Phonetic Chart of Sounds of English. Unit 2

4. Read short stories of famous writers and present a summary along with sharing the new wordslearnt with their usage (any one short story may be chosen from 'suggested further reading'). Unit 3

5. Compose short poems and write stories on topics of your choice. (Any One Story or Poem)-Unit 3

6. Enumerate Qualities of a good letter, present different formats. Unit 4

7. Demonstrate the format of e-mail, and enlist email etiquette. Unit 4

8. (i)Describe Importance of Netiquette (ii) Describe Telephone Manners. Unit 5

9. Preparing for an Interview – Do's and Don'ts. Unit 5

10. Any other relevant topic considered appropriate by the teacher according to students' interest.

**Learning Outcome:**

At the end of this course the students will be able to:

1. Demonstrate Reading with correct Pronunciation and Comprehension.
2. Ask and Answer relevant questions orally after Listening to the spoken /delivered content intechnologically enabled learning environment.
3. Introduce themselves orally, introduce others, converse in routine and professional situationswith proper usage of language and vocabulary.
4. Prepare, organize and effectively deliver an oral presentation using digital or other tools.

**Recommended Readings:**


1. T. Balasubramanian, A text Book of English Phonetics for Indian Students, 3rd Ed.2022
2. Daniel Jones, English Pronouncing Dictionary, Cambridge, Cambridge University Press, 1956.
3. James Hartman & etal. English Pronouncing Dictionary, Cambridge, Cambridge University Press, 2006.
4. Kulbhushan Kumar, Effective Communication Skills, Khanna Publishing House, NewDelhi (RevisedEd.2018)
5. J. D. O'Connor, Better English Pronunciation, Cambridge, Cambridge University Press,1980.
6. Lindley Murray, English Grammar: Comprehending Principles and Rules,.London,Wilson and Sons,1908.
7. Margaret M. Maison, Examine your English, Orient Longman, New Delhi,1964.
8. J.Sethi & etal, A Practice Course in English Pronunciation, New Delhi, Prentice Hall,2004.


**Web Sources For Speaking Skills**

http://7esl.com

**https://agendaweb.org/listening-exercises.html**

http://grammarly.com

https://www.duolingo.com

https://learnenglish.britishcouncil.o

rghttp://www.ummoapp.com

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**DIPLOMA WING**
**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

*SEMESTER I – GROUP 'A'*

| | | |
|---|---|---|
| COURSE TITLE | : | ENGINEERING GRAPHICS |
| PAPER CODE | : | -- |
| SUBJECT CODE | : | -- |
| TREORY CREDITS | : | 00 |
| PRACTICAL CREDITS | : | 02 |

**Course Objectives:**

- To understand the language of graphics which is used to express ideas, convey instructions while carrying out engineering jobs.
- To develop drafting and sketching skills, to know the applications of drawing equipments, and get familiarize with Indian Standards related to engineering drawings.
- To develop skills to visualize actual object or a part of it, on the basis of drawings.
- To develop skills to translate ideas into sketches and to draw and read various engineering curves, projections and dimensioning styles.
- To understand the basic commands and develop basic skills related to computer aided drafting, of how to draw, modify, and edit basic shapes (2D), using AUTOCAD.

**Course Content**

**Unit – I Basic elements of Drawing**

Drawing Instruments and supporting materials: method to use them with applications.

Convention of lines and their applications.

Representative Fractions – reduced, enlarged and full size scales; Engineering Scales such as plain and diagonal scale.

Dimensioning techniques as per SP-46:2003 – types and applications of chain, parallel and coordinate dimensioning.

Geometrical and Tangency constructions. (Redraw the figure)

**Unit – II Orthographic projections**

Introduction of projections-orthographic, perspective, isometric and oblique: concept and applications. (No question to be asked in examination).

Introduction to orthographic projection, First angle and Third angle method, their symbols.

Conversion of pictorial view into Orthographic Views – object containing plain surfaces, slanting surfaces, slots, ribs, cylindrical surfaces. (use First Angle Projection method only)

**Unit – III Isometric Projections**

Introduction to isometric projections.

Isometric scale and Natural scale.

Isometric view and isometric projection.

Illustrative problems related to objects containing lines, circles and arcs shape only.

Conversion of orthographic views into isometric view/projection.

**Unit – IV Free Hand Sketches of engineering elements**

Free hand sketches of machine elements: Thread profiles, nuts, bolts, studs, set screws, washer, Locking arrangements. (For branches other than mechanical Engineering, the teacher should select branch specific elements for free hand sketching)

Free hand sketches of orthographic view (on squared graph paper) and isometric view (on isometric grid paper)

**Unit – V Computer aided drafting interface**

Computer Aided Drafting: concept.

Hardware and various CAD software available.

System requirements and Understanding the interface.

Components of AutoCAD software window: Title bar, standard tool bar, menu bar, object properties tool bar, draw tool bar, modify tool bar, cursor cross hair. Command window, status bar, drawing area, UCS icon.

File features: New file, Saving the file, Opening an existing drawing file, Creating templates, Quit.

Setting up new drawing: Units, Limits, Grid, Snap.

Undoing and redoing action.

**Unit – VI Computer aided drafting**

Draw basic entities like Line, Circle, Arc, Polygon, Ellipse, Rectangle, Multiline, PolyLine.

Method of Specifying points: Absolute coordinates, Relative Cartesian and Polar coordinates.

Modify and edit commands like trim, extend, delete, copy, offset, array, block, layers.

Dimensioning: Linear, Horizontal Vertical, Aligned, Rotated, Baseline, Continuous, Diameter, Radius, Angular Dimensions.

Dim scale variable.

Editing dimensions.

Text: Single line Text, Multiline text.

Standard sizes of sheet. Selecting Various plotting parameters such as Paper size, paper units, Drawing orientation, plot scale, plot offset, plot area, print preview.

| S. No. | Practical Exercises | Unit No. | Approx. Hrs |
|---|---|---|---|
| 1 | Draw horizontal, Vertical, 30 degree, 45 degree, 60 and 75 degrees lines, different types of lines, dimensioning styles using Tee and Set squares/ drafter. (do this exercise in sketch book) | I | 02 |
| 2 | Write alphabets and numerical (Vertical only) (do this exercise in sketch book) | I | 02 |
| 3 | Draw regular geometric constructions and redraw the given figure (do this exercise in sketch book) Part I | II | 02 |
| 4 | Draw regular geometric construction and redraw the given figure (do this exercise in sketch book) Part II | II | 02 |
| 5 | Draw a problem on orthographic projections using first angle method of projection having plain surfaces and slanting. Part I | III | 02 |
| 6 | Draw another problem on orthographic projections using first angle method of projection having slanting surfaces with slots. Part II | III | 02 |

| | | | |
|---|---|---|---|
| 7 | Draw two problems on orthographic projections using first angle method of projection having cylindrical surfaces, ribs. Part I | III | 02 |
| 8 | Draw two problems on Isometric view of simple objects having plain and slanting surface by using natural scale. Part I | IV | 02 |
| 9 | Draw some problems on Isometric projection of simple objects having cylindrical surface by using isometric scale. Part I | IV | 02 |
| 10 | Draw free hand sketches/ conventional representation of machine elements in sketch book such as thread profiles, nuts, bolts, studs, set screws, washers, Locking arrangements. Part I | V | 02 |
| 11 | Problem based Learning: Given the orthographic views of at least three objects with few missing lines, the student will try to imagine the corresponding objects, complete the views and draw these views in sketch book. Part I | III, II, V | 02 |
| 12 | Draw basic 2D entities like: Rectangle, Rhombus, Polygon using AutoCAD (Print out should be a part of progressive assessment). Part I | V | 02 |
| 13 | Draw basic 2D entities like: Circles, Arcs, circular using AutoCAD (Printout should be a part of progressive assessment). Part II | V | 02 |
| 14 | Draw basic 2D entities like: Circular and rectangular array using AutoCAD (Printout should be a part of progressive assessment). Part III | V | 02 |
| 15 | Draw blocks of 2D entities comprises of Rectangle, Rhombus, Polygon, Circles, Arcs, circular and rectangular array, blocks using AutoCAD (Print out should be a part of progressive assessment). Part IV | V | 02 |
| 16 | Draw basic branch specific components in 2D using AutoCAD (Print out should be a part of term work). Part I | VI | 02 |
| 17 | Draw complex branch specific components in 2D using AutoCAD (Print should be a part of progressive assessment). Part I | VI | 02 |
| | **Total** | | **34** |

**SUGGESTED LEARNING RESOURCES**


1. Bureau of Indian Standards. *Engineering Drawing Practice for Schools and Colleges IS: Sp-46.* BIS. Government of India, Third Reprint, October 1998; ISBN: 81-7061-091-2.
2. Bhatt, N. D. *Engineering Drawing*. Charotar Publishing House, Anand, Gujrat 2010; ISBN: 978-93-80358-17-8.
3. Jain & Gautam, Engineering Graphics & Design, Khanna Publishing House, New Delhi (ISBN: 978-93-86173-478)
4. Jolhe, D. A. *Engineering Drawing*. Tata McGraw Hill Edu. New Delhi, 2010; ISBN: 978-0-07-064837-1
5. Dhawan, R. K. *Engineering Drawing*. S. Chand and Company, New Delhi; ISBN: 81-219-1431-0.
6. Shah, P. J. *Engineering Drawing*. S. Chand and Company, New Delhi, 2008, ISBN:81-219-2964-4.
7. Kulkarni, D. M.; Rastogi, A. P.; Sarkar, A. K. *Engineering Graphics with AutoCAD*. PHI Learning Private Limited-New Delhi (2010); ISBN: 978-8120337831.
8. Jeyapoovan, T. *Essentials of Engineering Drawing and Graphics using AutoCAD*. Vikas Publishing HousePvt. Ltd, Noida, 2011; ISBN: 978-8125953005.
9. Autodesk. *AutoCAD User Guide*. Autodesk Press, USA, 2015.
10. Sham, Tickoo. *AutoCAD 2016 for Engineers and Designers*. Dreamtech Press; Galgotia Publication, New Delhi, 2015; ISBN 978-9351199113.

**Software/Learning Websites**

1. https://www.youtube.com/watch?v=TJ4jGyD-WCw
2. https://www.youtube.com/watch?v=dmt6_n7Sgcg
3. https://www.youtube.com/watch?v=_MQScnLXL0M
4. https://www.youtube.com/watch?v=3WXPanCq9LI
5. https://www.youtube.com/watch?v=fvjk7PlxAuo
6. http://www.me.umn.edu/coursesme2011/handouts/engg%20graphics.pdf
7. https://www.machinedesignonline.com

**Course Outcomes**

Following outcomes will be achieved:

1) Select and construct appropriate drawing scales, use drawing equipment's, and understand Indian Standards of engineering drawing

2) Draw views of given object and components 3) Sketch orthographic projections into isometric projections and vice versa.

3) Apply computer aided drafting tools to create 2D engineering drawings

**DIPLOMA WING**
**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

*SEMESTER I – GROUP 'A'*

| | | |
|---|---|---|
| COURSE TITLE | : | ENGINEERING WORSHOP PRACTICE |
| PAPER CODE | : | -- |
| SUBJECT CODE | : | -- |
| TREORY CREDITS | : | 00 |
| PRACTICAL CREDITS | : | 02 |

**Course Objectives:**

- To understand basic engineering processes for manufacturing and assembly.
- To understand, identify, select and use various marking, measuring, and holding, striking and cutting tools and equipment's
- To understand and interpret job drawings, produce jobs, and inspect the job for specified dimensions
- To understand the various types of wiring systems and acquire skills in house wiring
- To understand, operate, control different machines and equipment's adopting safety practices

**Course Content:**

| S.No. | Details Of Practical Content |
|---|---|
| **I** | **Carpentry:** i) Demonstration of different wood working tools / machines. ii) Demonstration of different wood working processes, like plaining, marking, chiseling, grooving, turning of wood etc. iii) One simple job involving any one joint like mortise and tenon dovetail, bridle, half lap etc. |
| **II** | **Fitting:** i) Demonstration of different fitting tools and drilling machines and power tools ii) Demonstration of different operations like chipping, filing, drilling, tapping, sawing, cutting etc. iii) One simple fitting job involving practice of chipping, filing, drilling, tapping, cutting etc |
| **III** | **Welding:** i) Demonstration of different welding tools / machines. ii) Demonstration on Arc Welding, Gas Welding, MIG, MAG welding, gas cutting and rebuilding of broken parts with welding. iii) One simple job involving butt and lap joint |
| **IV** | **Sheet Metal Working:** i) Demonstration of different sheet metal tools / machines. ii) Demonstration of different sheet metal operations like sheet cutting, bending, edging, end curling, lancing, soldering, brazing, and riveting. iii) One simple job involving sheet metal operations and soldering and riveting. |
| **V** | **Electrical House Wiring:** Practice on simple lamp circuits (i) one lamp controlled by one switch by surface conduit wiring, (ii) Lamp circuits- connection of lamp and socket by separate switches, (iii) Connection of Fluorescent lamp/tube light, (iv) simple lamp circuits-install bedroom lighting. And (v) Simple lamp circuits- install stair case wiring. |
| **VI** | **Demonstration:** i) Demonstration of measurement of Current, Voltage, Power and Energy. ii) Demonstration of advance power tools, pneumatic tools, electrical wiring tools and accessories. iii) Tools for Cutting and drilling |

**References:**


2. S.K. Hajara Chaudhary, Workshop Technology, Media Promoters and Publishers, New Delhi, 2015
3. B.S. Raghuwanshi, Workshop Technology, Dhanpat Rai and sons, New Delhi 2014
4. K. Venkat Reddy, Workshop Practice Manual, BS Publications, Hyderabad 2014
5. Kents Mechanical Engineering Hand book, John Wiley and Sons, New York


**Course outcomes**

At the end of the course, the student will be able to:

| | |
|---|---|
| CO1 | Acquire skills in basic engineering practice to identify, select and use various marking, measuring, and holding, striking and cutting tools & equipment's and machines |
| CO2 | Understand job drawing and complete jobs as per specifications in allotted time |
| CO3 | Inspect the job for the desired dimensions and shape |
| CO4 | Operate, control different machines and equipment's adopting safety practices |

**DIPLOMA WING**
**RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL**

*SEMESTER I – GROUP 'A'*

| | | |
|---|---|---|
| COURSE TITLE | : | SPORTS AND YOGA |
| PAPER CODE | : | -- |
| SUBJECT CODE | : | -- |
| TREORY CREDITS | : | 00 |
| PRACTICAL CREDITS | : | 01 |

**Course Objectives:**

- To make the students understand the importance of sound health and fitness principles as they relate to better health.
- To expose the students to a variety of physical and yogic activities aimed at stimulating their continued inquiry about Yoga, physical education, health and fitness.
- To create a safe, progressive, methodical and efficient activity based plan to enhance improvement and minimize risk of injury.
- To develop among students an appreciation of physical activity as a lifetime pursuit and a means to better health.

**Course Content:**

- **Introduction to Physical Education**
  - Meaning & definition of Physical Education
  - Aims & Objectives of Physical Education
  - Changing trends in Physical Education
- **Olympic Movement**
  - Ancient & Modern Olympics (Summer & Winter)
  - Olympic Symbols, Ideals, Objectives & Values
  - Awards and Honours in the field of Sports in India (Dronacharya Award, Arjuna Award, Dhayanchand Award, Rajiv Gandhi Khel Ratna Award etc.)
- **Physical Fitness, Wellness & Lifestyle**
  - Meaning & Importance of Physical Fitness & Wellness
  - Components of Physical fitness
  - Components of Health related fitness
  - Components of wellness
  - Preventing Health Threats through Lifestyle Change
  - Concept of Positive Lifestyle

- **Fundamentals of Anatomy & Physiology in Physical Education, Sports and Yoga**
    - Define Anatomy, Physiology & Its Importance
    - Effect of exercise on the functioning of Various Body Systems. (Circulatory System, Respiratory System, Neuro-Muscular System etc.)

- **Kinesiology, Biomechanics & Sports**
    - Meaning & Importance of Kinesiology & Biomechanics in Physical Edu. & Sports
    - Newton's Law of Motion & its application in sports.
    - Friction and its effects in Sports.
- **Postures**
    - Meaning and Concept of Postures.
    - Causes of Bad Posture.
    - Advantages & disadvantages of weight training.
    - Concept & advantages of Correct Posture.
    - Common Postural Deformities – Knock Knee; Flat Foot; Round Shoulders; Lordosis, Kyphosis, Bow Legs and Scoliosis.
    - Corrective Measures for Postural Deformities

- **Yoga**
    - Meaning & Importance of Yoga
    - Elements of Yoga
    - Introduction - Asanas, Pranayama, Meditation & Yogic Kriyas
    - Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana & Shashankasana)
    - Relaxation Techniques for improving concentration - Yog-nidra
- **Yoga & Lifestyle**
    - Asanas as preventive measures.
    - Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana.
    - Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana.
    - Back Pain: Tadasana, Ardh Matsyendrasana, Vakrasana, Shalabhasana, Bhujangasana.
    - Diabetes: Procedure, Benefits & contraindications for Bhujangasana, Paschimottasana, Pavan Muktasana, Ardh Matsyendrasana.
    - Asthema: Procedure, Benefits & contraindications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana.

- **Training and Planning in Sports**
  - Meaning of Training
  - Warming up and limbering down
  - Skill, Technique & Style
  - Meaning and Objectives of Planning.
  - Tournament – Knock-Out, League/Round Robin & Combination.
- **Psychology & Sports**
  - Definition & Importance of Psychology in Physical Edu. & Sports
  - Define & Differentiate Between Growth & Development
  - Adolescent Problems & Their Management
  - Emotion: Concept, Type & Controlling of emotions
  - Meaning, Concept & Types of Aggressions in Sports.
  - Psychological benefits of exercise.
  - Anxiety & Fear and its effects on Sports Performance.
  - Motivation, its type & techniques.
  - Understanding Stress & Coping Strategies.
  - Doping
    - Meaning and Concept of Doping
    - Prohibited Substances & Methods
    - Side Effects of Prohibited Substances
  - **Sports Medicine**
    - First Aid – Definition, Aims & Objectives.
    - Sports injuries: Classification, Causes & Prevention.
    - Management of Injuries: Soft Tissue Injuries and Bone & Joint Injuries
  - **Sports / Games**

    Following sub topics related to any one Game/Sport of choice of student out of: Athletics, Badminton, Basketball, Chess, Cricket, Kabaddi, Lawn Tennis, Swimming, Table Tennis, Volleyball, Yoga etc.
    - History of the Game/Sport.
    - Latest General Rules of the Game/Sport.
    - Specifications of Play Fields and Related Sports Equipment.
    - Important Tournaments and Venues.
    - Sports Personalities.
    - Proper Sports Gear and its Importance.

**References:**


1. Modern Trends and Physical Education by Prof. Ajmer Singh.
2. Light On Yoga By B.K.S. Iyengar.
3. Health and Physical Education – NCERT (11th and 12th Classes)


**Course Outcomes:**

On successful completion of the course the students will be able to:

(i) Practice Physical activities and Hatha Yoga focusing on yoga for strength, flexibility, and relaxation.

(ii) Learn techniques for increasing concentration and decreasing anxiety which leads to stronger academic performance.

(iii) Learn breathing exercises and healthy fitness activities

(iv) Understand basic skills associated with yoga and physical activities including strength and flexibility, balance and coordination.

(v) Perform yoga movements in various combination and forms.

(vi) Assess current personal fitness levels.

(vii) Identify opportunities for participation in yoga and sports activities.

(viii) Develop understanding of health-related fitness components: cardiorespiratory endurance, flexibility and body composition etc.

(ix) Improve personal fitness through participation in sports and yogic activities.

(x) Develop understanding of psychological problems associated with the age and lifestyle.

(xi) Demonstrate an understanding of sound nutritional practices as related to health and physical performance.

(xii) Assess yoga activities in terms of fitness value.

(xiii) Identify and apply injury prevention principles related to yoga and physical fitness activities.

(xiv) Understand and correctly apply biomechanical and physiological principles elated to exercise and training

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## INDUCTION PROGRAM

Please refer Appendix IV for guidelines.

The Essence and Details of Induction program can also be understood from the 'Detailed Guide on Student Induction program', as available on AICTE Portal, although that is for UG students of Engineering & Technology

(Link:https://www.aicteindia.org/sites/default/files/Detailed%20Guide%20on%20Student%20Induction%20program.pdf).

| Induction program (mandatory) | Two-week duration |
|---|---|
| Induction program for students to be offered right at the start of the first year. | • Physical activity<br>• Creative Arts<br>• Universal Human Values<br>• Literary<br>• Proficiency Modules<br>• Lectures by Eminent People<br>• Visits to local Areas<br>• Familiarization to Dept./Branch & Innovations |

# *Appendix - IV*

# *Student Induction Program*

## STUDENT INDUCTION PROGRAM

The students will have to undergo a mandatory induction program as part of their Diploma Programme Curriculum right at the start of the first year. The duration of the induction program will be of two weeks wherein students will undergo a wide variety of activities without actually starting with their usual classes. Normal classes will start only after the induction program is over.

This will help build confidence among the new students, instil a sense of connect and appreciation towards their institution, provide them with the comfortable environment to adjust and pick up friendship with other students, facilitate them to get to know important functionaries and faculty members of the institution, equip them with human and social values.

The Induction Program will help the new students in building social character, leadership qualities, self-confidence, creativity and appreciation for mankind and nature at large. In nutshell, the induction program is envisaged to give the new students the broader foundational experience for the life-long success.

The new students, in the process, will get to learn about various processes and procedures in place in the institution, facilities and best practices, student activities, and the culture & values prevailing in the institution. The Program is also expected to be used for rectifying some critical lacunas, for example, Communication Skills in English for those students who have deficiency in it. Such students can be identified by conducting diagnostic tests and special Proficiency Modules can be conducted for them.

The mentor-mentee groups of the students are formed with each group comprising small number of students and being associated with a faculty mentor. Then the different activities start with a healthy daily routine.

**The suggestive list of activities is as mentioned below:**

- Physical Activity
- Creative Arts and Culture
- Mentoring & Universal Human Values
- Familiarization with the institution, Dept./Branch
- Literary Activity
- Proficiency Modules
- Lectures & Workshops by Eminent People
- Visits in Local Area
- Extra-Curricular Activities in the institution
- Feedback and Report on the Program

# Induction Program Schedule (Suggestive only)

**Note:** It is presumed that the first year students are so divided into two major groups that the number of students in each group is almost equal with some branches forming part of Group-I while the rest of the branches being part of Group-II.

| | | | |
|---|---|---|---|
| **Time** | **Activity** | **Students' Group** | **Venue** |
| Whole day | Students arrive - Hostel allotment | I & II | |
| **DAY 1** | | | |
| 9.30 am – 10.45 am | Mentor-mentee groups - Introduction within group. | I | Suitable Venue as per number of mentor-mentee groups |
| | Screening of Institute Documentary Movie; video clips of various functions and events | II | Conference/Seminar Hall |
| 11.00 am – 12.15 pm | Mentor-mentee groups - Introduction within group. | II | Suitable Venue as per number of mentor-mentee groups |
| | Screening of Institute Documentary Movie; video clips of various functions and events | I | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch | I & II | Respective Hostels |
| 3.30 pm – 5.30 pm | Institute Excursion | I & II | Around the Campus |
| 5.30 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 2** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 12.30 pm | Presentation cum Interactive Session with:<br><br>Important Institution Functionaries like Principal, HoDs etc. | I | Conference/Seminar Hall |
| | Visit to Respective Departments | II | Respective Departments |
| 12.30 pm – 2.30 pm | Lunch | I & II | Respective Hostels |
| 2.30 pm – 5.30 pm | Presentation cum Interactive Session with:<br><br>Important Institution Functionaries like Principal, HoDs etc. | II | Conference/Seminar Hall |
| | Visit to Respective Departments | I | Respective Departments |
| **DAY 3** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Diagnostic test (for English) | I & II | Suitable venue as per strength of students |

| | | | |
|---|---|---|---|
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.30 pm | Universal Human Values | I (Section wise-) | Suitable venue as per number of sections |
| | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| 12.30 pm – 2.30 pm | Lunch | I & II | Respective Hostels |
| 2.30 pm – 4.00 pm | Universal Human Values | II (Section wise-) | Suitable venue as per number of sections |
| | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| 4.00 pm – 4.30 pm | Break | I & II | |
| 4.30 pm – 6.30 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists | II | Conference/Seminar Hall |
| | Sports & Games | I | Sports Ground |
| 2.30 pm – 6.30 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 6.30 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 4** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am - 7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am - 9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |
| 2.30 pm – 3.30 pm | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |

| | | | |
|---|---|---|---|
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 4.30 pm – 5.00 pm | Break | I & II | |
| 5.00 pm – 7.00 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists | II | Conference/Seminar Hall |
| | Sports & Games | I | Sports Ground |
| 2.30 pm – 7.00 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 7.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 5** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |
| 2.30 pm – 3.30 pm | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 4.30 pm – 5.00 pm | Break | I & II | |

| | | | |
|---|---|---|---|
| 5.00 pm – 7.00 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists (coordinated by Students' Clubs and Technical Societies) | I | Conference/Seminar Hall |
| | Sports & Games | II | Sports Ground |
| 2.30 pm – 7.00 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 7.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 6** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |
| 2.30 pm – 3.30 pm | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 4.30 pm – 5.00 pm | Break | I & II | |
| 5.00 pm – 7.00 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists (coordinated by Students' Clubs and Technical Societies) | II | Conference/Seminar Hall |
| | Sports & Games | I | Sports Ground |

| | | | |
|---|---|---|---|
| 2.30 pm – 7.00 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 7.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 7** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |
| 2.30 pm – 3.30 pm | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 4.30 pm – 5.00 pm | Break | I & II | |
| 5.00 pm – 7.00 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists (coordinated by Students' Clubs and Technical Societies) | I | Conference/Seminar Hall |
| | Sports & Games | II | Sports Ground |
| 2.30 pm – 7.00 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 7.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 8** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |

| | | | |
|---|---|---|---|
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |
| 2.30 pm – 3.30 pm | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 4.30 pm – 5.00 pm | Break | I & II | |
| 5.00 pm – 7.00 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists (coordinated by Students' Clubs and Technical Societies) | II | Conference/Seminar Hall |
| | Sports & Games | I | Sports Ground |
| 2.30 pm – 7.00 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 7.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 9** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |

| | | | |
|---|---|---|---|
| 9.30 am – 10.30 am | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |
| 2.30 pm – 3.30 pm | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 4.30 pm – 5.00 pm | Break | I & II | |
| 5.00 pm – 7.00 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists (coordinated by Students' Clubs and Technical Societies) | I | Conference/Seminar Hall |
| | Sports & Games | II | Sports Ground |
| 2.30 pm – 7.00 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 7.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 10** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |

| | | | |
|---|---|---|---|
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |
| 2.30 pm – 3.30 pm | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 4.30 pm – 5.00 pm | Break | I & II | |
| 5.00 pm – 7.00 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists (coordinated by Students' Clubs and Technical Societies) | II | Conference/Seminar Hall |
| | Sports & Games | I | Sports Ground |
| 2.30 pm – 7.00 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 7.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 11** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |

| | | | |
|---|---|---|---|
| 2.30 pm – 3.30 pm | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 4.30 pm – 5.00 pm | Break | I & II | |
| 5.00 pm – 7.00 pm | Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists (coordinated by Students' Clubs and Technical Societies) | I | Conference/Seminar Hall |
| | Sports & Games | II | Sports Ground |
| 2.30 pm – 7.00 pm | Local visits | 02/03 sections (by rotation) | Historical places in and around the area |
| 7.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |
| **DAY 12** | | | |
| 6:00 am | Wake up call | I & II | Respective Hostels |
| 6:30 am -7:20 am | Physical activity (mild exercise/yoga) | I & II | Sports Ground |
| 7.30 am -9.20 am | Bath, Breakfast etc. | I & II | Respective Hostels |
| 9.30 am – 10.30 am | Universal Human Values | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 10.30 am – 11.00 am | Break | I & II | |
| 11.00 am – 12.00 pm | Creative Arts / Technical Workshops / Proficiency Modules | I (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | II | Conference/Seminar Hall |
| 12.30 pm – 2.30 pm | Lunch Break | I & II | Respective Hostels |
| 2.30 pm – 3.30 pm | Universal Human Values | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |
| 3.30 pm – 4.30 pm | Creative Arts / Technical Workshops / Proficiency Modules | II (Section wise) | Suitable venue as per number of sections |
| | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | I | Conference/Seminar Hall |

| | | | |
|---|---|---|---|
| 4.30 pm – 5.00 pm | Break | I & II | |
| 6.00 pm – 8.00 pm | Talent Show and Valedictory Function<br><br>Principal's Address | I & II | Suitable venue (indoor/ outdoor) |
| 8.00 pm – 9.30 pm | Rest and Dinner | I & II | Respective Hostels |

**Note:**

1. Total duration of the Induction Program is two weeks i.e. 12 working days with Saturdays being working and Sundays off.
2. Sundays can be utilized for screening some Patriotic / Socially Significant Movies in the Jubilee Hall.
3. Faculty mentors would be required to obtain the feedback cum suggestions of the students of their respective groups about the Induction programme on the last day.
4. Coordinators can be assigned for various activities during the induction programme. The suggestive template is as under:
5.

| S. No. | **Name of the activity** | **Coordinators** |
|---|---|---|
| 1. | Visits to different departments and around the campus | HoDs |
| 2. | Physical/Sports activities in the Sports Ground (Morning as well as Evening) | In charge of Physical Education / Sports |
| 3. | • Creative Arts / Technical Workshops.<br>• Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists.<br>• Talent Show and Valedictory Function. | In charge of Technical / Cultural activities |
| 4. | Presentation cum Interactive Session with Eminent Alumni/Eminent Speaker | Training & Placement In charge |
| 5. | Universal Human Values | Suitable Faculty members |
| 6. | Proficiency Module (English) | Faculty of English language |
| 7. | Local Visits | Hostel Wardens / Discipline in charge |
| 8. | • Wake up call/Hostel related activities<br>• Arrangements at Valedictory Function | Chief Wardens (Boys/Girls) |

**Schedule of local visits**

| Dates | Sections |
|---|---|
| … | … |
| … | … |
| … | … |

**Note**:

1. The faculty mentors of the respective mentor-mentee groups/sections will accompany the students on local visits.
2. The Institute buses, if there, may be made available for the purpose each day or some other arrangements may be made.
3. Attendance of the students be taken at the time of departure and return.

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