DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA,BHOPAL

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

FIRST SEMESTER - GROUP 'B'

: NAME OF THE PROGRAMME :

Cement Technology, Civil Engg. ,CTM, Electrical Engineering, IC Manufacturing, Mine Surveying, PRPC, Plastic Technology,Printing Technology, Production Engineering ,Textile Technology

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	7354	103	INTRODUCTION TO IT SYSTEMS	3	3	10	10	10	30	70	03 Hrs.	4	2	20	30	3 Hrs.	5	150
4	7355	104	FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGINEERING	3	3	10	10	10	30	70	03 Hrs.	4	2	20	30	3 Hrs.	5	150
5	7356	105	ENGINEERING MECHANICS	3	3	10	10	10	30	70	03 Hrs.	4	2	20	30	3 Hrs.	5	150
6			ENVIRONMENTAL SCIENCE	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7			SPORTS AND YOGA	0	0	0	0	0	0	0	0	2	1	20	30	3 Hrs.	1	50
TOTAL				18	16				150	350		18	9	100	150		25	750

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
750

DIPLOMA WING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

SEMESTER I – GROUP 'B'

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 of multiple 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 complex 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 'B'

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 so that 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 on surface 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 thermometer, 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 gun etc.
- 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 energy transformations.
- Compare and relate physical properties associated with linear motion and rotational motion and apply conservation of angular momentum principle to known problems.
- Describe the phenomenon of surface tension, effects of temperature on surface tension and solve 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 reducing 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 screw gauge.
3. To determine radius of curvature of a convex and a concave mirror/surface using a spherometer.
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 thermometer and 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 of energy.
- 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 and different scales of temperature measurements.

SUGGESTED STUDENT ACTIVITES & STRATEGIES

Apart from classroom and laboratory learning following are the suggested student related activities which 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 classroom presentations.
- 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 'B'

COURSE TITLE	:	INTRODUCTION TO IT SYSTEMS
PAPER CODE	:	7354
SUBJECT CODE	:	103
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	02

Course Objectives::

This course is intended to make new students comfortable with computing environment - Learn- ing basic computer skills, Learning basic application software tools, Understanding Computer Hard- ware, Cyber security awareness

Course Content:

UNIT 1:

Basic Internet skills: Understanding browser, efficient use of search engines, awareness about Digital India portals (state and national portals) and college portals.

General understanding of various computer hardware components – CPU, Memory, Display, Key- board, Mouse, HDD and other Peripheral Devices.

UNIT 2:

OS Installation (Linux and MS Windows), Unix Shell and Commands, vi editor.

UNIT 3:

HTML4, CSS, making basic personal webpage.

UNIT 4:

Office Tools: OpenOffice Writer, OpenOffice Spreadsheet (Calc), OpenOffice Impress.

UNIT 5: Information security best practices.

Class lectures will only introduce the topic or demonstrate the tool, actual learning will take place in the Lab by practicing regularly.

Suggested Lab Work:

This is a skill course. Topics/concepts taught in the class should be practiced in the Lab same week and practiced regularly during the semester till student becomes confident about it. This course is all about some theory and a lot of practice.

References:

- R.S. Salaria, Computer Fundamentals, Khanna Publishing House
- Ramesh Bangia, PC Software Made Easy – The PC Course Kit, Khanna Publishing House
- Online Resources, Linux man pages, Wikipedia
- Mastering Linux Shell Scripting: A practical guide to Linux command-line, Bash scripting, and Shell programming, by Mokhtar Ebrahim, Andrew Mallett

Course outcomes:

At the end of the course student will be able to comfortably work on computer, install and configure OS, assemble a PC and connect it to external devices, write documents, create worksheets, prepare presentations, protect information and computers from basic abuses/ attacks.

INTRODUCTION TO IT SYSTEMS LAB

Course Objectives:

This Lab course is intended to practice whatever is taught in theory class of 'Introduction of IT Systems' and become proficient in using computing environment - basic computer skills, basic application software tools, Computer Hardware, cyber security features, etc.

Course Content:

S.No.	Topics for Practice
1	Browser features, browsing, using various search engines, writing search queries
2	Visit various e-governance/Digital India portals, understand their features, services offered
3	Read Wikipedia pages on computer hardware components, look at those components in lab, identify them, recognise various ports/interfaces and related cables, etc.
4	Install Linux and Windows operating system on identified lab machines, explore various options, do it multiple times
5	Connect various peripherals (printer, scanner, etc.) to computer, explore various features of peripheral and their device driver software.
6	Practice HTML commands, try them with various values, make your own Webpage
7	Explore features of Open Office tools, create documents using these features, do it multiple times
8	Explore security features of Operating Systems and Tools, try using them and see what happens.

This is a skill course. More you practice, better it will be.

References:

1. Online resources, Linux man pages, Wikipedia.
2. R.S. Salaria, Computer Fundamentals, Khanna Publishing House.
3. Ramesh Bangia, PC Software Made Easy – The PC Course Kit, Khanna Publishing House.
4. Mastering Linux Shell Scripting: A practical guide to Linux command-line, Bash scripting, and Shell programming, by Mokhtar Ebrahim, Andrew Mallett.
5. IT Essentials PC Hardware and Software Companion Guide, Davis Anfinson and Ken Quamme, CISC Press, Pearson Education.
6. PC Hardware and A+ Handbook, Kate J. Chase PHI (Microsoft).

Course outcomes:

At the end of the course student will be able to comfortably work on computer, install and configure OS, assemble a PC and connect it to external devices, write documents, create worksheets, prepare presentations, protect information and computers from basic abuses/attacks.

DIPLOMA WING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

SEMESTER I – GROUP 'B'

COURSE TITLE	:	FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING
PAPER CODE	:	7355
SUBJECT CODE	:	104
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	02

Course Objectives:

To provide basic knowledge of the different elements and concepts of electrical engineering field and to learn basic concepts of various active and passive electronic components, Signals, Op-Amp and their applications, Digital Electronics and their applications to help students deal with electrical and electronics engineering principles and applications in industrial processes of different fields.

Course Content:

UNIT I Overview of Electronic Components & Signals:

Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors, FET, MOS and CMOS and their Applications. Signals: DC/AC, voltage/current, periodic/non-periodic signals, average, rms, peak values, different types of signal waveforms, Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.

UNIT II Overview of Analog Circuits:

Operational Amplifiers-Ideal Op-Amp, Practical op amp, Open loop and closed loop configurations, Application of Op-Amp as amplifier, adder, differentiator and integrator.

UNIT III Overview of Digital Electronics: Introduction to Boolean Algebra, Electronic Implementation of Boolean Operations, Gates-Functional Block Approach, Storage elements-Flip Flops-A Functional block approach, Counters: Ripple, Up/down and decade, Introduction to digital IC Gates (of TTL Type).

Unit IV Electric and Magnetic Circuits:

EMF, Current, Potential Difference, Power and Energy; M.M.F, magnetic force, permeability, hysteresis loop, reluctance, leakage factor and BH curve; Electromagnetic induction, Faraday's laws of electromagnetic induction, Lenz's law; Dynamically induced emf; Statically induced emf; Equations of self and mutual inductance; Analogy between electric and magnetic circuits.

Unit V A.C. Circuits:

Cycle, Frequency, Periodic time, Amplitude, Angular velocity, RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, and power factor; Mathematical and phasor representation of alternating emf and current; Voltage and Current relationship in Star and Delta connections; A.C in resistors, inductors and capacitors; A.C in R-L series, R-C series, R-L-C series and parallel circuits; Power in A. C. Circuits, power triangle.

Unit VI Transformer and Machines: General construction and principle of different type of transformers; Emf equation and transformation ratio of transformers; Auto transformers; Construction and Working principle of motors; Basic equations and characteristic of motors.

References:

1. Ritu Sahdev, Basic Electrical Engineering, Khanna Publishing House
2. Mittle and Mittal, Basic Electrical Engineering, McGraw Education, New Delhi, 2015, ISBN : 978-0-07-0088572-5
3. Saxena, S. B. Lal, Fundamentals of Electrical Engineering, Cambridge University Press, latest edition ISBN : 9781107464353
4. Theraja, B. L., Electrical Technology Vol – I, S. Chand Publications, New Delhi, 2015, ISBN: 9788121924405
5. Theraja, B. L., Electrical Technology Vol – II, S. Chand Publications, New Delhi, 2015, ISBN: 9788121924375
6. Jegathesan, V., Basic Electrical and Electronics Engineering, Wiley India, New Delhi, 2015, ISBN : 97881236529513
7. Sedha, R.S., A text book of Applied Electronics, S.Chand, New Delhi, 2008, ISBN-13: 978-8121927833
8. Malvino, Albert Paul, David, Electronics Principles, McGraw Hill Education, New Delhi,2015, ISBN-13**:** 0070634244-978
9. Mehta, V.K., Mehta, Rohit, Principles of Electronics, S. Chand and Company, New Delhi, 2014, ISBN-13-9788121924504
10. Bell Devid, Fundamental of Electronic Devices and Circuits, Oxford University Press, New Delhi 2015 ISBN : 9780195425239

FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS ENGINEERING LAB

Suggested Practicals/Exercises:
The practical in this section are PrOs (i.e. sub-components of the COs) to be developed and assessed in the student for the attainment of the competency.

S. No.	Practical Outcomes (PrOs)	Approx. Hrs.
1.	Determine the permeability of magnetic material by plotting its B-H curve.	02*
2.	Measure voltage, current and power in 1-phase circuit with resistive load.	02*
3.	Measure voltage, current and power in R-L series circuit.	02*
4.	Determine the transformation ratio (K) of 1-phase transformer.	02
5.	Connect single phase transformer and measure input and output quantities.	02
6.	Make Star and Delta connection in induction motor starters and measure the line and phase values.	02
7.	Identify various passive electronic components in the given circuit	02
8.	Connect resistors in series and parallel combination on bread board and measure its value using digital multimeter.	02
9.	Connect capacitors in series and parallel combination on bread board and measure its value using multimeter.	02*

S. No.	Practical Outcomes (PrOs)	Approx. Hrs.
10.	Identify various active electronic components in the given circuit.	02
11.	Use multimeter to measure the value of given resistor.	02
12.	Use LCR-Q tester to measure the value of given capacitor and inductor.	02
13.	Determine the value of given resistor using digital multimeter to confirm with colour code.	02*
14.	Test the PN-junction diodes using digital multimeter.	02*
15.	Test the performance of PN-junction diode.	02
16.	Test the performance of Zener diode.	02
17.	Test the performance of LED.	02
18.	Identify three terminals of a transistor using digital multimeter.	02
19.	Test the performance of NPN transistor.	02*
20.	Determine the current gain of CE transistor configuration.	02
21.	Test the performance of transistor switch circuit.	02
22.	Test the performance of transistor amplifier circuit.	02
23.	Test Op-Amp as amplifier and Integrator	02
	Total	**46**

References:

1. Ritu Sahdev, Basic Electrical Engineering, Khanna Publishing House, 2018
2. Mittle and Mittal, Basic Electrical Engineering, McGraw Education, New Delhi, 2015, ISBN : 978-0-07-0088572-5
3. Saxena, S. B. Lal, Fundamentals of Electrical Engineering, Cambridge University Press, latest edition ISBN : 9781107464353
4. Theraja, B. L., Electrical Technology Vol – I, S. Chand publications, New Delhi, 2015, ISBN: 9788121924405
5. Theraja, B. L., Electrical Technology Vol – II, S. Chand publications, New Delhi, 2015, ISBN: 9788121924375
6. Jegathesan, V., Basic Electrical and Electronics Engineering, Wiley India, New Delhi, 2015, ISBN : 97881236529513
7. Sedha, R.S., A text book of Applied Electronics, S.Chand ,New Delhi, 2008, ISBN-13: 978-8121927833
8. Malvino, Albert Paul, David, Electronics Principles, McGraw Hill Eduction, New Delhi,2015, ISBN-13**:** 0070634244-978
9. Mehta, V.K., Mehta, Rohit, Principles of Electronics, S. Chand and Company, New Delhi, 2014, ISBN-13-9788121924504
10. Bell Devid, Fundamental of Electronic Devices and Circuits, Oxford University Press, New Delhi 2015 ISBN : 9780195425239

Suggested Softwares/Learning Websites:

a. en.wikipedia.org/wiki/Transformer
b. www.animations.physics.unsw.edu.au//jw/AC.html
c. www.alpharubicon.com/altenergy/understandingAC.htm
d. www.electronics-tutorials
e. learn.sparkfun.com/tutorials/transistors
f. www.pitt.edu/~qiw4/Academic/ME2082/Transistor%20Basics.pdf
g. www.technologystudent.com/elec1/transis1.htm
h. www.learningaboutelectronics.com
i. www.electrical4u.com

Course Outcomes:

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

1. Understand basic principle and operation of electric circuits and machines.
2. Solve basic problems related to electrical circuits and machines. Explain the operation of different electrical technologies.
3. Demonstrate an understanding of the control systems.
4. Understand the basic circuit elements
5. Understand different types of signal waveforms.
6. Understand logic gates and apply them in various electronic circuits.
7. Understand the basic concepts of op-amps, and their applications.
8. Use relevant electric/electronic protective devices safely.

DIPLOMA WING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

SEMESTER I – GROUP 'B'

COURSE TITLE	:	ENGINEERING MECHANICS
PAPER CODE	:	7356
SUBJECT CODE	:	105
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	02

Course Objectives:

Following are the objectives of this course:

1) To obtain resultant of various forces
2) To calculate support reactions through conditions of equilibrium for various structures
3) To understand role of friction in equilibrium problems
4) To know fundamental laws of machines and their applications to various engineering problems

Course Contents:

Unit – I Basics of mechanics and force system

Significance and relevance of Mechanics, Applied mechanics, Statics, Dynamics.

Space, time, mass, particle, flexible body and rigid body.

Scalar and vector quantity, Units of measurement (SI units) - Fundamental units and derived units.

Force – unit, representation as a vector and by Bow's notation, characteristics and effects of a force, Principle of transmissibility of force, Force system and its classification.

Resolution of a force - Orthogonal components of a force, moment of a force, Varignon's Theorem.

Composition of forces – Resultant, analytical method for determination of resultant for concurrent, non-concurrent and parallel co-planar force systems – Law of triangle, parallelogram and polygon of forces.

Unit– II Equilibrium

Equilibrium and Equilibrant, Free body and Free body diagram, Analytical and graphical methods of analysing equilibrium

Lami's Theorem – statement and explanation, Application for various engineering problems.

Types of beam, supports (simple, hinged, roller and fixed) and loads acting on beam (vertical and inclined point load, uniformly distributed load, couple),

Beam reaction for cantilever, simply supported beam with or without overhang – subjected to combination of Point load and uniformly distributed load.

Beam reaction graphically for simply supported beam subjected to vertical point loads only.

Unit– III Friction

Friction and its relevance in engineering, types and laws of friction, limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose, relation between co-efficient of friction and angle of friction.

Equilibrium of bodies on level surface subjected to force parallel and inclined to plane.

Equilibrium of bodies on inclined plane subjected to force parallel to the plane only.

Unit– IV Centroid and centre of gravity

Centroid of geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle)

Centroid of composite figures composed of not more than three geometrical figures

Centre of Gravity of simple solids (Cube, cuboid, cone, cylinder, sphere, hemisphere) Centre of Gravity of composite solids composed of not more than two simple solids.

Unit – V Simple lifting machine

Simple lifting machine, load, effort, mechanical advantage, applications and advantages. Velocity ratio, efficiency of machines, law of machine.

Ideal machine, friction in machine, maximum Mechanical advantage and efficiency, reversible and non-reversible machines, conditions for reversibility

Velocity ratios of Simple axle and wheel, Differential axle and wheel, Worm and worm wheel, Single purchase and double purchase crab winch, Simple screw jack, Weston's differential pulley block, geared pulley block.

Suggested Learning Resources:

1. D.S. Bedi, Engineering Mechanics, Khanna Publications, New Delhi (2008)
2. Khurmi, R.S., Applied Mechanics, S. Chand & Co. New Delhi.
3. Bansal R K, A text book of Engineering Mechanics, Laxmi Publications.
4. Ramamrutham, Engineering Mechanics, S. Chand & Co. New Delhi.
5. Dhade, Jamadar & Walawelkar, Fundamental of Applied Mechanics, Pune Vidhyarthi Gruh.
6. Ram, H. D.; Chauhan, A. K., Foundations and Applications of Applied Mechanics, Cambridge University Press.
7. Meriam, J. L., Kraige, L.G., Engineering Mechanics- Statics, Vol. I, Wiley Publication, New Delhi.

Course outcomes:

After completing this course, student will be able to:

1. Identify the force systems for given conditions by applying the basics of mechanics.
2. Determine unknown force(s) of different engineering systems.
3. Apply the principles of friction in various conditions for useful purposes.
4. Find the centroid and centre of gravity of various components in engineering systems.
5. Select the relevant simple lifting machine(s) for given purposes.

ENGINEERING MECHANICS LAB

Course Objectives::

Following are the objectives of this course:

1) To obtain resultant of various forces
2) To calculate support reactions through conditions of equilibrium for various structures
3) To understand role of friction in equilibrium problems
4) To know fundamental laws of machines and their applications to various engineering problems

List of Practical to be performed:

1. To study various equipments related to Engineering Mechanics.
2. To find the M.A., V.R., Efficiency and law of machine for Differential Axle and Wheel.
3. To find the M.A., V.R., Efficiency and law of machine for Simple Screw Jack.
4. Derive Law of machine using Worm and worm wheel.
5. Derive Law of machine using Single purchase crab.
6. Derive Law of machine using double purchase crab.
7. Derive Law of machine using Weston's differential or wormed geared pulley block.
8. Determine resultant of concurrent force system applying Law of Polygon of forces using force table.
9. Determine resultant of concurrent force system graphically.
10. Determine resultant of parallel force system graphically.
11. Verify Lami's theorem.
12. Study forces in various members of Jib crane.
13. Determine support reactions for simply supported beam.
14. Obtain support reactions of beam using graphical method.
15. Determine coefficient of friction for motion on horizontal and inclined plane.
16. Determine centroid of geometrical plane figures.

Suggested Learning Resources:

1. Bedi D.S., Engineering Mechanics, Khanna Publishing House
2. Khurmi, R.S., Applied Mechanics, S.Chand & Co. New Delhi.
3. Bansal R K, A text book of Engineering Mechanics, Laxmi Publications.
4. Ramamrutham, Engineering Mechanics, S.,S Chand & Co. New Delhi.
5. Dhade, Jamadar & Walawelkar, Fundamental of Applied Mechanics, Pune Vidhyarthi Gruh.
6. Ram, H. D.; Chauhan, A. K. Foundations and Applications of Applied Mechanics, Cambridge University Press.
7. Meriam, J. L., Kraige, L.G. , Engineering Mechanics- Statics, Vol. I, Wiley Publication, New Delhi.

Course outcomes:

After completing this course, student will be able to

1. Identify the force systems for given conditions by applying the basics of mechanics.
2. Determine unknown force(s) of different engineering systems.
3. Apply the principles of friction in various conditions for useful purposes.
4. Find the centroid and centre of gravity of various components in engineering systems.
5. Select the relevant simple lifting machine(s) for given purposes.

DIPLOMA WING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

SEMESTER I – GROUP 'B'

COURSE TITLE	:	ENVIRONMENTAL SCIENCE
PAPER CODE	:	--
SUBJECT CODE	:	--
TREORY CREDITS	:	00
PRACTICAL CREDITS	:	00

Course Objectives:

Technicians working in industries or elsewhere essentially require the knowledge of environmental science so as to enable them to work and produce most efficient, economical and eco-friendly finished products.

- Solve various engineering problems applying ecosystem to produce eco – friendly products.
- Use relevant air and noise control method to solve domestic and industrial problems.
- Use relevant water and soil control method to solve domestic and industrial problems.
- To recognize relevant energy sources required for domestic and industrial applications.
- Solve local solid and e-waste problems.

Course Content:

Pre requisite: - High School Chemistry

Unit-1 Ecosystem

Structure of ecosystem, Biotic & Abiotic components

Food chain and food web

Aquatic (Lentic and Lotic) and terrestrial ecosystem

Carbon, Nitrogen, Sulphur, Phosphorus cycle.

Global warming -Causes, effects, process, Green House Effect, Ozone depletion

Unit– 2 Air and, Noise Pollution

Definition of pollution and pollutant, Natural and manmade sources of air pollution (Refrigerants, I.C., Boiler)

Air Pollutants: Types, Particulate Pollutants: Effects and control (Bag filter, Cyclone separator, Electrostatic Precipitator)

Gaseous Pollution Control: Absorber, Catalytic Converter, Effects of air pollution due to Refrigerants, I.C., Boiler

Noise pollution: sources of pollution, measurement of pollution level, Effects of Noise pollution, Noise pollution (Regulation and Control) Rules, 2000

Unit- 3 Water and Soil Pollution

Sources of water pollution, Types of water pollutants, Characteristics of water pollutants Turbidity, pH, total suspended solids, total solids BOD and COD: Definition, calculation

Waste Water Treatment: Primary methods: sedimentation, froth floatation, Secondary methods: Activated sludge treatment, Trickling filter, Bioreactor, Tertiary Method: Membrane separation technology, RO (reverse osmosis).

Causes, Effects and Preventive measures of Soil Pollution: Causes-Excessive use of Fertilizers, Pesticides and Insecticides, Irrigation, E-Waste.

Unit– 4 Renewable sources of Energy

Solar Energy: Basics of Solar energy. Flat plate collector (Liquid & Air). Theory of flat plate collector. Importance of coating. Advanced collector. Solar pond. Solar water heater, solar dryer. Solar stills.

Biomass: Overview of biomass as energy source. Thermal characteristics of biomass as fuel. Anaerobic digestion. Biogas production mechanism. Utilization and storage of biogas.

Wind energy: Current status and future prospects of wind energy. Wind energy in India. Environmental benefits and problem of wind energy.

New Energy Sources: Need of new sources. Different types new energy sources. Applications of (Hydrogen energy, Ocean energy resources, Tidal energy conversion.) Concept, origin and power plants of geothermal energy

Unit-5 Solid Waste Management, ISO 14000 & Environmental Management 06 hours

Solid waste generation- Sources and characteristics of : Municipal solid waste, E- waste, biomedical waste.

Metallic wastes and Non-Metallic wastes (lubricants, plastics, rubber) from industries.

Collection and disposal: MSW (3R, principles, energy recovery, sanitary landfill), Hazardous waste

Air quality act 2004, air pollution control act 1981 and water pollution and control act1996.

Structure and role of Central and state pollution control board.

Concept of Carbon Credit, Carbon Footprint.

Environmental management in fabrication industry.

ISO14000: Implementation in industries, Benefits.

References:

(a) Suggested Learning Resources:

Books:

1. S.C. Sharma & M.P. Poonia, Environmental Studies,Khanna Publishing House,NewDelhi
2. C.N. R. Rao, Understanding Chemistry, Universities Press (India) Pvt. Ltd., 2011.
3. Arceivala, Soli Asolekar, Shyam, Waste Water Treatment for Pollution Control and
4. Reuse, Mc-Graw Hill Education India Pvt. Ltd., New York, 2007, ISBN:978-07-062099-
5. Nazaroff, William, Cohen, Lisa, Environmental Engineering Science, Willy, New York, 2000, ISBN 10: 0471144940.
6. O.P. Gupta, Elements of Environmental Pollution Control, Khanna Publishing House, New Delhi
7. Rao, C. S., Environmental Pollution Control and Engineering, New Age International Publication, 2007, ISBN: 81-224-1835-X.
8. Rao, M. N.Rao, H.V.N, Air Pollution, Tata Mc-Graw Hill Publication, New delhi, 1988, ISBN: 0-07-451871-8.
9. Frank Kreith, Jan F Kreider, Principles of Solar Engineering, McGraw-Hill, New York ; 1978, ISBN: 9780070354760.

10. Aldo Vieira, Da Rosa, Fundamentals of renewable energy processes, Academic Press Oxford, UK; 2013. ISBN: 9780123978257.
11. Patvardhan, A.D, Industrial Solid Waste, Teri Press, New Delhi, 2013, ISBN:978-81-7993-502-6
12. Metcalf & Eddy, Waste Water Engineering, Mc-Graw Hill, New York, 2013, ISBN: 077441206.
13. Keshav Kant, Air Pollution & Control, Khanna Publishing House, New Delhi (Edition 2018)

(b) Open source software and website address:

1) www.eco-prayer.org
2) www.teriin.org
3) www.cpcp.nic.in
4) www.cpcp.gov.in
5) www.indiaenvironmentportal.org.in
6) www.whatis.techtarget.com
7) www.sustainabledevelopment.un.org
8) www.conserve-energy-future.com)

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.

Course outcomes

At the end of the course student will be able to

1. Understand the ecosystem and terminology and solve various engineering problems applying ecosystem knowledge to produce eco – friendly products.
2. Understand the suitable air, extent of noise pollution, and control measures and acts.
3. Understand the water and soil pollution, and control measures and acts.
4. Understand different renewable energy resources and efficient process of harvesting.
5. Understand solid Waste Management, ISO 14000 & Environmental Management.

DIPLOMA WING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

SEMESTER I – GROUP 'B'

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

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 • Creative Arts • Universal Human Values • Literary • Proficiency Modules • Lectures by Eminent People • Visits to local Areas • 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: 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: 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 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. • Lecture Sessions or Films on Universal Human Values / Cultural / Talent hunt Activities / Performances by Classical or folk artists. • 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 • 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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