ShriVaishnavVidyapeethVishwavidyalaya

Diploma (Electrical Engineering)

SEMESTER I

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY		PRACTICAL		
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
DTMA101		APPLIED MATHEMATICS I	3	0	0	3	60	20	20	30	20

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:

1. To introduce the students with the Fundamentals of the Engineering Mathematics.

Course Outcomes:

After the successful completion of this course students will be able to

1. Apply the techniques of the modern algebra.
2. Understand the Quadratic Equations & Binomial Theorem.
3. Know the fundamental principles of the vector algebra.
4. Study the trigonometric properties used in the engineering.
5. Understand the concepts of the coordinate geometry.

Syllabus:

UNIT I

ALGEBRA: Logarithm, Definition of natural and common Logarithm, Laws of Logarithm. Simple Problems. Complex Numbers: Definition of Complex numbers, Cartesian and polar. Exponential forms of complex numbers. Modulus, amplitude & conjugate of a complex number, Algebra of Complex numbers (Equality, Addition, Subtraction, Multiplication). Cube roots of unity & its properties.De Moivre's theorem (statement only) and simple problems.

UNIT II

Quadratic Equations & Binomial Theorem: Definition of Quadratic Equations, Analysing the nature of roots using discriminant, Relation between roots & coefficients,Conjugate roots, Binomial Theorem: Definition of factorial notation, definition of permutation and combination with formula, Binomial theorem for positive index (statement only), General term and middle term. Binomial theorem for negative index (statement only), Partial Fraction: Definition of polynomial fraction, proper & improper fractions and definition of partial fractions, Resolving proper fractions into partial fractions with denominator containing non repeated linear factors, repeated linear factors and irreducible non repeated quadratic factors.

UNIT III

Vector Algebra: Definition of a vector quantity.Concept of Position vector and Ratio formula.Rectangular resolution of a vector.Algebra of vectors – equality, addition, subtraction & scalar multiplication.Scalar (Dot) product of two vectors with properties. Vector (cross) product of two vectors with properties. Applications: Application of dot product in work done by a force

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and projection of one vector upon another. Application of cross product in finding vector area and moment of a force.

UNIT IV

TRIGONOMETRY: Trigonometric Ratios of associated, compound, multiple and sub-multiple angles. Inverse trigonometric functions – Definition, formulae and simple problems.Properties of Triangle – sine, cosine and tangent formulae - Simple Problems.

UNIT V

COORDINATE GEOMETRY & MENSURATION: Co-ordinate System, Cartesian& Polar co-ordinate system, Distance formula and section formula, Area of a triangle and condition for collinearity. Straight Line, Equation of straight line in slope point form, intercept form, two-point form, two-intercept form, normal form. General equation of a straight line.Angle between two straight lines – Condition for parallelism and perpendicularity.Length of perpendicular from a point on a line.Perpendicular distance between two parallel lines. CIRCLE: Equation of circle in standard form, centre-radius form, diameter form, two-intercept form. General equation of circle with a given centre and radius.Simple Problems. Conic Section: Standard equations of parabola, ellipse & hyperbola. Definition of focus, vertex, directrix, axes, eccentricity.Simple problems. MENSURATION: Regular Polygon of n sides – Formula for area and perimeter. Prism and Pyramid – Formula for volume & Surface area.Simple Problems.

Text Books:

1. B.K. Paul, Diploma Engineering Mathematics (Vol-1), U.N. Dhar& Sons
2. A. Sarkar, Mathematics (First Semester), NabaPrakashani
3. G.P. Samanta, A Text Book of Diploma Engineering Mathematics, Volume-1, Learning Press
4. Dr. S. Bose & S. Saha, A Complete Text Book of Mathematics, LakhsmiPrakasan

Reference Books:

1. H.S. Hall & S.R. Knight, Higher Algebra Book Palace, New Delhi
2. S.L. Loney, Trigonometry S. Chand & Co.
3. H.K. Dass Engineering Mathematics S. Chand & Co.
4. T.M. Apostol Calculus, Volume-1, John Wiley & Sons
5. B.K.Pal, K.Das, Engineering Mathematics, Volume-1, U.N. Dhar& Sons
6. B.C. Das & B.N. Mukherjee, Differential Calculus U.N. Dhar& Sons
7. KAR, Engineering Mathematics, Tata McGraw- Hill
8. SINGH, Engineering Mathematics Tata McGraw- Hill

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Diploma Program
Applied Physics

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
DTPH101	Diploma	Applied Physics	60	20	20	30	20	3	0	2	4

Course Objectives	Students should be able to (A) identify different systems of units and convert units from one system to other as well as conversant with practical units. (B)Estimate and minimize the errors. (C) Select proper measuring instrument considering least count, range and precision required. (D)Select appropriate materials required for a specific purpose by studying properties of materials.(E) To understand and apply the concepts of charge, current, resistance, capacitance and electromagnetism to solve field problems. (F) To understand the properties of laser to apply them for various engineering applications including optical Fibre communication.
Course Outcomes	Students will be able to (A) Convert units from one system to other. (B) Estimate and minimize the errors in measurements. (C) Take precision measurement by selecting proper measuring instrument considering least count, range of precision required. (D) Select appropriate materials required for a specific purpose. (E) Apply the concepts of charge, current, resistance, capacitance and electromagnetism to solve field problems. (F) To handle instruments consists laser and optical fibers for various engineering applications.

Abbreviation		
Th	Theory	**Teacher Assessment (Theory) shall be based on following components: Quiz / Assignment / Project / Participation in class (Given that no component shall be exceed 10 Marks).**
T	Tutorial	**Teacher Assessment (Practical) shall be based on following components: Viva/ File/ Participation in Lab work (Given that no component shall be exceed 50% of Marks).**
P	Practical	

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DTPH101: Applied Physics

UNIT I Measurements

1.1 Units: Requirements of standard unit, various unit's systems (CGS, FPS, MKS, SI), conversions, fundamental and derived physical quantities and their units, dimensions and dimensional analysis.

1.2 Errors: Accuracy, precision of instruments, errors, types of errors, minimization of errors, significant figures, problems.

1.3 Measuring instruments: Venire caliper, micrometer screw gauge, spherometer, thermometer, galvanometer, voltmeter, Ammeter with least count and range, errors in them and correction to it.

UNIT II Properties of matter

2.1 Elasticity: Deformation, restoring force, stress, strain, Hooke's law, stress-strain diagram for some materials (steel, aluminum, cast iron, concrete), breaking stress.

2.2 Viscosity: Newton's law of viscosity, coefficient of viscosity, streamline and turbulent flow, critical velocity, Reynold's number, problems, stokes' law, determination of viscosity, factors affecting viscosity.

2.3 Surface tension: Cohesive and adhesive forces, angle of contact, surface tension, capillary action, problems, factors affecting surface tension.

UNIT III Optics

3.1 Wave theory of light: Huygen's theory, wavefronts, laws of reflection and refraction, total internal reflection, dispersion, angle of deviation, problems.

3.2 Interference and diffraction: Principle of superposition, constructive and destructive interference, and conditions to obtain steady interference pattern, Young's double slit experiment, diffraction, Fresnel and fraunhofer diffraction, applications and problems.

3.3 Polarization: Polarized and unpolarized light, qualitative treatment of polarizer and analyzer, half shade polarimeter, applications.

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UNIT IV Electricity and Electromagnetism

4.1 Electricity and Electromagnetism: Coulomb's Law, Electric Field, Intensity of Electric field and Electric Potential, Capacitance, capacitors in series and parallel. Ohm's law, resistance, conductance, resistivity, conductivity, series and parallel combination of resistors, problems.

4.2 Electromagnetism: Oersted experiment, magnetic field, magnetic flux, magnetic flux density, Biot-Savart law, magnetic field near straight conductor and at the centre of current carrying coil, problems.

UNIT V Laser and Fibre Optics

5.1 Laser: Stimulated and Spontaneous Emission, Population Inversion, Pumping, Optical Resonator, Properties and Applications of Laser, Ruby, He-Ne lasers.

5.2 Optical fibre: Introduction to Optical fibre, Ray theory of propagation through optical fibre, Acceptance angle and cone, Types of Optical fibre, Numerical Aperture, VNumber, Fractional refractive index change Δ, applications of optical fibre.

References

1. Engineering Physics by Gaur R. K. and Gupta S. L., Dhanpat Rai Publications, New Delhi, Eighth Edition, 2001, Physics Text Book of 11th & 12th std. (NCERT).
2. "Engineering Physics", by Dr. S. L. Gupta and Sanjeev Gupta, Dhanpat Rai Publication, New Delhi.
3. "Engineering Physics", by Navneet Gupta, Dhanpat Rai Publication, New Delhi.
4. "Engineering Physics", by H. J Sawant, Technical Publications, Pune, Maharashtra.
5. "Engineering Physics". by MN. Avdhanulu & P. G. Kshirsagar, S. Chand & Co.Edition (2012).

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DTPH101: Applied Physics

List of Experiments:

1. To determine the volume of a box by the Vernier Caliperse.
2. To determine the diameter of a wire by screw guage.
3. To determine the distance between two lines by traveling microscope.
4. To verify Hooke's law.
5. To find refractive index of material of prism using spectrometer.
6. To verify Ohm's law.
7. Measurement of Numerical aperture of fiber by LASER.
8. To determine the mass of cane sugar dissolved in water using half shade polarimeter.
9. To determine the surface tension of a liquid by Jagers's method.
10. To determine the value of coefficient of viscocity of water using Poiseuille' method.

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING &EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTEE101		Basic Electrical Engineering	60	20	20	30	20	2	1	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To impart the basic knowledge about the Electric and Magnetic circuits.
2. To explain the working principle, construction, applications of DC machines, AC machines.

Course Outcomes (COs):

After the successful completion of this course students will be able to

1. Understand and analyse basic circuit concepts.
2. Apply knowledge of mathematics to analyse and solve electrical circuit problems.
3. Understand the AC fundamentals.
4. Illustrate basic knowledge about the Electric and Magnetic circuits.
5. Distinguish the working Principles of various Electrical Machines.

Syllabus

UNIT I **8 Hrs.**

Basic Terminology and their concepts: Current, EMF, potential difference (Voltage), resistance, resistivity their units conductors & insulators, semiconductors. Electrical power, energy, and their units (SI), Heating effect of electric current. Relationship between electrical, mechanical, and thermal SI units of work, power and energy.

UNIT II **8 Hrs.**

D.C. Circuits: Ohm's law, Resistance – Specific Resistance, Temperature coefficient of Resistance, Resistance in series, parallel and series - parallel combinations, Kirchhoff's laws.

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DTEE101		Basic Electrical Engineering	60	20	20	30	20	2	1	2	4

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UNIT III **9 Hrs.**

Electromagnetism: Concept of magnetic flux, flux density, magnetic field intensity, permeability and their units. Magnetic circuits, concept of reluctance and mmf. Analogy between electric and magnetic circuits. Lenz's Law, Fleming's Left-hand rule & Fleming's right-hand rule, Self and mutual inductance.

UNIT IV **9 Hrs.**

A.C Circuits: - Instantaneous value, maximum (peak) value, cycle, frequency, alternating current and voltage. Difference between AC and DC. Average and RMS value of alternating voltage and current. Concept of phase, phase difference A.C. through pure resistance, inductance, capacitance, phasor diagram and power absorbed. Apparent power, reactive power and active power, power factor.

UNIT V **9 Hrs.**

Basic Concepts of Electrical Machines: Introduction of Transformer, DC Machine, Induction motor and Synchronous machines.

Textbooks:

1. Basic Electrical Engineering, V.N Mittle & Arvind Mittal, TMH, Second Edition.
2. Basic Electrical engineering, D.P Kothari & I.J Nagrath, TMH, Second Edition.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTEE101		Basic Electrical Engineering	60	20	20	30	20	2	1	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

References:

1. B. L. Theraja, "Electrical Technology", Vol.1, S. Chand Publication, New Delhi
2. E. Hughes, 'Electrical and Electronics Technology", Pearson, 2010.
3. L. S. Bobrow, 'Fundamentals of Electrical Engineering', Oxford University Press.

List of Experiments:

1. Verification of KCL and KVL for DC circuits.
2. Measurement of current, power and power factor of incandescent lamp, fluorescent lamp, and LED lamp.
3. Measurement of resistance and inductance of a choke coil using 3 voltmeter method.
4. Two way and three-way control of lamp and formation of truth table.
5. Measurement of earth resistance.
6. Study of effect of open and short circuit in simple circuits.
7. Demonstration of fuse and MCB separately by creating a fault.
8. Demonstration of cut-out sections of electrical machines (DC machines, Induction machines and synchronous machines).
9. Understanding AC and DC supply. Use of tester and test lamp to ascertain the healthy status of mains.

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING &EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTME101	BEC	Engineering Drawing	60	20	20	30	20	3	0	4	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit.
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

(A)Use drawing equipment, instruments & Materials (B) Follow and apply standard practice as per bureau of I.S. Develop the ability to draw various curves used in engineering practice. (C)Develop the ability to draw orthographic view of objects and draw the projections of point, line and planes.

Course Outcomes (COs):

1. Develop the ability to draw sectional view of various types of solids and construct development of surfaces.
2. Develop the concept and ability to draw the isometric projections and views.
3. Sketch the various Fasteners & tools used in mechanical engineering.

Syllabus

Unit-I **10HRS**

Uses of Drawing Aids: Drawing equipment instruments and materials, planning & layout of drawing, I.S. codes for planning & layout.

Lines, lettering & dimensioning: Different types of lines, Vertical capital & lower-case letters, inclined capital & lower-case letters, Numerals & Greek alphabets. Dimensioning methods-aligned method & unilateral with chain, parallel, progressive & combined dimensioning.

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING &EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTME101	BEC	Engineering Drawing	60	20	20	30	20	3	0	4	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit.
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Unit-II **8HRS**

Engineering Curves: Construction of Polygons, Various types of curves like Ellipse, parabola, hyperbola, cycloid, epicycloid, hypocycloid, Involute & spiral.

Unit-III **10HRS**

Projections of Points, Lines & Planes: Reference planes, Orthographic projections, 1st Angle and 3rd Angle projection, Projections of points, Projections of Lines- Determination of true lengths & inclinations, Projections of plane- circular, square, rhombus, triangular, regular Pentagonal & hexagonal plane surfaces, determination of true shape.

Unit-IV **8HRS**

Orthographic Projections: Simple Orthographic and Sectional Orthographic Projections of simple machine parts. Isometric Projections: Difference between isometric projections & isometric drawing, Isometric views & isometric projections.

Unit-V **6HRS**

Introduction to Computer Drafting: Introduction to different commands in the drawing software.

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTME101	**BEC**	**Engineering Drawing**	60	20	20	30	20	3	0	4	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit.
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Text Books:

1. BHATT, N. D. (53rd Edition 2019). *Engineering Drawing.* Charotar Publishing House PVT. LTD.
2. Luzadder , W. J. (7th edition 1976)). *Fundamentals of Engineering Drawing.* Prentice Hall.
3. Shah , P. J. (2008). *A Textbook of Engineering Drawing.* S. Chand Publishing.

References:

1. French, T. E., & Vierck, C. J. (1966). *Fundamentals of Engineering Drawing.* McGraw-Hill.
2. Gopalakrishna , K. R. (2017). *Engineering Drawing Vol 1 & 2 Combined.* Subhas Publications / Subhas Stores.

List of Experiments:

1. Three sheets on problems from geometrical constructions, lettering & types of lines
2. Five Sheets on the topic of Engineering Curves.
3. Four Sheets on Projections of Points & Projections of Straight Lines.
4. Three Sheets on Projections of Planes.
5. Five Sheets on the topic of Orthographic Projections.
6. Demonstration of drafting software to the students

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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTEE102	SEC	Electrical Workshop Practice	0	0	0	30	20	0	0	4	2

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To provide hands-on experience about use of different tools and basic manufacturing practices.
2. To develop a general manual and machining skills in the students.

Course Outcomes (COs):

After completing the course, the students will be able to:

1. Identify tools and equipment used and their respective functions.
2. Identify different types of materials and their basic properties.
3. Use and take measurements with the help of basic measuring tools/equipment.
4. Apply proper tools for a particular operation and apply safety procedures and precautionary measures.
5. Create different wiring styles.
6. Analyze different Earthing Practices for its applications.

List of Experiments:

1. Study of wiring components(Wires, Switches, Fuses, sockets, plug, lamps and lamp holders, rating of different accessories).
2. Control of two lamps from two switches (looping system).
3. To study Staircase wiring.
4. Use of megger for insulation testing and continuity test of wiring installation and machines.

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING &EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTEE102	SEC	Electrical Workshop Practice	0	0	0	30	20	0	0	4	2

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

5. Study of safety precautions while working on electrical installations and necessity of earthing. Identify different types of main switches with respect to
   a. Rating
   b. Purpose
   c. Use.
6. Identify fuse, 1-pole, 2-pole and 3-pole MCBs, ELCBs and RCCBs with respect to rating, purpose, and use etc.
7. Identify various types of wires and cables with respect to sizes, rating, purpose and use etc.
8. Make Electrical Wiring Joints (make straight joint/ married joint, make t joint, make western union joint and make pigtail joint).
9. Make a circuit for one lamp controlled by one switch with PVC surface conduit system.
10. Make a circuit for godown wiring.
11. Make a circuit for electrical bell connection.
12. Make a circuit for ceiling fan with regulator.
13. Make a circuit for series and parallel connection of lamps.
14. To understand the concept of earthing and types of earthing.
15. To study house wiring i.e., batten, cleat, casing-capping and conduit wirings.

References:

1. Workshop Technology I,II,III, by SK Hajra, Choudhary and AK Choudhary; Media Promoters and Publishers Pvt. Ltd. Mumbai.
2. Workshop Technology Vol. I, II, III by Manchanda; India Publishing House, Jalandhar.
3. Workshop Training Manual Vol. I, II by S.S. Ubhi; Katson Publishers, Ludhiana.
4. Manual on Workshop Practice by K Venkata Reddy; MacMillan India Ltd., New Delhi
5. Workshop Technology by B.S. Raghuwanshi; DhanpatRai and Co., New Delhi
6. Workshop Technology by HS Bawa; Tata McGraw Hill Publishers, New Delhi.

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Board of Studies	Faculty of Studies	Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth
Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth	Vishwavidyalaya, Indore	Vishwavidyalaya, Indore
Vishwavidyalaya, Indore	Vishwavidyalaya, Indore		

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Choice Based Credit System (CBCS) in the light of NEP-2020
Diploma
(2021-2024)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING &EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCE 201	BEC	Basic Civil Engineering	60	20	20	30	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit.
***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):
The students (A) will be able to identify various civil engineering aspects (B) with emphasis on, various surveys in Civil Engineering (C) efficiently & effective (D).

Course Outcomes (COs):
The student will be able
1. To understand aspect of Civil Engineering with emphasis on surveying.
2. To acquire knowledge of various types of surveying methods.
3. To analyze and solve the problems related to survey.

Syllabus:

UNIT I **08 Hrs.**
Types of Survey: Definition and introduction of survey; Objects of surveying; Uses of survey; Classification of surveying; Primary - Plain and geodetic survey; Secondary – Surveying based on instruments, method, object, nature of field.

UNIT II **09 Hrs.**
Chain Survey: Principle of chain survey; Study and use of instruments for linear measurements; Ranging – direct and indirect; Chain Triangulation – survey stations and selection of survey stations, factors affecting selection of survey stations; Survey lines, check lines, tie lines, base lines, offset; Obstacles in chaining.

UNIT III **09 Hrs.**
Compass Survey: Principle of compass survey; Meridian – True, Magnetic and Arbitrary; Bearing of lines, fore bearing, back bearing, whole circle bearing, quadrantal bearing; Prismatic compass, components, construction, and use.

UNIT IV **08 Hrs.**
Levelling: Definition and terms related to leveling; Dumpy level – components and construction; Leveling staff, backsight, foresight, intermediate sight, change point; Height of collimation; Height of instrument method; Rise and Fall method

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UNIT V **08 Hrs.**

Mapping and Sensing: Mapping details and contouring; Measurement of areas; Volumes application of measurement in quantity computations; Introduction of remote sensing and its application.

Textbooks:

1. B.C. Punmia; Surveying – Volume – I, Laxmi Publications.
2. S.K. Duggal; Surveying – Volume – I, McGraw Hill Publications.

Reference Books:

1. N.N. Basak; Surveying and Levelling, McGraw Hill Publications.
2. T.P. Kanetkar; Surveying and Levelling, Pune Vidyarthi Grih Prakashan

List of Practical's:

1. Measurement of distance with chain and tape on ground with direct ranging.
2. Measurement of distance with chain and tape on ground with indirect ranging.
3. Measurement of area by chain and cross staff.
4. Back bearing and fore bearing using prismatic compass.
5. Measurement of back and fore bearing for open traverse.
6. Levelling using Dumpy level.

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