Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Program Name: Diploma

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
DTMA201	BS	**APPLIED MATHEMATICS II**	60	20	20	0	0	3	1	0	4

Course Objective

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. *understand the concept of limit, continuity, and differentiability and find maxima, minima and critical points of functions.*
2. *solve the system of simultaneous linear equations using matrices and determinants*
3. *apply partial derivatives and 3D geometry to Engineering problems*
4. *understand different techniques of Integral and apply definite integral to find area and learn various methods of solving linear differential equations of first order.*
5. *construct and solve the problems by differential equations and integration.*

Course Content:

Unit 1

FUNCTION, LIMIT, CONTINUITY & DIFFERENTIABILITY: Function, Definitions of variables, constants, open & closed intervals. Definition & types of functions – Simple Examples, Limits, Concept & definition of Limit. Standard limits of algebraic, trigonometric, exponential and logarithmic functions. Evaluation of limits. Continuity, Definition and simple problems of continuity. DERIVATIVE: Definition of Derivatives, notations. Derivative of standard functions. Rules for differentiation in case of sum, difference, product and quotient of functions. Derivative of composite functions (Chain

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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
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rule). Derivatives of inverse trigonometric functions. Derivatives of implicit functions. Logarithmic derivatives. Derivatives of parametric functions. Derivative of one function with respect to another function, Second order derivatives. Applications of Derivatives. Geometric meaning of derivative. Rate measurement, Maxima & Minima (one variable).

Unit 2

MATRICES & DETERMINATS: Define matrix and its representation state its order. State types of matrices with examples. Perform Addition, subtraction and multiplication of a matrix with a scalar and multiplication of two matrices (upto third order only). Transpose, Adjoint and Inverse of a matrix upto third order. Solution of simultaneous equations by matrix method (linear equations in two and three unknowns). Problems on above, DETERMINATS: Define determinant (second and third order). Minor, CO-factor, Study properties of determinants. Cramer's Rule: (solutions of simultaneous equations of two and three unknown).

Unit 3

PARTIAL DIFFERENTIATION & ANALYTICAL GEOMETRY IN THREE DIMENSIONS: Functions of several variables. Partial derivatives up to three independent variables, Maxima & Minima, Euler's Theorem on homogenous function for two variables. ANALYTICAL GEOMETRY IN THREE DIMENSIONS: Co-ordinates of a point in rectangular co-ordinate system, Distance formula, Division formula, Dcs & Drs of a line, the formula for angle between two lines with given Drs, conditions of perpendicularity and parallelism. State equation of a plane, Find equation of a plane in different forms (i) General form Ax+By+Cz+D=0, where A,B,C are Drs of the normal to the plane, (ii) Intercept form (X/a+Y/b+Z/c=1), (iii) Normal form, Angle between two planes, Perpendicular distance from a point to a plane.

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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
DTMA201	BS	**APPLIED MATHEMATICS II**	60	20	20	0	0	3	1	0	4

Unit 4

INTEGRAL CALCULUS: Integration as inverse process of differentiation. Indefinite and Definite Integral, Integrals of standard functions, Methods of Integration (i) Integration by Decomposition of Integrand, (ii) Integration by Substitution, (iii) Integration by parts, Methods of Integration by partial fraction. Definite Integrals, Properties of Definite Integrals. Area bounded by the curve y=f(x), x=a, x= b and x -axis and the area bounded by the curve x=f(y), y=c, y= d and y - axis.

Unit 5

DIFFERENTIAL EQUATION: Differential equation, Order and degree of a differential equation, Formation of first order first degree differential equation. Solution of first order and first-degree differential equation by the following methods (i) separation of variables (ii) Linear

Text Books:

1. A. Sarkar, Mathematics (First Semester), Naba Prakashani
2. G.P. Samanta, A Text Book of Diploma Engineering Mathematics, Volume-1, Learning Press
3. Dr. S. Bose & S. Saha, A Complete Text Book of Mathematics, Lakhsmi Prakasan

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 in Civil Engineering
(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 101	BEC	Applied Mechanics	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):
The students (A) will be Able to familiarize with different branches of mechanics (B) with emphasis on their analysis and application to practical engineering problems(C) efficiently & effectively (D)

Course Outcomes (COs):
The students will be able to

1. To apply knowledge of mathematics, science in engineering.
2. To identify, formulate, and solve engineering problems.
3. Demonstrate various types of forces and their analysis.
4. Demonstrate shear force and bending moment on structural member.
5. Demonstrate centre of gravity and moment of inertia determination of different geometrical shapes.

Syllabus:

UNIT I **05 Hrs.**

Static and Dynamic Forces: Introduction to Engineering Mechanics; Classification of Engineering Mechanics; Statistics, Dynamics, Kinematics, Kinetics etc.; Fundamental Laws of Mechanics.

UNIT II **06 Hrs.**

Law of Forces: Force, Pressure and Stress; Free body diagram; Bow's Notation; Characteristics and effects of a force; System of forces, Resolution of a force, Composition of forces, Resultant / equilibrant force; Law of Parallelogram of Forces, Law of Triangle of Forces, Polygon Law of Forces; Lami's Theorem, Equilibrium of a Body Under Two/ Three/More than Three Forces; Law of Superposition of Forces.

UNIT III **06 Hrs.**

Analysis of Framed Structure: Analysis of Framed Structure: Frame, Types of frames; Truss, Types of trusses, Analysis of Truss; Various methods of Analyzing the truss; Numerical analysis of truss.

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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*				
DTCE 101	BEC	Applied Mechanics	60	20	20	30	20	2	1	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit.
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UNIT IV **06 Hrs.**

Centre of Gravity: Centroid; Centre of Gravity; Determination of Centroid of Simple Figures; Centroid of Composite Sections; Centre of Gravity of Solid Bodies.
Moment of Inertia: Basic Concept of Inertia, Definition of Moment of Inertia, Theorems of Moment of Inertia and Radius of Gyration.

UNIT V **07 Hrs.**

Beams: Types of Beams, Simply Supported Beam, Overhanging Beam, Cantilever Beam; Types of supports of a beam or frame: Roller, hinged and fixed supports; Load on the beam; Different types of loading; Support reaction of a beam for point and uniformly distributed load; Shear force and bending moment for simply supported beam for point and uniformly distributed load.

Textbooks:

1. Prasad I.B., Applied Mechanics, Khanna Publication
2. R.S. Khurmi, N. Khurmi, A Textbook of Engineering Mechanics, S Chand Publishing.
3. R.K. Rajput, A Textbook of Applied Mechanics, Laxmi Publications

Reference Books:

1. S.P, Timoshenko, Engineering Mechanics, McGraw Hill Education.
2. R.C. Hibbler, Engineering Mechanics: Statics & Dynamics, Pearson Education
3. A. Boresi & Schmidt, Engineering Mechanics- statics dynamics, Thomson Books

List of Practical's:

1. To verify the law of Triangle of forces
2. To verify the Lami's theorem.
3. To verify the law of parallelogram of forces.
4. To verify law of polygon of forces
5. To determine support reaction and shear force at a given section of a simply Supported beam and verify in analytically using parallel beam apparatus.
6. To determine the moment of inertia of fly wheel by falling weight method.
7. To verify bending moment at a given section of a simply supported beam.
8. Study of Various Beams and their Loading conditions

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Choice Based Credit System (CBCS) in the Light of NEP-2020
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Common to EE/Solar Engineering/ME/EI/TX
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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	BEC	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;
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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 and its practical examples. 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. Simple numerical problems based on Kirchhoff's laws.

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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	BEC	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;
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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. Elementary ideas about hysteresis loss. Electro Magnetic Induction, Dynamically and statically induced E.M.F, Lenz's Law & 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. Importance of RMS value. Simple problems. Concept of phase, phase difference and phasor representation of alternating voltage and current. A.C. through pure resistance, inductance, capacitance, phasor diagram and power absorbed. Apparent power, reactive power and active power, power factor, its importance and simple problems.

UNIT V **9 Hrs.**

Basic Concepts of Electrical Machines: Constructional details of Transformer, DC Machine, Induction motor and Synchronous machines, Working principle and operation of Transformer, 3-Phase Induction motor, DC machines 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.

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.

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Common to EE/Solar Engineering/ME/EI/TX
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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	BEC	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;
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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 methods.
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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			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTCH101	Diploma	Engineering Chemistry	60	20	20	30	20	2	1	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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Course Educational Objectives (CEOs):

To impart a sound knowledge on the principles of chemistry involving the different application-oriented topics required for all diploma engineering branches.

1. To understand the boiler related problems and treatment of hard water for industries and power plants.
2. To acquire the knowledge about the properties of engineering materials, lubricants and fuels.
3. To understand the electrochemical reactions and significance of corrosion control to protect the structure.
4. To acquaint the students with practical knowledge of the basic concepts of chemistry.

Course Outcomes (COs):

Students will:

1. Understand the properties of water and the importance of its treatment for portable and industrial purposes.
2. They will understand the basic properties of engineering materials, lubricants and fuels
3. To make the students understand the principles and electrochemical reactions involved in corrosion and methods to control corrosion.
4. They can predict the potential applications of chemistry and practical utility to become a good engineer.

Syllabus

Unit-I Water: Characteristics and Treatment

Sources, Impurities, Hardness & its units, Industrial water characteristics, softening of water by various methods (Exrernal & Internal treatment), Boiler trouble causes, effects & remedies, Characteristics of municipal water & its treatment.

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Shri Vaishnav Institute of Science
Name of Program: Diploma (All Streams)
(2021-2025)

COURSE CODE	CATE-GORY	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*				
DTCH101	Diploma	Engineering Chemistry	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.

Unit-II Lubricants

Introduction, Mechanism of lubrication, Classification of lubricants, Properties and Testing of lubricating oils.

Unit-III Fuels

Introduction, Definition and classification of fuels, Characteristics of a good fuel, Calorific value, Determination of calorific value by Bomb calorimeter, Proximate and Ultimate analysis of coal and their significance, Carbonization, Cracking of higher Hydrocarbons and its advantages, Knocking, Cetane number, Octane Number.

Unit-IV Electrochemistry and Corrosion

Arrhenius theory of electrolytic dissociation, Transport number, Kohlrausch's law, Electrochemical cells.

Introduction and economic aspects of corrosion, Dry or Chemical Corrosion, Wet or Electrochemical Corrosion, Prevention methods of corrosion.

Unit-V Engineering Materials

Engineering materials and their classification: Refractories, Cement, Polymers. Properties and applications.

References

1. Engg. Chemistry- Rath cengage learning.
2. Applied Chemistry – Theory and Practice, O.P. Viramani, A.K. Narula, New Age Pub. Chemistry for Environmental Engineering – Sawyer, McCarty and Parkin –McGraw Hill, International.
3. Basic Lubrication theory – Alistair Cameron

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COURSE CODE	CATE-GORY	COURSE NAME	TEACHING &EVALUATION SCHEME								
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DTCH101	Diploma	Engineering Chemistry	60	20	20	30	20	2	1	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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4. Engineering chemistry- Dr. Jyoti Mitna
5. Engineering chemistry- Dr. Sunita Ratan
6. Applied Chemistry – S.M. Khopkar
7. Introduction of polymer science- G.S. Mishra

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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*				
DTME205	DCC	Mechanical Measurement	60	20	20	0	0	3	0	0	3

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):

This course provides information about (A) Measurement of equipment in industries. This course also provides(B) basic knowledge and skills regarding measurement problems, their causes, and remedies in industries. Know basic (A) workshop processes (B) Read and interpret job drawing.

Course Outcomes (COs):

1. Recognize troubles in Mechanical Measurements.
2. Assemble, dismantle, and align mechanisms in sequential order.
3. Students will describe basic concepts of mechanical measurement.
4. Students will describe methods of measurement for various quantities like force, torque, power, displacement.

Syllabus

Unit-I **9 HRS**

Introduction to measurement and measuring instruments; Units of measurement; Calibration and Concept of errors.

Unit-II **8 HRS**

Measurement of pressure; Measurement of temperature-Measurement of temperature by thermometers.

Unit-III **8 HRS**

Measurement of temperature by thermometers, Bimetallic and Thermocouples.

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(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*				
DTME205	DCC	Mechanical Measurement	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; C - Credit.
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Unit-IV **8 HRS**

Metrology: Standards of measurement; Linear and angular measurement devices and systems limit gauges; Gauge blocks.

Unit-V **9 HRS**

Linear Measurement Instruments- Vernier caliper and Micrometer; Interval measurements: Slip gauges, checking of slip gauges for surface quality, Optical flat and Limit gauges.

Text Books:

1. Kumar, D. (2015). *Mechanical Measurements & Control.* Metropolitan Book Co. (P) Ltd.
2. Thomas , G., & Roy , D. (1993). *Mechanical Measurements* . Pearson.
3. Doebelin , E. O. , 4th edition (1 January 1990). *Measurement Systems: Application and Design.* McGraw Hill Higher Education.
4. Gupta, I. C. (2018). *A Textbook Of Engineering Metrology* . Dhanpat Rai Publications.

References:

1. Higgins , L. R. (1 September 1987). *Maintenance Engineering Handbook 4th Revised edition.* DA Information Services.
2. Gopalkrishnan, P. (1 January 2015). *Handbook of Materials Management.* Prentice Hall India Learning Private Limited.
3. Srivastava , S. K. (1 January 2002). *Industrial Maintenance Management.* S.Chand & Company Ltd.

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Vishwavidyalaya, Indore	Vishwavidyalaya, Indore		

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COURSE CODE	CATE GORY	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*				
DTME206	**SEC**	**Workshop Maintenance and Management**	0	0	0	30	20	0	0	2	1

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 subject aims to provide the student with:

1. To become familiar with workshop technology, industrial safety protocols, and gain an understanding of material properties.
2. To gain practical knowledge and hands-on experience in carpentry, fitting, welding, and sheet metal work through various shop exercises.

Course Outcomes(COs):

Students will:

1. Students will understand the importance of workshops, the technology involved, and the necessary industrial safety measures and precautions.
2. Students will be able to effectively use carpentry tools and analyze different wood joints and their properties.
3. Students will be proficient in using fitting tools to create various shapes and designs.
4. Students will recognize and understand different welding techniques and their applications.
5. Students will be capable of designing various shapes using sheet metal and related tools.

Syllabus

UNIT I **8 Hrs.**

Introduction to Workshop Maintenance: Introduction, need of workshop and types of workshops, Types of maintenance: preventive, predictive, corrective, and breakdown maintenance, Industrial safety- Introduction, objective of industrial safety, causes of accidents, common sources of accidents, preventive measures, and common safety methods.

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COURSE CODE	CATE GORY	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*				
DTME206	**SEC**	**Workshop Maintenance and Management**	0	0	0	30	20	0	0	2	1

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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UNIT II **9 Hrs.**

Modern Maintenance Practices: Advanced Maintenance Techniques: Total Productive Maintenance (TPM) and Reliability-Centered Maintenance (RCM). Computerized Maintenance Management Systems (CMMS): Features, applications, and benefits. Spare Parts Management: Inventory control, economic order quantity (EOQ), and stock levels. Sustainability in Maintenance: Energy efficiency and environmental considerations.

UNIT III **8 Hrs.**

Welding Shop: Introduction**,** gas welding, arc welding, soldering, brazing, and gas cutting, welding tools and consumables, metal joining operations, and metal joints. safety precautions during metal joining and cutting operations.

UNIT IV **9 Hrs.**

Machine Shop: Introduction, types of machine tools (e.g., lathes, milling machines, drills, grinders), machine tool components and their functions, measuring tools such as calipers, micrometers, and height gauges.

UNIT V **9 Hrs.**

Workshop Safety and Environmental Management: Safety regulations and standards (OSHA, etc.), Personal Protective Equipment (PPE), Fire prevention and first aid practices. Waste management in workshops, Handling hazardous materials, Energy conservation practices. Identifying potential hazards. Emergency response plans.

LIST OF EXPERIMENTS-

1. To study various industrial safety precautions & preventive measures.
2. To study the various timber properties, its defects and its prevention.
3. To make various joints (L-joint, T-joint, Cross joint, etc.) using carpentry tools.

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4. To perform various fitting shop operations using fitting tools.
5. To study various welding methods and its safety precaution.
6. To make various welding joints (Butt joints, Lap, joints, corner joints, etc).

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COURSE CODE	CATE GORY	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*				
DTME206	**SEC**	**Workshop Maintenance and Management**	0	0	0	30	20	0	0	2	1

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.

7. To study sheet metal properties and safety precautions.
8. To make various shapes using sheet metal tools and terminologies.

Text Books:

List of Textbooks-

1. Manufacturing Technology by P. N. Rao
2. Workshop Technology by B.S. Raghuvanshi
3. **"Maintenance Engineering Handbook"** by Keith Mobley
4. **"Handbook of Maintenance Management and Engineering"** by Mohamed Ben-Daya, Salih O. Duffuaa.
5. **"Industrial Maintenance Management"** by Srivastava S.K.

List of Reference Books-

1. Production Technology by R.K. Jain
2. Principles of Manufacturing Material & Process – Campeau
3. **"Workshop Technology Part 1, 2 & 3"** by W.A.J. Chapman

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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	TEACHER ASSESSTMENT*	END SEM UNIVERSITY EXAM	TEACHER ASSESSTMENT*				
DTHU101		COMMUNICATION SKILLS	0	0	0	30	20	0	0	4	2

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***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 20 marks.

Course Educational Objectives (CEOs):

A diploma holder is supposed to (A) write official, business and personal letters. (B)Technical report writing forms another activity of diploma holders. (C)Keeping in view, the above and continuing education needs of diploma holders, communication skill has been considered as essential human science subject. (D)The emphasis of teaching should be to develop necessary competencies (knowledge and skill) in written and oral communication in English.

Course Outcomes (COs):

Syllabus

UNIT-I

Prose (Text book) writing in English:

1. Introduction to communication skills in English language.
2. Concept, principle and procedure for prose selection.
3. Study and practice in English prose as recommended in the prescribed book (5-lessons)

UNIT-II

Correspondence in English: Official, Business & Personal Letters:

1. Introduction and understanding of writing letters in English.
2. Concept, principle and procedure in writing official letters.
3. Concept, principle and procedure in writing business letters.

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4. Concept, principle and procedure in writing personal letters.
5. Classification of text of letters as Title, Body and closing procedure.

UNIT – III

English Grammar: Basic Language Skills: Grammar and usage- Types of sentences, Phrases and Clauses; Parts of Speech; Direct-Indirect; Active-Passive voice; S-V Agreement, Tenses.

UNIT – IV

Communication Techniques: All forms of written communications including drafting reports; notices, agenda note, business correspondences, preparation of summaries and précis; telegrams, circulars and Telephonic communications.

UNIT – V

Precis and Comprehension:

1. Introduction and understanding of writing precis in English.
2. Concept/ principle or procedure for precis writing.
3. Organizing and summarizing the selected paragraph to develop scheme in precis writing.
4. Textbook prescribed by State Board of Technical Education to be followed.

Reference Books:

1. *TTTI- Chandigarh, A Book of English for Polytechnic, Pros Selection. MacMillan, India.*
2. *Krishna Mohan and Meera Banerjee. Developing Communication Skills. MacMillan, India.*
3. *N. K. Aggarwal. Better English Grammar & Composition. Arnold Publication, New Delhi.*
4. *Thomas Huckin and Leslie Olson. Technical Writing and Professional Communication. McGraw Hill, New Delhi.*
5. *R K Bansal and J B Harrison. Spoken English for India. Orient Longman, New Delhi.*

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