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				
DTMA101	BS	**APPLIED MATHEMATICS I**	60	20	20	-	-	3	0	-	3

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 basics of logarithm, complex number, Quadratic Equation, Binomial Theorem and Partial Fraction.*
2. *apply vector calculus to solve the engineering problems*
3. *construct trigonometric functions to solve the problems*
4. *understand and apply the concepts of line, circle and conic sections.*

Course Content:

Unit 1

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 2

Quadratic Equations & Binomial Theorem: Definition of Quadratic Equations, Analyzing the nature of roots using discriminant, Relation between roots & coefficients, Conjugate roots, Binomial Theorem: Definition of factorial notation, definition of

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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				
DTMA101	BS	**APPLIED MATHEMATICS I**	60	20	20	-	-	3	0	-	3

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 3

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

Unit 4

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 5

COORDINATE GEOMETRY: 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

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			END SEM	MST	Q/A	END SEM	Q/A				
DTMA101	BS	**APPLIED MATHEMATICS I**	60	20	20	-	-	3	0	-	3

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.

Text Books:

1. B.K. Paul, Diploma Engineering Mathematics (Vol-1), U.N. Dhar & Sons
2. A. Sarkar, Mathematics (First Semester), Naba Prakashani
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, 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

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
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Department of Physics
Choice Based Credit System (CBCS)

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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Diploma in Mechanical 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*				
DTME105	DCC	Engineering Materials	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):

To understand (A) engineering materials, atomic structure crystal structure, imperfection, etc. (B)To understand phase transformation, heat treatment, alloys, and mechanical properties.

Course Outcomes (COs):

After undergoing this course, the students will be able to:

1. distinguish between metals and non metals and ferrous and non ferrous materials.
2. explain the arrangement of atoms in various crystals.
3. carry out various heat treatment processes.
4. analyze microstructure and changes in microstructure due to heat treatment.
5. classify various types of plastics and rubber.

Syllabus

Unit-I **8 HRS**

Engineering Materials: Introduction, classification of materials; need of engineering materials; important properties of materials. Thermal, Chemical, Electrical, Mechanical properties of various materials. mechanical tests; modes of fracture.

Unit-II **9 HRS**

Crystallography - Fundamentals: Crystal, Unit Cell, Space Lattice, Arrangement of atoms in Simple Cubic Crystals, BCC, FCC and HCP Crystals, Number of atoms per unit Cell, Atomic Packing Factor, Crystal imperfection- Introduction, types of imperfection.

Deformation of materials: Overview of deformation behavior and its mechanism, behavior of material under load control and strain control.

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			THEORY			PRACTICAL		L	T	P	CREDIT
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
DTME105	DCC	Engineering Materials	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-III **9 HRS**

Metals and Alloys - Ferrous Materials: Different iron ores, Basic process of iron-making and steel-making, Classification of iron and steel. Different types of Cast Iron, manufacture, and their use.

Steels and alloy steel: Classification of plain carbon steels, Properties and usage of different types of Plain Carbon Steels, Effect of various alloys on properties of steel, Uses of alloy steels (high speed steel, stainless steel, spring steel, silicon steel)

Non-Ferrous Materials: Properties and uses of Aluminum, Copper and Zinc and their alloys

Unit-IV **9 HRS**

Phase transformation: Introduction, rate of transformation, mechanism of phase transformation and application of transformation; Iron-carbon system, iron-carbon equilibrium diagram; TTT-diagram, transformation of austenite upon continuous cooling and martensitic transformation.

Heat Treatment: Introduction, Heat treatment processes – hardening, tempering, annealing, normalizing, Casehardening and surface hardening, Hardenability of steels, Selection of case carburizing. heat-treatment furnaces.

Unit-V **7 HRS**

Plastics: Important sources of plastics, Classification-thermoplastic and thermoset and their uses, Various trade names of plastics, Plastic coatings, food grade plastics. Applications of plastics in automobile and domestic use.

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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*				
DTME105	DCC	Engineering Materials	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.

Text Books:

1. Rajput, R. K. (2008). *Engineering Materials.* New Delhi: S. Chand & Co. Ltd. .
2. Dogra , D., & Sharma , A. (2012). *Engineering Materials & Metallurgy.* S.K. Kataria & Sons.
3. Ashby, M. F. (Third edition 2006). *Engineering Materials Volume 2: An Introduction to Microstructures, Processing and Design.* Burlington: Butterworth-Heinemann.
4. Manchanda , V. K. (1999). *Textbook Of Materials Science.* New India Publishing House.
5. Choudhury , S. H. (1978). *Materials Science and Processes.* Indian Book Distributing.

References:

1. Basu, D. (2001). *Dictionary of Material Science & High Energy Physics.* CRC Press.
2. Singh, I. P. (2018). *Materials Science And Engineering.* JAIN BROTHERS.
3. Callister, W. D., & Rethwisch, D. G. (2018). *Materials Science and Engineering: An Introduction, 10th Edition.* John Wiley & Sons, Inc.

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
DTME102	BEC	Basic Mechanical 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):

To introduce the (A) main and sub domains of mechanical engineering (B) To introduce the space latest and future trends, jobs, and research opportunities in the field of mechanical engineering.

Course Outcomes (COs):

1. Students must be able to identify engineering trends and about mechanical engineering.
2. Students must be able to understand the basic concepts of thermodynamics, reciprocating machines, manufacturing process.
3. Students must be able to understand the basic concepts of measurements and how to apply in industry.

Syllabus

Unit-1 **6 Hrs.**

Overview of Engineering:

Introduction of engineering, classification of engineering disciplines, overview of mechanical engineering, domain and scope for mechanical engineers, jobs in engineering and future.

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
DTME102	BEC	Basic Mechanical Engineering	60	20	20	30	20	3	0	2	4

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

Thermodynamics:

Introduction and definition of thermodynamics, thermodynamics properties, laws of thermodynamics, classification and working of boilers, introduction of refrigeration, coefficient of performance.

Unit-III **8 Hrs.**

Reciprocating Machines:

Steam engine, Introduction of IC engine, terminology of IC engine, two and four stroke of petrol and diesel engine, applications of IC engines.

Unit-IV **8 Hrs.**

Measurement:

Introduction of various measuring instruments and devices, force, torque, velocity, acceleration, temperature, pressure, vernier caliper, micrometer, dial gauges, slip gauges, sine bar and combination set.

UNIT-V **8 Hrs.**

Manufacturing Process:

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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
DTME102	BEC	Basic Mechanical 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.

Introduction, definition and classification of basic manufacturing processes, properties of materials, introduction of casting, rolling, welding, soldering, extrusion.

Text Books:

1. Gupta D K, Gupta B, & Baredar P (2020) A Textbook of Basic Mechanical Engineering, Dhanpat Rai & Co. (English Edition)
2. Rajpur R.K. (2022) A Textbook of Basic Mechanical Engineering, University Science Press (An imprint of Laxmi Publications Pvt. Ltd.) (English Edition)
3. Pandey S.S., Jain K.K. (2024), Basic Mechanical Engineering, Deepak Prakashan Pvt. Ltd. Bhopal (Hindi and English Edition)
4. Thakur R.K, (2024), Basic Mechanical Engineering, University Book House Pvt. Ltd. Jaipur (Hindi Edition)

Reference Books:

1. Smith E.H. (1994) Mechanical Engineer's Reference Book. Society of Automotive Engineers, U.S.
2. Kreith F & Goswami D (2004), The CRC Handbook of Mechanical Engineering, CRC Press.

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Diploma in Mechanical Engineering
SEMESTER I (2023-2026)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
DTME102	BEC	Basic Mechanical 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.

List of Experiments

1. To the study of two-stroke and four stroke diesel engines.
2. To the study of two-stroke and four stroke petrol engines.
3. To study the of Cochran boiler.
4. To the study of Babcock and Wilcox boiler.
5. To the study of Locomotive boiler.
6. To the study of Lancashire boiler.
7. To the study of mountings and accessories in boilers.
8. To the study of measuring instruments.
9. To conduct experiments on linear and angular measurements.

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Choice Based Credit System (CBCS) Scheme in light of NEP2020

Diploma in Mechanical Engineering

SEMESTER I (2023-2026)

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):

Students will be able to understand the fundamental principles of engineering drawing, including geometric constructions, projection techniques, and dimensioning standards, ensuring clarity and precision in technical communication.

Course Outcomes (COs):

After completion of this course the student are expected to be able to demonstrate following knowledge skills and attitudes.

1. Students will create accurate engineering drawings with title blocks, line types, and dimensioning methods.
2. Students will construct complex geometric shapes, including regular polygons and conic sections, using manual techniques.
3. Students will prepare orthographic and isometric projections, accurately translating 3D objects into 2D representations.
4. Students will effectively project points and lines in different quadrants, determining their true lengths and angles accurately.

Syllabus

Unit - I

Introduction: Introduction to Engineering Drawing and its importance, Types of Engineering Drawings, Drawing Instruments & Accessories, Drawing Sheet Sizes, Sheet Layout & Title Block, Types of lines and their applications, Conventional representation of Materials, Lettering, Dimensioning: Dimensioning terminology, Types, Methods & Rules for dimensioning.

Unit - II

Geometrical Construction: Divide a line and Circle, Angle bisect, Triangles, Construction of Regular Polygons.

Scales: Introduction, Scale Representation, Units of measurements, Representative Fraction, Construction of Plain Scale.

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SEMESTER I (2023-2026)

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 - III

Conic Section Curve: Application Conic Section Curves, Construction of Ellipse, Parabola, and Hyperbola. Tangent & Normal to Ellipse, Parabola, and Hyperbola.

Special Curve; Cycloid, Epicycloid, Hypocycloid and Involute Construction and applications.

Unit - IV

Orthographic Projections: Introduction, Multiview projection, Orthographic Projection terminology, First angle and third angle projection, Reference planes, Multi view drawings preparation.

Projection of Points & Lines: Introduction, Projection of points, projection of lines, Determination of true length & Inclination of line.

Unit – V

Isometric Projections: Principle of Isometric Projection, Construction of Isometric Scale, Isometric Projection & Isometric view, Dimensioning on Isometric Projection, four centre method to Draw Ellipse, Isometric Views of Right Solids, Non-Isometric Solids, Truncated Solids and Composite Solids.

Introduction to Computer Aided Drafting: Introduction, CAD Application, CAD Software's and Hardware's. Introduction to AutoCAD; Drawing Space, Draw Commands, Modify Commands, Inquiry Commands, Dimension and Sheet Layout.

Text and Reference Books:

1. *"Engineering Drawing" by Basant Agarwal & C.M. Agarwal, McGraw Hill Education, 2019.*
2. *"Engineering Drawing" by N.D. Bhatt, Charotar Publishing House, 2023 (Revised 54th Edition).*
3. *"Engineering Drawing" by P.S. Gill, S.K. Kataria & Sons, 2017.*
4. *"Engineering Graphics" by P.I. Varghese, McGraw Hill Education, 2020.*
5. *"Engineering Drawing and Graphics" by K. Venugopal, New Age International Publishers, 2020.*
6. *"Engineering Drawing - Hindi" by Yogendra Varshney, Deepak Prakashan.*
7. *"Engineering Drawing - Hindi" by P. N. Vijayavergiya, Deepak Prakashan.*
8. *"Engineering Drawing - Hindi" by Prakash Asthana, Deepak Prakashan.*

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			THEORY			PRACTICAL		L	T	P	CREDITS
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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;
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9. *"Engineering Drawing - Hindi" by Aniket Modi, Deepak Prakashan.*

List of Experiments

1. Prepare a title block and layout a drawing sheet according to standard sizes.
2. Practice drawing various types of lines (thick, thin, dashed, dotted) and understand their uses.
3. Perform dimensioning on simple geometrical shapes, demonstrating the correct terminology, methods, and rules.
4. Divide a line segment and a circle into specified parts using appropriate tools.
5. Construct regular polygons (triangles, squares, pentagons, etc.) using compass and straightedge.
6. Construct a plain scale with representative fractions, including measurements in different units.
7. Construct ellipses, parabolas, and hyperbolas using different methods and Draw tangents and normal.
8. Construct cycloids, epicycloids, hypocycloids, and involutes, demonstrating their applications in engineering.
9. Prepare orthographic projections of given 3D objects in first and third-angle projections.
10. Create multi-view drawings from given 3D sketches or objects.
11. Project points in different quadrants and determine true lengths and angles.
12. Practice the projection of lines at various angles and determine their true lengths and inclinations.
13. Draw isometric views of right solids and non-isometric solids from given orthographic views.
14. Create isometric views of truncated solids and composite solids.
15. Introduction of AutoCAD & Create basic drawings.

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COURSE CODE	CAT-EGO-RY	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*				
BTME103	**SEC**	**Workshop Practices**	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):
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: Introduction, need of workshop and types of workshops, Industrial safety- Introduction, objective of industrial safety, causes of accidents, common sources of accidents, preventive measures, and common safety methods.

UNIT II **9 Hrs.**

Carpentry Shop: Introduction, use of carpentry tools such as saws, chisels, and hammers, marking and measuring tools; cutting tools and striking tool types of wood, carpentry hardware, and basic carpentry operations like sawing and chiseling, types of timbers, defects in timbers, and common wood joints (cross-lap, corner-lap, dovetail and bridle joints).

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BTME103	**SEC**	**Workshop Practices**	0	0	0	30	20	0	0	4	2

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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UNIT III **8 Hrs.**

Fitting Shop: Introduction, different fitting tools, including work holding, marking, measuring, cutting, and finishing tools, preparation of simple jobs and joints, fitting operations such as filing and drilling, and emphasizing safety precautions in fitting tasks.

UNIT IV **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 V **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

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.
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).
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

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BTME103	**SEC**	**Workshop Practices**	0	0	0	30	20	0	0	4	2

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit;
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2. Workshop Technology by B.S. Raghuvanshi

List of Reference Books-
1. Production Technology by R.K. Jain
2. Principles of Manufacturing Material & Process - Campeau

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DTME106	BEC	Introduction to IT Systems	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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Course Educational Objectives (CEOs):

The students will be able to

1. Identify Computer Hardware Components, Network Components and Peripherals
2. Explain the role of an Operating System.
3. Perform fundamental tasks common to most application software

Course Outcomes (COs):

The student will be able

1. Use Word Processing Software to prepare document.
2. Use Spreadsheet Software to create workbooks and automate calculation.
3. Use Presentation Software to create interactive presentation.
4. Find and evaluate information on the Web.

Syllabus

Unit-I Introduction: **5HRS**

- What is Computer and basic applications of Computer.
- Components of Computer System and input/output Devices.
- Computer Memory and Concepts of Hardware and Software.

Unit-II Operating Computer using GUI Based Operating System and Internet browsing: **6HRS**

- What is an Operating System, Basics of Popular Operating Systems.
- The User Interface, Using Mouse; Use of Common Icons, Status Bar, Using Menu and Menu-selection, Running an application.

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DTME106	BEC	Introduction to IT Systems	0	0	0	30	20	0	0	2	1

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Internet browsing: Basics of Computer Networks, Internet, Search Engines, URLs, how to use Web Browser.

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Unit-III Microsoft Word Basics **5HRS**

- Introduction to Microsoft Word
- Working with Text formats
- Formatting Document Content
- Using Tables in documents
- Printing Your Documents

Unit-IV Microsoft Excel Basics **5HRS**

- Introduction to Microsoft Excel
- Managing Rows & Columns
- Managing Worksheets
- Working with cells
- Using Formulas and Functions
- Worksheet and Table Data usage

Unit-V Microsoft PowerPoint Basics **5HRS**

- Introduction to Microsoft PowerPoint
- Working with Illustrations and Audio / Video files
- Generating Presentations with PowerPoint
- Printing Presentation Slides

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Textbooks:

1. Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., New Delhi
2. Information Technology for Management by Henery Lucas, Tata McGraw Hills, New Delhi
3. A First Course in Computer by Sanjay Saxena; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi.

Reference Books:

1. Fundamentals of Information Technology by Leon and Leon; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi
2. Internet for Everyone by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi 10.
3. Fundamentals of Information Technology by Vipin Arora, Eagle Prakashan, Jalandhar.

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