Diploma in Mechatronics Engineering

I Sem 2020-21

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	L	T	P	CREDITS
DTMA101		Applied Mathematics-I	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 introduce the students with the Fundamentals of the Engineering Mathematics.

Course Outcomes (COs):
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, Analyzing 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.

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Diploma in Mechatronics Engineering

I Sem 2020 - 21

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 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), 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*

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Diploma in Mechatronics Engineering
I. Sem – 2020–21

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	L	T	P	CREDITS
DTPH 101		Applied Physics	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):
Students should be able to;
1. Identify different systems of units and convert units from one system to other as well as conversant with practical units.
2. Estimate and minimize the errors.
3. Select proper measuring instrument considering least count, range and precision required.
4. Select appropriate materials required for a specific purpose by studying properties of materials.
5. To understand and apply the concepts of charge, current, resistance, capacitance and electromagnetism to solve field problems.
6. To understand the properties of laser to apply them for various engineering applications including optical fiber communication.

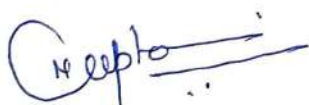## Course Outcomes:-
Students will be able to:
1. Convert units from one system to other.
2. Estimate and minimize the errors in measurements.
3. Take precision measurement by selecting proper measuring instrument considering least count, range of precision required.
4. Select appropriate materials required for a specific purpose.
5. Apply the concepts of charge, current, resistance, capacitance and electromagnetism to solve field problems.
6. To handle instruments consists laser and optical fibres for various engineering applications.

Syllabus

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

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Diploma in Mechatronics Engineering

I Sem 2020-21

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, 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.

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 Fiber 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 fiber: Introduction to Optical fibre, Ray theory of propagation through optical fibre, Acceptance angle and cone, Types of Optical fibre, Numerical Aperture, V- Number, Fractional refractive index change Δ, applications of optical fibre.

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

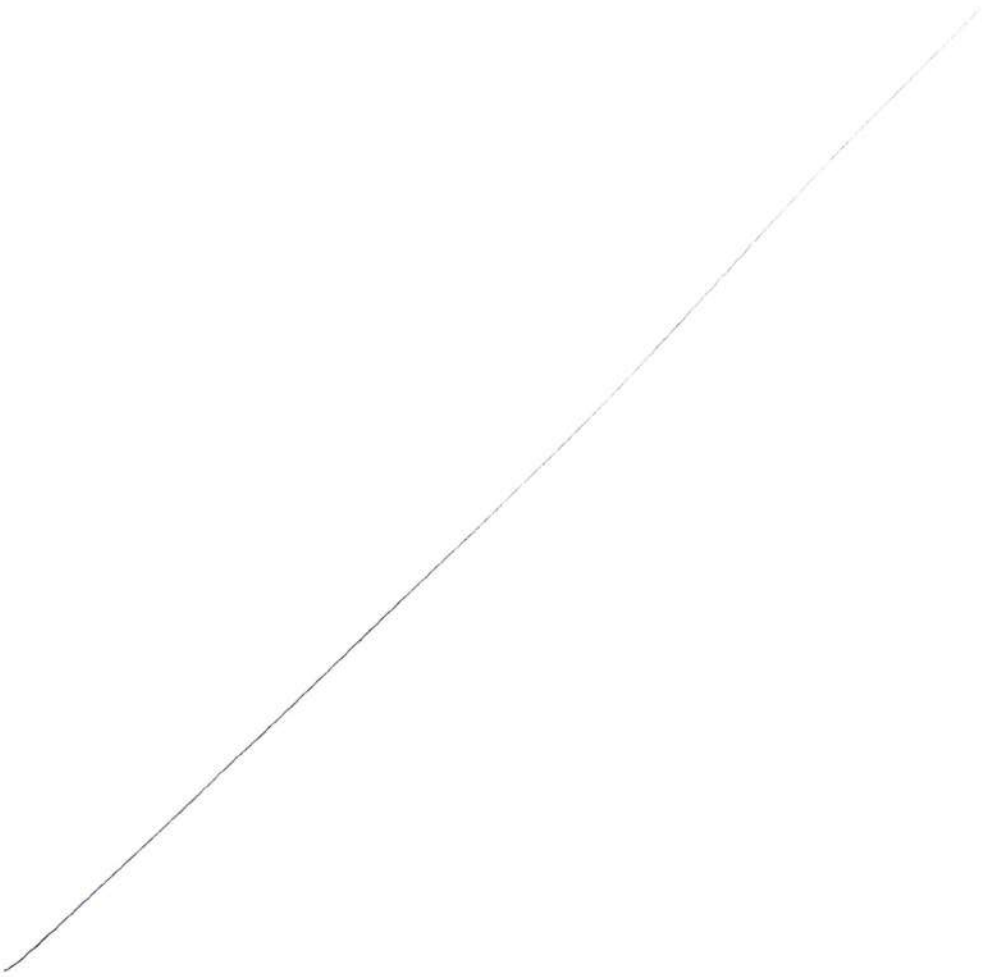# Diploma in Mechatronics Engineering

I Sem - 2020 - 21

Text Book: -

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)*

References:-

1. *Fundamentals of Physics Extended, By Halliday D., Resnik R. and Walker, Wiley, India, New Delhi, Eighth Edition, 2008.*
2. *Physics for scientists and Engineers by Serway R. A. and Jewett, Jr. J. W., Thomson Learning (Indian reprint), New Delhi, Sixth Edition, 2007.*

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Think Excellence. Live Excellence.

Diploma in Mechanical Engineering

Year 1st   Sem 1st

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			END SEM UNIVERSITY EXAM	TWO TERM EXAM	TEACHER ASSESSTMENT*	END SEM UNIVERSITY EXAM	TEACHER ASSESSTMENT*	L	T	P	CREDITS
DTME102		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 20 marks.

Course Educational Objectives (CEOs):

To introduce the (A) main & sub domains of Mechanical engineering (B)To introduce the scope latest & future trends, jobs & research opportunities in the field of Mechanical Engineering.

Course Outcomes (COs):

1. To introduce Mechanical Engineering with the help of case studies, magazine, documentaries, presentation and industrial visit.
2. To introduce the basic concepts of thermodynamics, heat engines, IC engine, production and case studies.
3. To introduce basic Manufacturing Process.

Syllabus

Unit - I

Overview of engineering: introduction to engineering, classification of engineering disciplines, overview of mechanical engineering, domain and scope for mechanical engineers, specialization in mechanical engineering and job opportunities

Unit - II

Thermodynamics: Introduction & basic definition of thermodynamics, terminology related with thermodynamics, laws of thermodynamics, properties of steam. Case study on topic related to thermodynamics

Unit - III

Measurement: Introduction, various measuring instruments & devices, linear & angular measurement, measurement of displacement, velocity and acceleration (translational and rotational), force, torque and strain, vibration and shock, measurement of pressure, flow, temperature and liquid level, viscosity and humidity. Case study on topic related to the any measuring devices.

Diploma in Mechanical Engineering

Year 1st   **Sem 1st**

Unit - IV

Heat Engine: Introduction to IC engine, terminology of IC engine, cycles used in IC engine, two and four stroke petrol and diesel engines. Introduction to boiler, types of steam boilers, properties of steam, terminology related to steam and boilers, mounting and accessories of steam boiler. Case study on topic related to the heat engines

Unit - V

Manufacturing Processes: Material properties, definition and classification of basic manufacturing process, introduction to casting, rolling, extrusion, welding, brazing, soldering. Case study on topic related with manufacturing engineering.

Reference Books

1. *Mechanical Engineering by R. K. Rajput*
2. *Basic Mechanical Engineering by D. K. Gupta*
3. *Basic Mechanical Engineering (MP) by Domkundwar*
4. *Engineering Metrology and Measurements, Bentley, Pearson Education*
5. *A course in Mechanical Measurements and Instrumentation, A K Sawhney, Dhanpat Rai Publications*
6. *Mechanical Engineering Handbook (CRC Press)*
7. *Mechanical Engineering Reference Book by E.H. Smith*
8. *An Introduction to Mechanical Engineering by Wickert/Lewis*
9. *Engineering Fundamentals: An Introduction to Engineering by Moaveni*

List of Experiments

1. To study Two-Stroke & Four-Stroke Diesel Engines.
2. To study Two-Stroke & Four-Stroke Petrol Engines.
3. To study the Cochran and Babcock & Wilcox boilers.
4. To study the working and function of mountings and accessories in boilers.
5. To conduct experiment on temperature measurement and check different characteristics of measurements.
6. To conduct experiment on linear and angular measurements and check different characteristics of measurements.
7. To conduct experiment on Stress, strain and force measurements and check different characteristics of measurements.
8. To conduct experiment on Speed/Velocity, acceleration measurements.

Diploma in Mechanical Engineering

Year 1st   **Sem 1st**

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			END SEM UNIVERSITY EXAM	TWO TERM EXAM	TEACHER ASSESSTMENT*	END SEM UNIVERSITY EXAM	TEACHER ASSESSTMENT*	L	T	P	CREDITS
DTME101		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 20 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 Outcome (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

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.

Unit-II

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

Unit-III

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

Reference Books:
1. *Elements of Engg. Drawing – N.D. Bhatt*
2. *Engineering Drawing – P.J. Shah.*
3. *Fundamentals of Engg. Drawing – W.J. Luz Zadar.*
4. *Fundamentals of Drawing – K.R. Gopal Krishna*
5. *Fundamentals of Engg. Drawing – French & Vierck*

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.

Diploma in Mechatronics Engineering

I Sem Session 2020-21

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	L	T	P	CREDITS
DTEI102		Fundamentals of Instruments and Control	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):
1. To introduce the basic functional elements of instrumentation.
2. To learn the fundamentals of electrical and electronic instruments.
3. To educate on the comparison between various measurement techniques.

Course Outcomes(COs):
After completion of this course the students will be able to
1. To develop and employ circuit models for elementary electronic components, e.g., resistors, sources, inductors, capacitors, diodes and transistors.
2. To apply knowledge of measurement system.
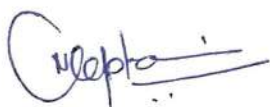3. To identify, formulate, and solve the fundamentals of electrical and electronic instruments.

Syllabus

UNIT-I
Principles of Instrumentation: Basic concepts of Instrumentation block diagram of generalized measurement system, function of different components, basic idea of Electronic, Hydraulics& pneumatic instruments and their Symbolic Representation.

UNIT-II
Performance Characteristics of Instruments: Specification, range, sensitivity, accuracy, precision, error, drift, threshold, resolution, hysteresis, correction, span, linearity, repeatability, reproducibility, speed of response, lag, fidelity, static & dynamic 6 characteristics (Definition with brief explanation only)

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Diploma in Mechatronics Engineering

I Sem 2020-21

UNIT-III

Analog Instruments, Classification, Principal of Operation and its Operating Forces in indicating Instruments, Introduction to Digital Instrumentation, comparison between analog and Digital Instruments.

UNIT-IV

Sensors & Transducers Definition of sensors & transducers, difference between sensor & transducer, factors governing the choice of transducer, Classification of Transducer: Primary & Secondary, Electrical & Mechanical, Analog & Digital, Active & Passive. Description of the following transducers: Resistance type (potentiometric, strain gauge), Inductance type (LVDT), RVDT.
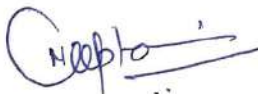
UNIT-V

Introduction to Control System, Types of Control system, Block diagram of Open loop and closed loop control system their comparison.

Text Books:

1. Murty D V S, "Transducers & Instrumentation", PHI, New Delhi (2016)
2. Sawhney A K, "Electrical and Electronics Measurements and Instrumentation", Dhanpat Rai and Sons.(2015)

Reference Books:

1. Kalsi H S, "Electronic Instrumentation "Tata McGraw Hill, New Delhi, 4th Ed. (2012).
2. Patranabis D, "Sensors and Transducers", PHI, New Delhi (2009).
3. Doebelin Ernest O,"Measurement Systems: Application and Design", Tata McGraw Hill Ltd., New Delhi(2004).

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Registrar
Shri Vaishnav Vidyapeeth
Vishwavidyalaya Indore

Diploma in Mechanical Engineering

Year 1st   **Sem 1st**

SUBJECT CODE	Category	SUBJECT NAME	THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM UNIVERSITY EXAM	TWO TERM EXAM	TEACHER ASSESSTMENT*	END SEM UNIVERSITY EXAM	TEACHER ASSESSTMENT*				
DTME103		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 20 marks.

Course Educational Objectives (CEOs)
Know basic (A) workshop processes (B) Read and interpret job drawing.

Course Outcomes (COs)
1. Identify, select and use various marking, measuring, holding, striking and cutting tools & equipment's. Operate, control different machines and equipment's.
2. Inspect the job for specified dimensions.
3. Produce jobs as per specified dimensions.
4. Adopt safety practices while working on various machines.

Syllabus
Unit-I
Engineering materials: Introduction, Different types of ferrous and non-ferrous materials, Properties of engineering materials.
Lathe machine: Introduction. Various operations performed on Lathe machine. Main parts of Lathe machine

Unit-II
Carpentry shop: Introduction, Various types of woods, Different types of tools, machines and accessories.

Unit-III
Fitting shop: Introduction Various marking, measuring, cutting, holding and striking tools. Different fitting operation like - chipping, filing, right angle, marking, drilling, tapping etc. Working Principle of Drilling machine, Tapping dies, its use. Safety precautions and safety equipment's.

Unit-IV
Welding shop: Introduction, Types of welding, ARC welding, Gas welding, Gas Cutting.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Think Excellence. Live Excellence.

Diploma in Mechanical Engineering

Year 1st   **Sem 1st**

Welding of dissimilar materials, Selection of welding rod material, Size of welding rod and work piece

Unit-V
Smithy shop: Introduction, Different forging processes like shaping, caulking, filleting, setting down operations etc. Safety precautions and safety equipment's.

Reference Books:
1. *Mechanical Workshop Practice-K.C. John-PHI Learning Pvt Ltd. EEE 2010*
2. *B.S. Raghuwanshi- Workshop Technology – Dhanpat Rai and sons, New Delhi, Ninth Edition 2002*
3. *S.K. Hajra Chaudhary- Workshop Technology Vol I & II – Media Promotors and Publisher, New Delhi. Eighth Edition 1986*

List of experiments:
1. Demonstration of different wood working tools / machines in carpentry shop.
2. One simple job involving any one joint like mortise and tenon, dovetail, bridle, half lap etc.
3. Demonstration of different welding tools / machines.
4. Demonstration of Arc Welding, Gas Welding, Gas Cutting and rebuilding of broken parts with welding
5. One simple job involving butt and lap joint in welding shop.
6. Demonstration of different forging tools and Power Hammer.
7. Demonstration of different forging processes like shaping, caulking, fullering, setting down operation etc
8. One job like hook peg, flat chisel or any hardware item.
9. Demonstration of different fitting tools and drilling machines and power tools.
10. Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc. in fitting shop.

HOD.

Director

Vice Chancellor
Shri Vaishnav Vidyapeeth
Vishwavidyalaya, Indore

			TEACHING & EVALUATION SCHEME							
			THEORY			PRACTICAL				
COURSE CODE	Category	COURSE NAME	END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	Th	T	P	CREDITS
DTCS101	-	**Computer Application-I**	-	-	-	30	20	-	-	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):
1. To understand the concepts of programming languages (object oriented programming and its implementation).
2. To understand the concept of program design, program coding, debugging, testing for development.
3. To describe the concepts of loops, arrays.
4. To understand the concepts of memory, pointers, functions, variables.
5. To understand the concepts of class, constructor, destructor.

Course Outcomes (COs):
After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes
1. Student will able to explain and implement the object oriented programming concepts.
2. Student will design, develop & test program for development.
3. Student will able to apply loop concept in program and design an array program.
4. Student will able to apply & implement the concept of class, constructor & destructor.

Syllabus
UNIT-I
Basic concepts of Computers, Basic LINUX Concepts and Vi – Editor, Internal and external DOS Commands, Shell programming. Basic concepts of MS-word, excel, PowerPoint and MS access Database.

UNIT-II
Learning OS Commands Practice of all Internal and External DOS Commands, Writing simple batch programs, Exposure to Windows environment, Practice of UNIX commands and Vi editor, Writing simple shell script

UNIT-III
Introduction to C: Basic Programming concepts, Program structure in C, Variables and Constants, Data types, Conditional statements, control statements, Functions, Arrays, Structures, Introduction to pointers, and Introduction to File Systems.

UNIT-IV
C Programming: Practicing programs to get exposure to basic data types, algebraic expressions, Conditional statements, Input Output Formatting, Control structures, arrays, functions, structures, pointers and basic file handling.

References:

1. Kernighan, B.W.," The elements of programming style", McGraw-Hill.
2. Yourdon, E., "Techniques of program structures and design", Prentice-Hall. Press, W.H., Teukolsky, S.A., Vetterling W.T.& Flannery, B.P., "Numeri.
3. "Introduction to Computers" by Peter Norton.
4. Yashvant Kanethkar "Shell Programming".

List of Experiments:

1. Creation and editing of Text files using MS- word.
2. Creation and operating of spreadsheet using MS-Excel.
3. Creation and editing power-point slides using MS- power point
4. Creation and manipulation of database table using MS-Access.
5. Study and practice of Internal & External DOS commands.
6. Using basic DOS commands like date, time, dir, copy con, type, ren etc. Exercise
7. Creating the directory structure and Batch file in the DOS
8. Using Windows XP graphical user interfaces (GUI).
9. Using basic Linux commands
10. Study of Shell programming (Writing shell scripts using control structures)
11. Study and practice of Basic linux Commands – ls, cp, mv, rm, chmod, kill, ps etc
12. Using vi editor Shell Programming (Writing simple shell scripts, use of conditional structures).
13. Study and Practice of MS windows – Folder related operations, My-Computer, window explorer, Control Panel.
14. WAP to illustrate constructor & Destructor
15. WAP to illustrate Object and classes.
16. WAP to illustrate Operator overloading
17. WAP to illustrate Function overloading
18. WAP to illustrate Derived classes & Inheritance.