

Course Name : Diploma in Mechanical Engineering
Semester : First
Subject Title : Mathematics - I
Subject Code : DTMA1101

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
L	T	P		Theory		Test	Total		Pract		Oral		Termwork		
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	2	-	-	100	35	25	125	50	-	-	-	-	25	10	150

Objective:

1. To teach students basic facts, concepts and principles of mathematics as a tool to analyze engineering problems.
2. To make students well versed in the prerequisites for further studies in mathematics and engineering.

No.	Contents	L	M
1	Algebra : i) Determinant of order three, Cramer's rule, properties of determinants. ii) Concepts of Permutations and Combinations and ${}^n P \quad {}^n C$ iii) Binomial Theorem with positive integral index, general term, Binomial expansion for negative integral and fractional index. . iv) Matrices of order m x n, types of matrices, equality of matrices, addition and subtraction of matrices, multiplication of matrices, transpose of matrix, adjoint of matrix, inverse of matrix, solution of system of linear equations by adjoint method.	06 03 05 08	14 06 10 14

2	Trigonometry : i) Circular measures of angles, Conversion from degree to radians and radians to degree. ii) Trigonometric ratios of any angle. iii) Addition – subtraction formulae. iv) Allied angle formulae. v) Product formulae, sum or difference formulae. vi) Multiple, submultiples angle formulae. vii) Inverse trigonometric functions. viii) Properties of triangle: sine rule, cosine rule. (without proof)	16	36
3	Straight lines : i) Equations of straight lines in different forms. ii) Angle between two straight lines, conditions for two parallel and perpendicular straight lines.	06	12
4	Complex Numbers : i) Definition of complex number, Elementary operations. ii) Argand's Diagram, Modulus, Amplitude, Polar form of a complex number.	04	08
		48	100

TEXT BOOKS :

- 1) Basic Mathematics (sem I) - B.M.Patel, J.M.Rawal and others - Nirali Prakashan (Revised syllabus - June 2007)
- 2) Mathematics for Polytechnic students I - S. P. Deshpande- Pune Vidyarthi Griha Prakashan (Revised syllabus - Aug.2010)

Course Name : Diploma in Mechanical Engineering
Semester : First
Subject Title : Physics – I
Subject Code : DTPH1102

Teaching and Examination Scheme:

Teaching Scheme			Paper Hours	Examination Scheme										Total Marks	
L	T	P		Theory		Test	Total		Pract.		Oral		Termwork		
				Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
3	-	2	3	100	35	25	125	50	-	-	-	-	25	10	150

Objectives:

Students should be able to;

- ☐ identify different systems of units and convert units from one system to other as well as conversant with practical units.
- ☐ estimate and minimize the errors.
- ☐ select proper measuring instrument considering least count, range and precision required.
- ☐ select appropriate materials required for a specific purpose by studying properties of materials.
- ☐ analyze the relation between pressure, volume and temperature of gas and the behavior of gas.
- ☐ identify good and bad conductors of heat needed for a given task.
- ☐ identify the phenomena of interference, diffraction and polarization of light and its industrial applications.
- ☐ use the properties of laser, x-rays and photoelectric effect for various engineering applications.
- ☐ identify, analyze, discriminate and interpret logical sequence of field problems with the study of physics.

Syllabus

Part I:- Theory

No	Contents	L	M
1	<p>1. Measurements</p> <p>1.1 Units Necessity of measurement, concept of unit of a physical quantity, requirements of standard unit, Various system of units (CGS, MKS, SI, FPS), conversions, practical units, fundamental and derived physical quantities and their units, dimensions and dimensional analysis</p> <p>1.2 Errors Accuracy, precision of instruments, errors, types of errors, minimization of errors, significant figures, problems</p> <p>1.3 Measuring instruments vernier caliper, dial caliper, micrometer screw gauge, spherometer, thermometer, galvanometer, voltmeter, ammeter with least count and range, errors in them and correction to it.</p>	2 2 4	6 6 8
2	<p>2. Properties of matter</p> <p>2.1 Elasticity Deformation, restoring force, stress, strain, Hooke's law, Moduli of elasticity (Young, bulk and rigidity), relation between them, problems, stress-strain diagram for some materials (steel, aluminium, cast iron, concrete), breaking stress, factor of safety.</p> <p>2.2 Viscosity Newton's law of viscosity, coefficient of viscosity, unit, streamline and turbulent flow, critical velocity, Reynold's number, problems, Stokes' law, determination of viscosity, factors affecting viscosity.</p> <p>2.3 Surface tension Cohesive and adhesive forces, angle of contact, surface tension, capillary action. problems. factors affecting surface tension.</p>	4 3 3	8 6 6
3	<p>3. Heat and Thermodynamics</p> <p>3.1 Gas laws and specific heats Boyle's law, Charle's law, Gay-Lussac's law, Kelvin scale of temperature, general gas equation, universal gas constant, N.T.P., principal specific heats and relation between them, problems</p> <p>3.2 Expansion, heat transmission and laws of thermodynamics Expansions of solids—linear, aerial and cubical, relation between them, modes of transmission of heat, coefficient of thermal conductivity, good and bad conductors and applications, Searle's and Lee's method, laws of thermodynamics, isothermal, isobaric, isochoric and adiabatic processes, problems</p>	3 5	10 10
4	<p>4. Optics</p> <p>4.1 Wave theory of light</p>	3	6

	Huygen's theory, wavefronts, wavenormals, laws of reflection and refraction, total internal reflection, dispersion, angle of deviation, problems		
	4.2 Interference and diffraction Principle of superposition, constructive and destructive interference, conditions to obtain steady interference pattern, Young's double slit experiment, diffraction, single slit and many slits diffraction, grating, applications, problems.	6	10
	4.3 Polarization Polarized and unpolarized light, qualitative treatment of polarizer and analyzer, polarimeter, applications	2	4
5	5. Modern Physics 5.1 X-rays Production of x-rays, continuous and characteristic x-rays, properties and applications of x-rays, problems, Moseley's law and its importance.	3	6
	5.2 Photoelectric effect Photoelectric effect, laws and characteristics of photoelectric effect, Einstein's photoelectric equation, problems, construction, working and applications of photocells	3	6
	5.3 Laser Spontaneous and stimulated emission, population inversion, pumping, lasing, properties and applications of laser, helium-neon laser and its applications, holography and its applications	5	8
		48	100

Part II:- Practicals

List of Laboratory experiments (10 experiments should be performed)

1. Use of vernier caliper and observations with traveling microscope
2. Use of micrometer screw gauge and observations with spectrometer
3. Determination of Young's modulus of material of wire using Searle's apparatus.
4. Capillarity with different bores capillary tubes
5. Determination of surface tension of liquid using capillary action
6. Determination of coefficient of viscosity using Stokes' method
7. Verification of laws of photoelectric effect
8. Determination of wavelength of laser using diffraction grating
9. Calculation of grating element of given grating
10. Determination of specific rotation/optical activity of given solution with polarimeter
11. Determination of thermal conductivity of bad conductor with Lee's method
12. Determination of thermal conductivity of good conductor with Searle's method
13. Determination of refractive index of glass with Snell's law

Demonstrations:-

1. Expansion of solid/liquid after heating
2. Working of photoelectric cell
3. Newton's rings
4. Total internal reflection
5. Polaroid
6. Dispersion of light by prism

Text Book: -

1. Engineering Physics by Gaur R. K. and Gupta S. L., Dhanpat Rai Publications, New Delhi, Eighth Edition, 2001.

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.

Course Name : Diploma in Mechanical Engineering
Semester : First
Subject Title : Chemistry-I
Subject Code : DTCY1103

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
L	T	P		Theory		Test	Total		Pract		Oral		Termwork		
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	0	2	3	100	35	25	125	40	25	10	-	-	-	-	150

Objectives:

1. To understand mole concept and volumetric analysis.
2. To represent the formation of bonds in molecules.
3. To describe the mechanism of redox reactions.
4. To identify the properties of organic compounds related to engineering applications

Syllabus

Part I: Theory

No.	Chapter	Contents	No. of Hours	Marks
1	Mole Concept, Atomic weight, Equivalent weight & Molecular weight	Definitions of atoms, molecules, Mole in terms of number, mass, volume, Definitions of equivalent weight and atomic weight of an element, Molecular weight of molecule, Determination of percentage composition of an element in a given molecule.	6	10
2	Acid, base and salt	Definitions & classification of acids & bases(Theories), pH & pOH, inorganic/organic Acids & bases, Basicity of an acid and acidity of a base, Equivalent weight of acids, bases, Acid base indicators, salts & types of salts: Normal, Acidic, Basic, Mixed, Double salt	5	10
3	Solution	Solution, Concentrations of solution: Grams per litre, Percentage by weight or volume,	6	08

		Normality, Molarity, Molality. Volumetric analysis, Titrations, Acid base titration, Acidimetry, Alkalimetry, Redox titration, Iodometric titrations, Complexometric titration. Precipitation titration.		
4	Redox Reactions	Introduction, Oxidation, Reduction, Electron transfer concept, Oxidising & reducing agents, Redox reactions in aqueous reactions, Oxidation number & rules for assigning oxidation number, Balancing of the chemical reaction	6	08
5	Chemical bonds & Chemical Kinetics	Chemical bond and theory of electrovalency, types of chemical bonds, Chemical reaction, types of chemical reaction, Reversible reactions, irreversible reactions, Rate of chemical reaction, Rate equation and rate law, order of reaction, Molecularity of reaction, Integrated rate equation, half life of reaction, Methods for the determination of rates of reactions.	7	10
6	Ionic equilibrium	Electrolytes, Degree of dissociation & Ostwald's dilution law, Hydrolysis & Degree of hydrolysis, common ion effect, solubility product and their application	5	06
7	Electrochemistry	Electrochemistry, Electrochemical reactions, Construction and working of electrochemical cell & electrolytic cell, Faraday's I & II laws of electrolysis, Applications of electrolysis: electroplating & refining, Electrochemical cells and batteries, Construction, working and applications of dry cells, Lead acid storage battery, fuel cells	8	10
8	Organic Chemistry	Introduction: Types of chemistry, Catenation property of Carbon element, Organic compounds, its properties and applications, Classification: by structure and functional group, Homologous series, Alkanes, alkenes and alkynes: Definition, General formula, Names and structure of first five members, Isomerism, Properties and Uses.	5	08

Part II:- Practicals

List of experiments:-

1. To study the use of indicators, pH papers and litmus papers for identification of acid, base and neutral solutions from the given set of solutions.
2. To standardize HCl solution using N/10 Na_2CO_3 .

3. To standardize NaOH solution using N/10 $C_2H_2O_4$ solution.
4. To determine the strength of acetic acid/ succinic acid using NaOH solution.
5. To standardize $KMnO_4$ solution using N/10 $C_2H_2O_4$ solution.
6. To determine strength of the mixture of $H_2SO_4 + C_2H_2O_4$ using NaOH and $KMnO_4$ solution.
7. To determine the amount of ferrous sulphate or ferrous ammonium sulphates in the given solution using $KMnO_4$ solution.
8. To standardize $K_2Cr_2O_7$ solution using N/10 $Na_2S_2O_3$ solution.
9. To determine the amount of ferrous sulphate or ferrous ammonium sulphates in the given solution using $K_2Cr_2O_7$ solution.
10. To determine the amount of copper sulphate in the given solution using $Na_2S_2O_3$ solution.
11. To standardize EDTA solution using N/10 $ZnSO_4$ solution.
12. To determine the amount of copper sulphate in the given solution using EDTA solution.
13. To standardize $AgNO_3$ solution using NaCl solution.
14. To determine the amount of HCl and HNO_3 per litre of the given solution using NaOH & $AgNO_3$ solution.
15. To characterize the following organic compounds for saturation, unsaturation and functional group: acetic acid, succinic acid, ethanol, ethylene diammine etc.

Text Book

1. Essentials of Physical chemistry ,B. S. Bhal & G. D. Tuli,, S Chand Group
Reprint: 18 (2010)

Reference books

1. Selected Topics in Inorganic Chemistry,By: Wahid U Malik, R.D.Madan, Tuli G.D.
S Chand Group, Edition: 17 (2006)
2. A Textbook of Organic Chemistry ,By: Bahl,Arun, B.S. Bahl S Chand Group
Edition: 18 (2006)

Course Name : Diploma in Mechanical Engineering
Semester : First
Subject Title : Communication Skills- I
Subject Code : DTHU1104

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
L	T	P		Theory		Test	Total		Pract		Oral		Termwork		
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	2	-	3	100	35	25	125	50	-	-	-	-	25	10	150

Objectives:

Developing the skills of comprehension of passages, building vocabulary and ability to express through oral and written communication , improving skills of composition, and help them formulate grammatically correct sentences.

Syllabus

Part I : Theory

Name of Topic	Lectures	Marks
PART I: TEXT Communication Skills-I compiled by Mrs. R. Thomas & Mrs. K. Krishnamurthy *Vocabulary-Understanding meaning of new words from text * Comprehension- Responding to the questions from text * Identifying parts of speech	24	50
PART II: Application of Grammar * Verbs * Tenses Do as directed (active/passive, direct/indirect, affirmative/negative/assertive, question tag, remove too, reported speech)	16	20
PART III: Paragraph Writing * Definition – Types of paragraphs * How to write a paragraph	03	10
PART IV: Vocabulary Building * Word Formation *Technical Jargon * use of synonyms/ antonyms/ homonyms/paronyms * One word substitute	05	20
Total	48	100

Part II : Tutorials

Term work will consist of 9 assignments. List of Assignments:

1. Building Vocabulary – (4hrs – 2 assignments)
 - i) 25 words for each assignment from the glossary given in the text book at the end of each chapter
 - ii) Technical Jargon- (2 hrs-1 assignment)
2. Grammar – (4 hrs – 2 assignments)
 - i) Insert correct parts of speech in the sentences given by the teachers. (16 sentences – two each, from different part of speech)
 - ii) Punctuate the sentences given by the teachers. (10 sentences)
3. Conversational Skills: Role Plays (8 hrs)
 - i) Students are going to perform the role on any 6 situations, given by the teacher. ii) Dialogue writing for the given situations. (2 assignments)
4. Write paragraphs on given topics (6 hrs-2 sentences)
 - i) Four types of paragraph to be written in **2 assignments** covering two types one assignments.
5. Newspaper Report Writing (4 hrs- 2 assignments)
 - i) Write any two events from the newspaper as it is.
 - ii) Write any two events on the situations given by the teacher.
6. Errors in English – (4 hrs- 2 assignments)
 - i) Find out the errors and rewrite the sentences given by the teacher. (20 sentences)

Learning Resources:

Books:

Text Book:

1. Communication Skills I- Compiled by Mrs. Thomas & Mrs. Krishnamurthy, H&M Dept

Reference Books:

1. Contemporary English grammar, structure and composition, Green David, Macmillan, India, First edition, 2000.
2. English grammar and composition, R. C. Jain, Macmillan, India, First edition, 2005.
3. Thesaurus, Rodgers, Oriental Longman
4. Dictionary, Oxford, Oxford University
5. Dictionary, Longman, Oriental Longman
6. English for Practical purposes, Patil Z. N. et al, Macmillan, India, 2004
7. English at Workplace, Sanyal Mukti, Macmillan, India

Course Name : Diploma in Mechanical Engineering
Semester : First
Subject Title : Production Process - I
Subject Code : DTME1105

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
L	T	P		Theory		Test	Total		Pract		Oral		Termwork		
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	-	-	3	100	35	25	125	40	-	-	-	-	-	-	125

Objectives:

The student will be able to

1. know and identify basic manufacturing processes for manufacturing different components.
2. operate & control different machines and equipments.
3. inspect the job for specified dimensions.
4. produce jobs as per specified dimensions.
5. select the specific manufacturing process for getting the desired type of output.
6. adopt safety practices while working on various machines.

Syllabus

Chapter	Name of the Topic	Hours	Marks
01	Casting: 1.1 Patterns – Material used, Types, Patterns allowances, Cores, Cores allowances. 1.2 Moulds – Mould materials, Types of sand, Moulding processes, Sand moulding, pit moulding, machine moulding, shell moulding. 1.3 Melting Practice – Types of furnaces with specific application, Cupola furnace, Electric arc furnace. 1.4 Casting principle and operation 1.5 Special Casting processes – Die	08	20

	<p>casting, Centrifugal casting, Investment casting.</p> <p>1.6 Casting defects and remedies.</p>		
02	<p>Mechanical Working of Metals:</p> <p>2.1 Forging</p> <p>2.1.1 Forging processes - Drop forging, Upset forging, Die forging or press forging.</p> <p>2.1.2 Types of dies like open die, closed die (Single Impression and Multi-impression), Closed die forging operations - Fullering, Edging, Bending, Blocking, Finishing</p> <p>2.1.3 Forgeable material and forgeability, Forging temperature, Grain flow in forged parts, Types of Presses and hammers.</p> <p>2.2 Rolling and Extrusion</p> <p>2.2.1 Principles of rolling and extrusion.</p> <p>2.2.2 Hot and cold rolling.</p> <p>2.2.3 Types of rolling mills.</p> <p>2.2.4 Different sections of rolled parts.</p> <p>2.2.5 Methods of extrusion – Direct, Indirect, Backward and impact Extrusion, Hot extrusion, Cold extrusion.</p> <p>2.2.6 Advantages, disadvantages and applications.</p>	08	20
03	<p>Sheet Metal Working:</p> <p>3.1 Types of presses and Specification.</p> <p>3.2 Press working operations – Cutting, bending, drawing, punching, blanking, notching, lancing.</p> <p>3.3 Die set components – punch and die shoe, guide pin, bolster plate, stripper, stock guide, feed stock, pilot.</p> <p>3.4 Punch and die Clearances for blanking and piercing, effect of clearance.</p>	06	15
04	<p>Welding:</p> <p>4.1 Classification.</p> <p>4.2 Gas welding techniques.</p> <p>4.3 Types of welding flames.</p> <p>4.4 Arc Welding – Principle, Equipment, Applications.</p> <p>4.5 Shielded metal arc welding.</p> <p>4.6 Submerged arc welding.</p> <p>4.7 TIG / MIG welding.</p> <p>4.8 Resistance welding – Spot welding, Seam welding, Projection welding.</p> <p>4.9 Welding defects.</p> <p>4.10 Brazing and soldering: Types, Principles, Applications.</p>	07	20
05	<p>Surface Finishing Processes:</p>	06	10

	5.1 Surface cleaning like abrasive blasting, solvent cleaning, acid Pickling, polishing and buffing. 5.2 Surface coating like electroplating, galvanizing, phosphating, Anodizing, metal spraying.		
06	Plastic Moulding: 6.1 Types of plastic 6.2 Compression moulding, Transfer moulding, Injection moulding, Blow moulding, Vacuum forming, Extrusion, Calendering, Rotational moulding.	06	15

Text Books:

1. Production Technology, P.C. Sharma ,S. Chand Publications,Third edition- 2009

Reference Books:

1. Workshop Technology - Volume I & II, B.S.Raghuvanshi, Dhanpat Rai & Co , Ninth Edition 2002
2. Manufacturing Technology, R.K. Rajput, Laxmi Publication (P) Ltd. First edition 2007
3. Workshop Technology - Volume 1 S. K. Hajra Chaudhary ,Media Promoters and Publishers limited, Eighth edition-1986

Course Name : Diploma in Mechanical Engineering
Semester : First
Subject Title : Basic Workshop Practice- I
Subject Code : DLME1106

Teaching Scheme			Paper Hours	Examination Scheme												Total Marks
L	T	P		Theory		Test	Total		Pract		Oral		Termwork			
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min		
1	-	3	-	-	-	-	-	-	-	-	-	-	50	20	50	

Objectives:

The student will be able to

- ☐ Know basic workshop processes.
- ☐ Read and interpret job drawing.
- ☐ Identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.
- ☐ Operate, control different machines and equipments.
- ☐ Inspect the job for specified dimensions.
- ☐ Produce jobs as per specified dimensions.
- ☐ Adopt safety practices while working on various machines.

CONTENTS:

Sr.No.	Details of Theory Contents	Periods
01	ENGINEERING MATERIALS: Introduction. Different types of ferrous and non-ferrous materials. Properties of Engineering materials.	3
02	CARPENTRY SHOP: Introduction. Various types of woods. Different types of tools, machines and accessories.	3
03	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 equipments.	3
04	SMITHY SHOP: Introduction.	3

	<p>Different forging tools and Power Hammer.</p> <p>Different forging processes like shaping, caulking, fullering, setting down operations etc.</p> <p>Safety precautions and safety equipments.</p>	
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Sr.No.	Details Of Practical Contents	
01	CARPENTRY SHOP:	<p>Demonstration of different wood working tools / machines</p> <p>Demonstration of different wood working processes, like planing, marking, chiseling, grooving, turning of wood etc.</p> <p>One simple job involving any one joint like mortise and tenon, dovetail, bridle, half lap etc.</p>
02	WOOD TURNING:	<p>One simple job involving turning, step turning, ball turning operation on wood.</p>
03	SMITHY SHOP:	<p>Demonstration of different forging tools and Power Hammer.</p> <p>Demonstration of different forging processes like shaping, caulking, fullering, setting down operation etc.</p> <p>One job like hook peg, flat chisel or any hardware item.</p>
04	FITTING SHOP:	<p>Demonstration of different fitting tools and drilling machines and power tools.</p> <p>Demonstration of different operations like chipping, filing, drilling, tapping, cutting etc.</p> <p>One simple fitting job involving practice of chipping, filing, drilling, tapping, cutting etc.</p>

Text Books:

1. Mechanical Workshop Practice-K.C.John-PHI Learning Pvt Ltd. EEE 2010

Reference Books:

1. B.S. Raghuwanshi- Workshop Technology – Dhanpat Rai and sons, New Delhi, Ninth Edition 2002
2. S.K. Hajra Chaudhary- Workshop Technology Vol I & II – Media Promotors and Publisher, New Delhi. Eighth Edition 1986

Course Name : Diploma in Mechanical Engineering
Semester : First
Subject Title : Engineering Graphics- I
Subject Code : DLME1107

Teaching Scheme			Paper Hours	Examination Scheme											Total Marks
L	T	P		Theory		Test	Total		Pract		Oral		Termwork		
				Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
2	-	4	-	-	-	-	-	50	20	-	-	50	20	100	

Objectives:

The student will be able to

- ☐ Understand the fundamentals of Engineering Drawing
- ☐ Read and interpret object drawings.

Syllabus

Part I:- Theory

No	Topic		Contents	Hrs
1	Drawing Instruments & their uses	1.1	Letters & Numbers (Single stroke Vertical)	4
		1.2	Convention of Lines & it's applications	
		1.3	Geometrical Constructions involving construction of tangential arcs & common tangents.	
2	Engineering Curves	2.1	Ellipse by following Methods 1. Directrix Focus Method 2. Arcs of Circles Method 3. Concentric Circles method 4. Rectangle/Oblong Method	7

		2.3	Parabola by following Methods 1. Directrix Focus Method 2. Rectangle Method 3. Tangent Method	
		2.4	Hyperbola by Eccentricity Method Rectangular Hyperbola	
		2.5	Cycloid, Epicycloid & Hypocycloid (Starting Point of the curve to be the point of contact at the beginning)	
		2.6	Involute of a circle (Full Involute only) Involute of a regular polygon	
		2.7	Archimedian spiral (starting with center only)	
		2.8	Helix on a cylinder	
3	Projections of points & straight Lines		Planes of projections – HP, VP & PP Orthographic projections of points, Projections of Straight Lines with lines inclined to both the reference planes.(Lines to be considered in first quadrant only. Simple problems excluding HT & VT of a line)	5
4	Projections of Planes		Projections of circular, square, rhombus, triangular, regular pentagonal & hexagonal plane surfaces with surfaces inclined to one reference plane & perpendicular to other. (excluding side view)	6
5	Orthographic Projections		Projections of simple machine parts with surfaces parallel to at least one of the planes of projection. (Excluding sectional Views)	8
6	Introduction to Computer Drafting		Introduction to different commands in the drawing software	2

Part II:- Practicals

- A. The students should work out the problems on the following topics on half imperial drawing sheets during the practicals.
1. One sheet on problems from geometrical constructions, lettering & types of lines
 2. Three Sheets on the topic of Engineering Curves.
 3. Two Sheets on Projections of Points & projections of Straight Lines.
 4. Two Sheets on Projections of Planes.
 5. Four Sheets on the topic of Orthographic Projections. B.
- Demonstration of drafting software to the students.

Text Books:-

1. Engineering Drawing : N.D.Bhat , Charotar Publishers,49th Edition 2010
2. Engineering Graphics & Engineering – S.T.Ghan,M.V.Rawalani- Nirali Publications-seventh Edition -2009

References:-

1. Engineering Drawing- D.A.Jolhe - TATA McGraw Hill- 2008
2. Engineering Graphics- K.R.Mohan – Dhanpatrai publishing co.-ist edition-2009

Course Name : Diploma in Mechanical Engineering
Semester : First
Subject Title : Production Processes Workshop
Subject Code : DLME1108

Teaching Scheme			Paper Hours	Examination Scheme										Total Marks	
L	T	P		Theory		Test	Total		Pract		Oral		Termwork		
				Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
-	-	2	-	-	-	-	-	-	-	-	-	-	25	10	25

Objectives:

The student will able to

- ☐ Know basic workshop processes.
- ☐ Read and interpret job drawing.
- ☐ Identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.
- ☐ Operate, control different machines and equipments.
- ☐ Inspect the job for specified dimensions.
- ☐ Produce jobs as per specified dimensions.
- ☐ Adopt safety practices while working on various machines.

Sr.No.	Details Of Practical Contents
01	PATTERN MAKING One job on single piece pattern. One job on split pattern.
02	MOULDING AND CASTING Demonstration to moulding, making shop moulding, tools materials, sand mixing etc.
03	MACHINE TOOL DEMONSTRATION: Machines such as drilling machine, shaper, griding and milling machines should operated and demonstrated.

Text Book:

1. Mechanical Workshop Practice-K.C.John-PHI Learning Pvt Ltd. EEE 2010

Reference Books:

1. B.S. Raghuwanshi- Workshop Technology – Dhanpat Rai and sons, New Delhi, Ninth Edition 2002
2. S.K. Hajra Chaudhary- Workshop Technology Vol I & II – Media Promotors and Publisher, New Delhi. Eighth Edition 1986