



Veermata Jijabai Technological Institute (V.J.T.I)
 (Central Technological Institute, Maharashtra State, INDIA) .
 H. R. Mahajani Marg, Matunga, Mumbai 400019
 Tel.No. +91 22 24198101-02 Fax: +91 22 24102874
 Website: www.vjti.ac.in

Programme: Diploma in Mechanical Engineering (DME)

Semester : I

Implemented from: 2017

COURSE CODE	COURSE	GR	TEACHING SCHEME (HRS/WK)				EXAMINATION SCHEME													
			L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS	
								Max	Min		Max	Min	Max	Min	Max	Min				
174MA11a	Mathematics-I	B	3	2	0	5	3	80	32	20	100	40	-	-	-	-	25	10	125	
174PH12	Physics-I	B	3	0	2	5	3	80	32	20	100	40	25	10	-	-	25	10	150	
174CH13	Chemistry-I	B	3	0	2	5	3	80	32	20	100	40	25	10	-	-	25	10	150	
174HM14x	Communication Skills	B	3	2	0	5	3	80	32	20	100	40	-	-	-	-	25	10	125	
174ME15	Engineering Drawing-I	C	2	0	4	6	3	80	32	20	100	40	-	-	-	-	50	20	150	
174CE16	Environmental Studies	B	1	2	0	3	-	-	-	-	-	-	-	-	25	10	25	10	50	
174ME17	Basic Workshop Practice-I	C	0	0	3	3	-	-	-	-	-	-	-	-	-	-	50	20	50	
TOTAL			15	6	11	32	-	400	-	100	500	-	50	-	25	-	225	-	800	

Abbreviations: B – Basic; C – Core; A – Applied; M – Management; L – Theory Lecture; T – Tutorial; P – Practical; TH – Theory Paper; IST – In-Semester Test; PR – Practical Exam; OR – Oral Exam; TW- Term Work; GR – Grade; CR - Credits


Curriculum Coordinator


Head
Diploma in Mechanical Engineering


Dean - Diploma



Syllabus (R-2017)

COURSE : DME

SEMESTER : I

SR. NO	SUBJECT TITLE	SUBJECT CODE
1	Mathematics- I	174MA11a
2	Physics-I	174PH12
3	Chemistry-I	174CH13
4	Communication Skills	174HM14x
5	Engineering Drawing-I	174ME15
6	Environmental Studies	174CE16
7	Basic Workshop Practice I	174ME17



DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: FIRST
COURSE TITLE	: MATHEMATICS - I
COURSE CODE	: 174MA11a

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	2	-	5	3	80	32	20	100	40	-	-	-	-	25	10	125

Course Objectives :

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

Course Outcomes :

Student should be able to

CO1	Apply properties of determinants and matrices to solve simultaneous linear equations.
CO2	Use binomial theorem for expansion and find equation of straight line, under given conditions.
CO3	Use properties and elementary operations of complex numbers to solve the problems.
CO4	Apply basic concepts in trigonometry to solve engineering problems.

Course Content :

SECTION - I								
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
1	Determinants:	6	12	1	40%	40%	20%	



	1.1	Determinant of order three.						
	1.2	Cramer's rule.						
	1.3	Properties of determinants						
2		Binomial Theorem	8	8	2	40%	40%	20%
	2.1	Concepts of Permutations and Combinations and problems based on ${}^n P_r, {}^n C_r$						
	2.2	Binomial Theorem with positive integral index, general term, Binomial expansion for negative integral and fractional index. .						
3		Straight line	5	8	2	40%	40%	20%
	3.1	Equations of straight lines in different forms.						
	3.2	Angle between two straight lines, conditions for two parallel and perpendicular straight lines.						
4		Complex Numbers	6	12	3	40%	40%	20%
	4.1	Definition of complex number, Elementary operations.						
	4.2	Argand's Diagram, Modulus, Amplitude, Polar form of a complex number.						
SECTION - II								
	Unit & Sub- Unit	Topics/Sub-topics						
5		Trigonometry	16	28	4	40%	40%	20%
	5.1	Circular measure of an angle, Conversion from degrees to radians and radians to degrees.						
	5.2	Trigonometric ratios of angle in four quadrants.						
	5.3	Compound angle formulae.						
	5.4	Allied angle formulae.						
	5.5	Product formulae, Sum or difference formulae.						



	5.6	Multiple, submultiples angle formulae.						
	5.7	Inverse trigonometric functions.						
	5.8	Properties of triangle: sine rule, cosine rule. (without proof)						
6		Matrices	8	12	1	40%	40%	20%
	6.1	Matrices of order $m \times n$, types of matrices, equality of matrices						
	6.2	Addition and subtraction of matrices, multiplication of matrices						
	6.3	Transpose of matrix, adjoint of matrix, inverse of matrix						
	6.4	Solution of simultaneous linear equations by adjoint method.						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).								

List of Assignments/Tutorials :

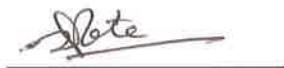
Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	1	Determinants	2	1
2	5	Circular measure of an angle, Trigonometric ratios	2	4
3	5	Compound angle formulae, Allied angle formulae	2	4
4	5	Product formulae, Sum or difference formulae.	2	4
5	2	Binomial Theorem.	2	2
6	5	Multiple, submultiples angle formulae.	2	4
7	5	Inverse trigonometric functions, Properties of triangle	2	4
8	6	Matrices	2	1
9	3	Straight lines	2	2



10	4	Complex Numbers	2	3
----	---	-----------------	---	---

Reference books :

Sr. No.	Author	Title	Publisher and Edition
1	S. P. Deshpande	Mathematics for Polytechnic	Pune Vidyarthi Griha Prakashan.
2	H.K.Dass	Advanced Engineering Mathematics	S.Chand & Company Ltd. Delhi
3	Dr.B.S.Grewal	Higher Engineering Mathematics	Khanna Publishers Delhi



Curriculum Coordinator



Head Diploma in Mech Engg



Dean - Diploma





DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: I
COURSE TITLE	: Physics – I
COURSE CODE	: 174PH12

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR*		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	-	2	5	3	80	32	20	100	40	25	10	-	-	25	10	150

*Practical examination will be conducted by internal examiner.

Rationale:–

Physics is the foundation of any engineering discipline. Its principles, laws, rules, results and conclusions drawn from observations and predictions of various phenomena occurring in nature; play important role in solving field problems in engineering and technology.

Though the span of physics is from quark to galaxy or particle physics to astrophysics; here certain topics are carefully selected for particular discipline. These topics will provide sufficient fundamental as well as background knowledge for the particular branch. Proper attention is given to the selection of sub-topics and their depth so that student will be able to cope up with innovations and new technologies in his field.

Various phenomena, principles, laws, rules discovered and invented by physics are used for industrial, engineering and technological applications. The overall growth of various engineering disciplines, namely, mechanical, electrical, electronics, civil and environmental and so on depends upon the development of physics and its detail understanding.

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.
- understand properties of matter such as elasticity, surface tension and viscosity, concepts, laws and rules used in static and current electricity, principles of heat and thermodynamics.
- analyze and use it for solving engineering problems.
- identify the phenomena of interference, diffraction and polarization of light and its industrial applications.
- identify, analyze, discriminate and interpret logical sequence of field problems with the study of physics.



Course Outcomes:

Student should be able to

CO1	Use various systems for measurements and measuring instruments.
CO2	Understand properties of matter, elasticity, viscosity and surface tension, along with relevant formulae, applications and problem solving based on it.
CO3	Understand principles of heat and thermodynamics, their applications and numerical based on it.
CO4	Understand concepts, laws and rules used in static and current electricity; and apply it to solve problems based on it.

Course Content:

SECTION - I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1.	Units and Measurements						
1.1	Need of measurements, requirements of standard unit, CGS, MKS, FPS and SI systems, fundamental and derived quantities/units, dimensions and dimensional analysis, problems	9	16	1	40%	40%	20%
1.2	Vernier caliper, screw gauge, spherometer. Least counts and range of voltmeter, ammeter and thermometer.						
2.	Properties of matter						
2.1	Elasticity – elasticity, plasticity, Hooke's law, Young's, Bulk and rigidity modulus, problems, relation between them, Searle's method of determination of Y, ultimate and breaking stress, factor of safety, wire under continuously increasing load.	15	24	2	40%	40%	20%
2.2	Surface tension – cohesive and adhesive forces, sphere of influence, molecular theory of surface tension, angle of contact, capillarity (formula with derivation), problems						



	2.3	Viscosity – velocity gradient, Newton’s law of viscosity, coefficient of viscosity, Stokes’ law of viscosity, Stokes’ method of viscosity, problems, laminar and turbulent flow, critical velocity, Reynold’s number						
SECTION - II								
	Unit & Sub-Unit	Topics/Sub-topics						
3	Heat and Thermodynamics							
	3.1	Gas laws – Boyle’s law, Charle’s law, Gay-Lussac’s law, absolute zero, Kelvin scale, work done at constant pressure, Cp, Cv and Mayer’s relation, problems, isothermal, adiabatic, isobaric and isochoric processes.	9	16	3	40%	40%	20%
	3.2	Expansion and transmission of heat – coefficients of linear, areal and cubical expansion, modes of transmission of heat, laws of thermal conductivity, coefficient of thermal conductivity, Lee’s and Searle’s methods, laws of thermodynamics, problems.						
4	Static and current electricity							
	4.1	Static electricity – Coulomb’s law, one coulomb, electric field, electric potential, capacitor, problems	15	24	4	40%	40%	20%
	4.2	Current electricity – Ohm’s law, one ohm, conductance, resistivity, conductivity, series and parallel combination of resistances, Wheatstone’s bridge, Joule’s law, potentiometer and its applications.						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.



List of Practicals

Sr. No.	Practicals	Approx. Hours	CO
1	Study of vernier caliper and travelling microscope	2	1
2	Study of screw gauge	2	1
3	Determination of viscosity of liquid by Stokes' method	2	2
4	Determination of surface tension of given liquid.	2	2
5	Thermal conductivity of good conductor by Searle's method	2	3
6	Thermal conductivity of bad conductor by Lee's method	2	3
7	To verify Ohm's law.	2	4
8	Use of meter bridge	2	4
9	Comparison of emfs of cells	2	4
10	Measurement of internal resistance of cell	2	4
* Minimum 8 practicals/experiment sessions to be included in a course in a term			

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1		XIth standard physics book	HSC Board, M.S. / NCERT
2		XIIth standard physics book	HSC Board, M.S. / NCERT

Reference books and Websites:

Sr. No	Author	Title	Publisher and Edition
1	Halliday D., Resnik R. and Walker	Fundamentals of physics extended	Wiley India, New Delhi, 8th edition
2	Serway R A and Jewett, Jr. J W	Physics for scientists and Engineers	Cengage learning, New Delhi, 6th edition



3	Verma H C	Concepts of Physics – Part I and II	Bharti Bhavan, New Delhi
---	-----------	-------------------------------------	--------------------------



Curriculum Coordinator

~~~~

Head Diploma in Mech Engg



Dean - Diploma





DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: First
COURSE TITLE	: CHEMISTRY – I
COURSE CODE	: 171CH13

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
3	-	2	5	3	80	32	20	100	40	25	10	-	-	25	10	150

Course 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.

Course Outcomes:

Student should be able to

CO1	Use the basic principles of chemistry to predict the electronic configuration, chemical reactions and describe the chemical bonding in molecules.
CO2	Solve the quantitative problems involving moles and concentrations of solution.
CO3	Calculate oxidation number & balance the redox reaction.
CO4	Compare properties of organic compounds and inorganic compounds.
CO5	Define and explain various concepts of acids, bases and salts, define pH and correlate it with the nature of aqueous solutions- neutral, acidic or basic
CO6	Apply the knowledge of electrolysis in engineering applications
CO7	Use the polymeric materials in engineering applications



CO8	Explain sources, adverse effect and measures to control various types of pollutions.
CO9	Perform laboratory experiment demonstrating safe and proper use of standard chemistry glass ware and equipments
CO10	Record and interpret the data obtained from experimentation

Course Content:

SECTION - I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Atomic Structure						
1.1	Definitions of Elements, atoms, Molecules, Fundamental particles of atom, their mass, charge, location, Definition of atomic number, atomic mass number, Isotopes and Isobars, Electronic configuration based on Hunds Rule, Aufbau's principle, Pauli's exclusion principle (till Atomic no. 30),	8	12	1	40%	40%	20%
1.2	Definitions: atomic weight, equivalent weights of an element, Molecular weight, Mole in terms of number, mass, volume, Definitions of equivalent weight and, Molecular weight of molecule,						
1.3	Determination of percentage composition of an element in a given molecule,						
2	Solution	05	10	2	40%	40%	20%
2.1	Solution, Concentrations of solution: Grams per litre, Percentage by weight or volume, Normality, Molarity, Molality.						
2.2	Volumetric analysis, Titrations, Acid base titration, Acidimetry, Alkalimetry, Redox titration,						



		Iodometric titrations, Complexometric titration, Precipitation titration.						
3		Redox Reactions	06	08	3	40%	40%	20%
	3.1	Introduction, Oxidation, Reduction, Electron transfer concept, Oxidising & reducing agents, Redox reactions in aqueous reactions						
	3.2	Oxidation number & rules for assigning oxidation number, Balancing of the chemical reaction						
4		Organic Chemistry	05	10	3	40%	40%	20%
	4.1	Introduction: Types of chemistry, Catenation property of Carbon element, Organic compounds, its properties and applications, Classification: by structure and functional group,						
	4.2	Homologous series, Definition, General formula, Names and structure of first five members of Alkanes, alkenes and alkyenes, their properties and Uses, Isomerism and its types: Chain, position and geometrical isomerism in alkanes and alkenes.						
SECTION - II								
Unit & Sub-Unit	Topics/Sub-topics							
5		Acid, base and Salts	06	08	5	40%	40%	20%
	5.1	Definitions & theories of acids & bases: Classical theory, Arrhenius theory, Lowry-Bronsted theory, Lewis theory,,						
	5.1	pH, pOH, pH scale, Numericals, Basicity of an acid and acidity of a base, Numericals of Equivalent weight of acids, bases, Definition of salts & types						



		of salts: Normal, Acidic, Basic, Mixed, Double salts, complex salts						
6		Electrochemistry	08	12	6	40%	40%	20%
	6.1	Electrochemistry, Electrochemical reactions, Construction and working of electrochemical cell & electrolytic cell,						
	6.2	Faradays I & II laws of electrolysis, Applications of electrolysis: electroplating & electrorefining						
	6.3	Electrochemical cells and batteries, Construction, working and applications of primary cell: dry cells, secondary cells, fuel cells						
7		Polymers	06	10	7	40%	40%	20%
	7.1	Polymer, Monomer, Polymerisation, Addition and condensation polymerisation, Plastics: definition, types: thermosetting & thermo softening plastics, compounding of plastics, properties and applications of plastics,						
	7.2	Rubber, structure of rubber, Natural rubber: preparation & properties, Vulcanization of rubber, properties of vulcanized rubber, synthetic rubber & its comparison with natural rubber. Properties and applications of rubbers.						
8		Environmental Chemistry	04	10	8	40%	40%	20%
	8.1	Introduction, Definition pollution, pollutant, types of pollution, sources, adverse effect and methods to control Air						
	8.2	Ozone layer formation and depletion, Green House effect, Global warming, sources, adverse effect and methods to control water pollution,						



		sources, adverse effect and methods to control Radioactive pollution and E waste,						
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).								

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments/Tutorials:

Sr. No.	Practical/Assignment	Approx. Hours	CO
1	To study the use of indicators, for identification of acid, base and neutral solutions from the given set of solutions.	2	9, 10
2	To standardize HCl solution using N/10 Na ₂ CO ₃ .	2	9, 10
3	To standardize KMnO ₄ solution using N/10 C ₂ H ₂ O ₄ solution.	2	9, 10
4	To determine strength of the mixture of H ₂ SO ₄ + C ₂ H ₂ O ₄ using NaOH and KMnO ₄ solution.	2	9, 10
5	To determine the amount of ferrous sulphate or ferrous ammonium sulphates in the given solution using KMnO ₄ solution.	2	9, 10
6	To standardize K ₂ Cr ₂ O ₇ solution using N/10 Na ₂ S ₂ O ₃ solution.	2	9, 10
7	To determine the amount of ferrous sulphate or ferrous ammonium sulphates in the given solution using K ₂ Cr ₂ O ₇ solution.	2	9, 10
8	To determine the amount of copper sulphate in the given solution using Na ₂ S ₂ O ₃ solution.	2	9, 10
9	To standardize EDTA solution using N/10 ZnSO ₄ solution.	2	9, 10
10	To standardize AgNO ₃ solution using NaCl solution.	2	9, 10
* Minimum 8 and maximum 12 practicals/experiment sessions to be included in a course in a term			



Text Books:

Sr. No.	Title	Publisher and Edition
1	XIth standard Chemistry book	HSC Board, M.S. / NCERT
2	XIIth standard Chemistry book	HSC Board, M.S. / NCERT

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	Jain & Jain	Engineering Chemistry	Dhanpat Rai & Co. (Pvt.) Delhi – 110006 Ltd Edition: Fifteenth (2008)
2	Shashi Chawla	A Text Book of Engineering Chemistry	Educational & Technical Publishers Dhanpat Rai & Co. (Pvt.) Ltd, Edition: Third (2005)
3	S. S. Dara & S. S. Umare	A Text Book of Engineering Chemistry	S. Chand & Company Ltd. Ran nagar, New Delhi – 110 055 Edition: Twelfth (2010)

**Curriculum Coordinator****Head Diploma in Mech Engg****Dean - Diploma**

DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: FIRST
COURSE TITLE	: COMMUNICATION SKILLS I
COURSE CODE	: 174HM14x

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
3	2	0	5	3	80	32	20	100	40	-	-	-	-	25	10	125

Course Objectives : Cultivating writing skills in students by giving exposure to good language, enhancing the power of expression through vocabulary exercises, improving skills of composition, promoting coherence in thinking, assimilating and reproducing ideas and enabling the students to formulate grammatically correct sentences thereby developing their ability to communicate effectively in industry, professional fields , in academic and social circles .

- In order to develop the writing abilities in students textbooks that give exposure to language have been introduced.
- The tutorials have been incorporated to provide practice to the students to develop writing skills.
- Vocabulary exercises are given to enhance word power while writing .
- Grammar topics are taught by giving sufficient practice material to help them formulate grammatically correct sentences.
- Idioms , phrases and proverbs are introduced in order to acquire fluency and richness to their language while expressing ideas through writing .

Course Outcomes:

Student should be able to

CO1	To acquire the ability to formulate grammatically correct sentences
CO2	To improve power of expression in written communication



CO3	To develop coherence in thinking, comprehending and expressing one's ideas in one's own language
-----	--

Course Content

SECTION - I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
I	1	26	25	3	30%	50%	20%
	2						
	3 A			3	20%	20%	60%
	3 B						
SECTION - II							
Unit &	Topics / Sub-topics						



Sub-Unit								
II	1	Vocabulary Building a) Synonyms b) Antonyms c) Homophones d) One word substitutes e) Homonyms	22	10	2	20%	40%	40%
	2	A) Application of grammar a) Correction of common errors in English b) Sentence structure B) short official letters a) leave applications b) seeking permission from authority c) grievance letter (campus situations)		15	1	30%	50%	20%
	3	Use of refined language a) Idioms b) Proverbs c) Phrases		15	2	40%	40%	20%
		TOTAL	48	80				

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Assignments/Tutorials :

Sr. No.	Practical/Assignment	Approx. Hours	CO
1.	Synonyms	2	2
2.	Antonyms	2	2
3.	Homophones	2	2
4.	Homonyms	2	2



5.	One word substitute	2	2
6	Phrases	2	2
7	Idioms	2	2
8	Proverbs	2	2
9	Sentence structure	2	1
10.	Correction of Errors	2	1
11	Comprehension a) Summarizing PPT Presentation b) Recapping the speech delivered	4	3
12	Composition writing a) short letters	4	3

Text Books :

Sr. No.	Author	Title	Publisher and Edition
1	Board of Editors – Chief Editor- Ajay R. Tengse	Delights in Prose	Orient Black Swan, First edition, 2014
2	Akshay V. Dhote Hitendra V. Dhote	Modern Trailblazers	Orient Black Swan, First edition, 2013

Reference books and Websites :

Sr. No.	Author	Title	Publisher and Edition
1	Oxford	Dictionary	Oxford University
2	Sanghita sen Alankrita Mahendra Priyadarshi Patnaik	Communication Language and Skills	Cambridge university Press, First published, 2015
3	B.V Pathak	English semester I	Nirali Prakashan, Fourth Edition, 2007
4	Green David	Contemporary English Grammar, structure and composition	Macmillan, India, First edition, 2000
5	Raymond Murphy	Essential English Grammar	Cambridge university Press, third Edition, 2011



Curriculum Coordinator



Head Diploma in Mech Engg



Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: FIRST
COURSE TITLE	: Engineering Drawing - I
COURSE CODE	: 174ME15

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME					EXAMINATION SCHEME											
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min	Max	Min	
2	-	4	6	3	80	32	20	100	40	-	-	-	-	50	20	150

Course Objectives:

The student will be able to

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

Course Outcomes:

Student should be able to

CO1	To understand geometry of shapes, drawing conventions, definitions and drawing procedures.
CO2	To imagine shapes of solid objects in three dimensions and draw their different views.
CO3	To imagine internal details of solid objects from given views and use of drawing conventions.

Course Content:

SECTION - I							
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level
1	Drawing Instruments & their uses	4	10	1	30	30	40



	1.1	Letters & Numbers (Single stroke Vertical)						
	1.2	Convention of Lines & it's applications						
	1.3	Geometrical Constructions involving construction of tangential arcs						
2		Engineering Curves	6	14	1	40	30	30
	2.1	Ellipse by following Methods 1. Arcs of Circles Method 2. Concentric Circles method 3. Rectangle/Oblong Method 4. Eccentricity Method						
	2.3	Parabola by following Methods 1. Eccentricity Method 2. Rectangle Method						
	2.4	Hyperbola by Eccentricity Method Rectangular Hyperbola						
	2.5	Cycloid (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						
	2.8	Helix on a cylinder						
3		Projections of Points & Straight Lines Reference 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)	6	16	2	40	30	30
SECTION - II								
Unit & Sub-Unit	Topics/Sub-topics							



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)	4	10	2	40	30	30
5	Orthographic Projections Simple Orthographic and Sectional Orthographic Projections of simple machine parts .(Full Section in one view)	10	30	3	40	30	30
6	Introduction to Computer Drafting Introduction to different commands in the drawing software	2	-	3	30	30	40
Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).							

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
1	A	Three sheets on problems from geometrical constructions, lettering & types of lines	10	1
	B	Five Sheets on the topic of Engineering Curves.	20	1
	C	Four Sheets on Projections of Points & Projections of Straight Lines.	10	2
	D	Three Sheets on Projections of Planes.	10	2
	E	Five Sheets on the topic of Orthographic Projections.	10	3
2		Demonstration of drafting software to the students.		

Note - The students should workout the problems on the following topics preferably on quarter imperial drawing sheets during the practical.



Text Books:

Sr. No.	Author	Title	Publisher and Edition
1	N.D.Bhatt	Engineering Drawing	Charotar Publishers 53rd Edition 2014
2	S.T.Ghan, M.V.Rawalani	Engineering Drawing	Nirali Publications Edition -2014/1

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1	D.A.Jolhe	Engineering Drawing	TATA McGraw Hill- 2008
2	K.R.Mohan	Engineering Graphics	Dhanpatrai Publishing Co. 1st Edition-2009



Curriculum Coordinator



Head Diploma in Mech Engg



Dean - Diploma



DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: FIRST
COURSE TITLE	: ENVIRONMENTAL STUDIES
COURSE CODE	: 174CE16

TEACHING AND EXAMINATION SCHEME:

TEACHING SCHEME				EXAMINATION SCHEME												
L	T	P	CR	PAPER HRS	TH		IST	TOTAL		PR		OR		TW		TOTAL MARKS
					Max	Min		Max	Min	Max	Min	Max	Min			
1	2	0	3									25	10	25@	10	50

Course Objectives: At the end of this course students will be able to

- Know multidisciplinary nature of environmental studies.
- Know various types of environmental pollution, its causes, effects & control measures.
- Know social issues such as human population, human rights & health.

Course Outcomes:

Student should be able to

CO1	Define & explain multi-disciplinary nature of Environmental studies.
CO2	Explain different types of natural sources and their effects on environment.
CO3	Explain various types of pollutions, its causes , controls etc.
CO4	Define bio diversity and their conservation for human society.
CO5	Define and explain the ethical values for environment.

Course Content:

SECTION - I								
Unit & Sub-Unit	Topics/Sub-topics	Hours	Marks	CO	R Level	U Level	A Level	
1	The Multidisciplinary nature of environmental studies :	02		1	40%	40%	20%	



(Handwritten signature)

	<p>Definition of Environment, Components and types, Need for public awareness, Environmental Ethics.</p> <p>1.1 Social Issues- Strategies for Sustainable development, urban problems related to energy, water conservation, global environmental changes.</p>			& 5			
2	<p>Natural Resources :</p> <p>2.1 Renewable and non renewable resources:</p> <p>2.2 Natural resources and associated problems</p> <p>2.2.1 Forest resources: Use and over-exploitation, deforestation, mining, dams and their effects on forests and tribal people.</p> <p>2.2.2 Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems.</p> <p>2.2.3 Energy Resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.</p> <p>2.3 Equitable use of resources for sustainable life styles</p>	04		2	30%	30%	40%
SECTION - II							
Unit & Sub-Unit	Topics/Sub-topics						
3	<p>Environmental Pollution :</p> <p>Definition Causes, effects and control measures of:-</p> <p>3.1 Air pollution</p> <p>3.2 Water pollution</p> <p>3.3 Soil pollution</p> <p>3.4 Marine pollution</p> <p>3.5 Noise pollution</p> <p>3.6 Thermal pollution</p> <p>3.7 Nuclear hazards</p>	10		3	30%	30%	40%



A handwritten signature in blue ink at the bottom center of the page.

Legends: R- Remember, U – Understand, A – Apply and above levels (Blooms’s Revised Taxonomy).

Notes: This specification table shall be treated as a general guideline and actual distribution of marks may slightly vary from table. But the questions from each topic should be asked as per marks weightage. Numerical questions are to be asked only if specified.

List of Practicals/Assignments/Tutorials:

Sr. No.	Unit	Practical/Assignment	Approx. Hours	CO
	1	Role of Information Technology in Environment and Human health	2	1 & 5
	2.	Various Natural resources and associated problems and Role of individual in conservation of natural resources.	4	2
	3.	Types and characteristics of different types of ecosystems.	4	4
	4.	Definition and types of biodiversity (genetics, species and ecosystem diversity). Conservation measures for Bio diversity in India.	4	4
	5.	Causes, effects and control measures of environmental pollution.	4	3
	6.	Role of an individual in prevention of pollution.	2	1 & 3
	7.	Students (in a group of 7-8 students) shall give seminar on a current topic related to environmental issues.	12	1, 2, 3, 4 & 5

Text Books:

Sr. No.	Author	Title	Publisher and Edition
1.	Anindita Basak	Environmental Studies	Pearson Publication, 1 st Edition, 2009.
2.	Dr. J. P. Sharma	Environmental Studies	Laxmi Publications (P) Ltd; 3 rd edition , 2009
3.	Erach Bharucha	Textbook of Environmental studies	UGC, 1 st Edition, 2011



4.	D D Mishra	Fundamental concepts in Environmental Studies	S Chand & Co Ltd, 1 st Revised edition 2009
----	------------	---	--

Reference books and Websites:

Sr. No.	Author	Title	Publisher and Edition
1.	Dr. H.S. Bhatia.	Environmental Pollution and Control	Galgotia Publications (p) LTd. 1 st edition,1998.
2.	Anubha Kaushik and C.P. Kaushik	Environmental Studies	New Age International (P) Ltd. 1 st Edition, 2007.



Curriculum Coordinator



Head Diploma in Mech Engg



Dean - Diploma




DIPLOMA PROGRAMME	: DIPLOMA IN MECHANICAL ENGINEERING
PROGRAMME CODE	: DME
SEMESTER	: FIRST
COURSE TITLE	: Basic Workshop Practice I
COURSE CODE	: 174ME17

Teaching & Examination Scheme:-

Teaching Scheme			Paper Hours	Examination Scheme										Total Marks	
L	T	P		Theory		Test	Total		P		O		TW		
				Max	Min		Max	Min	Max	Min	Max	Min	Max		Min
0	-	3	-	-	-	-	-	-	-	-	-	-	50	20	50

Rationale:-

Mechanical diploma student is expected to know basic workshop practice like Wood working and hot working processes. The students are required to identify, operate and control various machines. The students are required to select and use various tools and equipments related to Wood working and smithy processes.

Course Objectives:

1. To lay a strong foundation in study and practice of basic workshop processes which is the backbone in Engineering.
2. To make students well versed to identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.

Course Outcomes:

Student should be able to

CO1	Inspect and produce the job as per specified dimensions.
CO2	Adopt safety practices while working on various machines.



List of Practicals :

Sr. No.	Practical	Approx. Hours	CO	R Level	U Level	A Level
1	<p>CARPENTRY SHOP:</p> <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>	9	1	1	1	6
2	<p>SMITHY SHOP:</p> <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>	9	2	3	4	6
3	<p>FITTING SHOP:</p> <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>	12	1	1	3	6
4	<p>WELDING SHOP:</p> <p>Demonstration of different welding tools / machines.</p> <p>Demonstration of Arc Welding, Gas Welding, Gas Cutting and rebuilding of broken parts with welding.</p> <p>One simple job involving butt and lap joint.</p>	6	2	2	5	6




Reference books :

Sr. No.	Author	Title	Publisher and Edition
1	K.C.John	Mechanical Workshop Practice	PHI Learning Pvt Ltd. EEE 2010
2	B.S. Raghuwanshi	Workshop Technology	Dhanpat Rai and sons, New Delhi, 9 th Edition, 2002
3	S.K. Hajra Chaudhary	Workshop Technology Vol . I & II	Media Promotors and Publisher, New Delhi. 8 th edition , 1986



Curriculum Coordinator



Head Diploma in Mech Engg



Dean - Diploma

