

DE ME SEM-1 Detail Syllabus of Syllabus of Basic Mathematics(3300001)

Teaching Scheme (In Hours)			Total Credits (L+T+P)			Examination Scheme		
Theory Marks			Practical Marks			Total Marks		
L	T	P	C	ESE	PA	ESE	PA	100
2	2	0	4	70	30	0	0	

Unit – I Logarithm

Solve simple problems using concepts of Logarithms. Concept ,Rules and related Examples

Unit– II Determinants and Matrices

Idea of Determinant and Matrix, Addition/Subtraction, Product, Inverse up to 3X3 matrix, Solution of Simultaneous Equations(up to three variables)

Unit– III Trigonometry

Units of Angles(degree and radian), Allied & Compound Angles, Multiple –Submultiples angles, Graph of Sine and Cosine, Periodic function, sum and factor formulae, Inverse trigonometric function

Unit– IV Vectors

Basic concept of Vector and Scalar, addition & subtraction, Product of Vectors, Geometric meaning of Scalar and Vector Product. Angle between two vectors, Applications of Dot (scalar) and Cross (vector) Product, Work Done and Moment of Force.

Unit-V Menstruation

Area of Triangle, Square, Rectangle, Trapezium, Parallelogram, Rhombus and Circle Surface & Volume of Cuboids, Cone, Cylinder and Sphere.

DE ME SEM-1 Detail Syllabus of English(3300002)

Teaching Scheme (In Hours)			Total Credits (L+T+P)			Examination Scheme		
Theory Marks			Practical Marks			Total Marks		
L	T	P	C	ESE	PA	ESE	PA	150
3	2	0	5	70	30	20	30	

Unit – I Grammar

1.1 Tenses: - Present Tense (Simple, Continuous, Perfect, Perfect Continuous) - Past Tense (Simple, Continuous, Perfect) - Future Tense (Simple). **1.2 Determiners:** - Articles (A, An, The) Some, Any, Much, Many, All, Both, Few, A few, The few, Little, A little, The little, Each, Every. **1.3: Modal Auxiliaries** Can, Could, May, Might, Shall, Should, Will, Would, Must, Have to, Need, Ought to**1.4 Subject- Verb Agreement** **1.5 The Passive Voice** Simple Tenses, Perfect Tenses And Modal Auxiliary Verbs **1.6 Prepositions:** Time, Place and Direction **1.7 Connectors:** And, But, Or, Nor, Though, Although, If, Unless, Otherwise, Because, as, Therefore, So, Who, Whom, Whose, Which, Where, When, Why.

Unit – II Comprehension Passages

2.1 Comprehension Passages Lincoln's Letter to His Son's Teacher (Abraham Lincoln) ,What we must Learn from the West (Narayana Murthy) ,Dabbawallas: Mumbai's Best Managed Business (Amberish K. Diwanji) ☐ Internet (Jagdish Joshi) **2.2 Vocabulary Items:** - Matching items (word and its Meaning) - One word Substitution - Phrases and idioms - S ynonyms and Antonyms from given MCQs

Unit – III Short Stories

My Lost Dollar by Stephen Leacock ☐ The Snake in the Grass by R K Narayan ☐ A Day's Wait by Earnest Hemingway

Unit – IV Writing Skills

4.1 Dialogue Writing **4.2 Samples for Practice:** - Meeting and Parting - Introducing and Influencing – Requests - Agreeing and Disagreeing - Inquiries and Information **4.3 Letter:** - Placing an order - Letter to Inquiry - Letter of Complaint - Letter of Adjustment - Letter seeking permission

Unit – V Speaking Skills

For 28 hours of practical periods, digital language laboratory is recommended to be established in every polytechnic. But as polytechnics currently do not have digital language laboratories practical periods will be engaged encouraging the students to speak as per the text taught in the class.

DE ME SEM-1 Detail Syllabus of Environment Conservation and Hazard Management (3300003)

Teaching Scheme (In Hours)			Total Credits (L+T+P)			Examination Scheme		
Theory Marks			Practical Marks			Total Marks		
L	T	P	C	ESE	PA	ESE	PA	100
4	0	0	4	70	30	0	0	

Unit – I Ecology and environment

1.1 Importance of environment and scope 1.2 Engineering and environment issues 1.3 The natural system, Biotic and a-Biotic components and processes of natural system 1.4 Eco system, food chain and webs and other biological Systems, 1.5 Causes of environmental pollution 1.6 Pollution due to solid waste 1.7 water pollution, air pollution, the Noise as pollution, 1.8 Pollution of land due to industrial and chemical waste 1.9 Radiation and its effects on vegetables and animals

Unit– II Sustainable Development

2.1 Concept of sustainable development, 2.2 Natural resources, a-biotic and biotic resources 2.3 Principles of conservation of energy and management 2.4 Need of Renewable energy 2.5 Growth of renewable energy in India and the world 2.6 Concept of waste management and recycling

Unit – III Wind Power

3.1 Growth of wind power in India 3.2 Types of wind turbines – Vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT) 3.3 Types of HAWTs – drag and lift types 3.4 Working of large wind turbines 3.5 Aerodynamic control of large and small wind turbines 3.6 Types of electrical generators used in small and large wind turbines

Unit – IV Solar Power

4.1 Features of solar thermal and PV systems 4.2 Types of solar cookers and solar water heaters 4.3 Solar PV systems and its components and their working 4.4 Types of solar PV cells 4.5 Solar PV and solar water heaters, rating and costing

Unit – V Biomass energy

5.1 Types of Biomass Energy Sources 5.2 Energy content in biomass of different types 5.3 Types of Biomass conversion processes 5.4 Biogas production

Unit – VI Seismic Engineering and disaster management

6.1 Introduction of seismic engineering and its application civil engineering designs 6.2 Features of disasters such as Floods, Earthquakes, Fires, Epidemics, Gas/radioactive leaks etc. 6.3 Management and mitigation of above disasters

DE ME SEM-1 Detail Syllabus of Engineering Physics (Group-1) (3300004)

Teaching Scheme (In Hours)			Total Credits (L+T+P)			Examination Scheme		
Theory Marks			Practical Marks			Total Marks		
L	T	P	C	ESE	PA	ESE	PA	150
3	0	2	5	70	30	20	30	

Unit – I SI Units & Measurements

1.1 Need of measurement and unit in engineering and science, definition of unit , requirements of standard unit, systems of units-CGS,MKS and SI, fundamental and derived quantities and their units 1.2 Least count and range of instrument, least count of vernier caliper, micrometer screw gauge 1.3 Definition of accuracy, precision and error, estimation of errors -absolute error, relative error and percentage error, rules and identification of significant figures. (Numerical on above topics)

Unit– II Force and Motion:

Recapitulation of equations of motion, Newton's 1st law of motion, Force, basic forces in motion, gravitational force, electrostatic force, electromagnetic force, nuclear force, Inertia, types of inertia (inertia of rest, inertia of motion, inertia of direction), Momentum, Newton's 2nd law of motion, measurement of force using second law, simple problems on $F = ma$ and equations of motion, Impulse of force, Impulse as the product of force and time, impulse as the difference of momentum, examples of impulse, simple problems on impulse, Newton's 3rd law of motion and its examples. Law of conservation of momentum, Statement, simple problems (Numerical on above topics)

Unit– III General properties of matter

3.1 Elasticity Deforming force, restoring force, elastic and plastic body, stress and strain with their types. elastic limit, Hooke's law, Young's modulus, bulk modulus, modulus of rigidity and relation between them (no derivation), stress strain diagram. behavior of wire under continuously increasing load, yield point, ultimate stress, breaking stress, factor of safety. 3.2 Surface Tension. Molecular force, cohesive and adhesive force, Molecular range, sphere of influence, Laplace's molecular theory, Definition of surface tension and its S.I. unit, angle of contact, capillary action with examples, shape of meniscus for water and mercury, relation between surface tension , capillary rise and radius of capillary (no derivation),effect of impurity and temperature on surface tension 3.3 Viscosity Fluid friction, viscous force, Definition of viscosity, velocity gradient, Newton's law of viscosity, coefficient of viscosity and its S.I. unit, streamline and turbulent flow with examples, critical velocity, Reynolds's number and its significance, free fall of spherical body through viscous medium (no derivation), up thrust force, terminal velocity, Stokes law (statement and formula). (Numericals on Above topics)

Unit– IV Heat Transfer

4.1 Three modes of transmission of heat -conduction, convection and radiation, good and bad conductor of heat with examples, law of thermal conductivity, coefficient of thermal conductivity and its S.I. unit. 4.2 Heat capacity and specific heat of materials 4.3 Celsius, Fahrenheit and Kelvin temperature scales and their conversion formulae (Numericals on above topics)

Unit– V Waves and Sound

Definition of wave motion, amplitude, period, frequency, and wavelength, relation between velocity, frequency and wavelength, longitudinal and transverse wave, principle of superposition of waves, definition of resonance with examples, Formula for velocity of sound in air and various factors affecting it Ultrasonic Waves Definition, Properties of ultrasonic waves Uses of ultrasonic waves. Acoustics Of Building Importance of Reverberation, Reverberation time, Optimum time of Reverberation, Coefficient of absorption of Sound, Sabine’s formula for Reverberation time, Factors affecting Reverberation time and acoustics of building. (Numericals on above topics)

Unit– VI Light and Nanotechnology

Properties Of Light, Electromagnetic spectrum, Reflection, refraction, snell’s law, diffraction, polarization, interference of light, constructive and destructive physical significance of refractive index, dispersion of light Introduction to Nanotechnology (Numericals on above topics)

Unit – VII Radioactivity

7.1 Radioactivity Definition, Natural & Artificial radioactivity, Units and Laws of Radioactivity, Half Life, Average Life & Decay Constant. 7.2 Radioactive Rays Properties and uses of alpha particles, beta particles and gamma rays (Numericals on Above topics)

DE ME SEM-1 Detail Syllabus of Engineering Drawing (3300007)

Teaching Scheme (In Hours)			Total Credits (L+T+P)			Examination Scheme		
Theory Marks			Practical Marks			Total Marks		
L	T	P	C	ESE	PA	ESE	PA	200
2	0	4	6	70	30	40	60	

Unit – 1 ENGINEERING DRAWING AIDS

1.1 Drawing equipments, instruments and materials. (a) Equipments-types, specifications, method to use them, applications. (b) Instruments-types, specifications, methods to use them and applications. (c) Pencils-grades, applications, types of points and applications. (d) Other materials-types and applications

Unit– 2 PLANNING, LAYOUT AND SCALLING OF DRAWING

2.1 I.S. codes for planning and layout. 2.2 Scaling technique used in drawing.

Unit– 3 LINES, LETTERING AND DIMENSIONING

3.1 Different types of lines. 3.2 Vertical capital and lower case letters. 3.3 Inclined capital and lower case letters. 3.4 Numerals and Greek alphabets. 3.5 Dimensioning methods. (a) Aligned method. (b) Unilateral with chain, parallel, progressive and combined dimensioning.

Unit- 4 GEOMETRIC CONSTRUCTION

4.1 Develop the ability to draw polygons, circles and lines with different geometric conditions. 4.2 Geometric construction related with line like bisecting a line, to draw perpendicular with a given line, divide a line, etc. 4.3 Geometric construction related with angle like bisect an angle, trisect an angle, etc. 4.4 To construct polygon. a: Triangle b: Square / Rectangle. c: Pentagon with special method. d: Hexagon with special method. 4.5 To draw tangents. 4.6 Geometric construction related with circle & arc.

Unit-5 ENGINEERING CURVES

5.1 Able to draw engineering curves with proficiency and speed as per given dimensions. 5.2 Conic sections. (a) Concept and understanding of focus, directrix, vertex and eccentricity and drawing of conic sections. (b) Using various methods, understand construction of : i. Ellipse. ii. Parabola. iii. Hyperbola. 5.3 Cycloidal Curves(Cycloid, Epicycloid, Hypocycloid) 5.4 Involutives. (a) Involutives of a circle (b) Involutives of a polygon 5.5 Spiral (Archimedean spiral only).

Unit- 6 PROJECTION OF POINTS, LINES AND PLANES

6.1 Reference planes, orthographic projections. 6.2 Concept of quadrant. 6.3 1st angle and 3rd angle projection and their symbols. 6.4 Projection of points. 6.5 Projection of lines – determination of true length and inclinations for following cases. (a) Line parallel to one or both the plane. (b) Line perpendicular to one of the plane. (c) Line inclined to one plane and parallel to another. (d) Line inclined to both the planes. 6.6 Projection of Planes. (a) Types of planes. (b) Projection of planes parallel to one of the reference planes. (c) Projection of plane inclined to one reference plane and perpendicular to another. (d) Projection of planes inclined to both reference planes.

Unit- 7 ORTHOGRAPHIC PROJECTIONS

7.1 Types of projections-orthographic, perspective, isometric and oblique: concept and applications. 7.2 Various term associated with orthographic projections. (a) Theory of projection. (b) Methods of projection. (c) Orthographic projection. (d) Planes of projection. 7.3 Conversion of simple pictorial views into Orthographic views. Illustrative problems on orthographic projection. 7.4 B.I.S. code of practice.

Unit- 8 ISOMETRIC PROJECTIONS

8.1 Draw the isometric view from orthographic views of object/s containing lines, circles and arcs. 8.2 Isometric axis, lines and planes. 8.3 Isometric scales. 8.4 Isometric view and isometric drawing. 8.5 Difference between isometric projection and isometric drawing. 8.6 Illustrative problems limited to objects containing lines, circles and arcs shape only.

DE ME SEM-1 Detail Syllabus of Syllabus of Engineering Workshop Practice (3301901)

Teaching Scheme (In Hours)			Total Credits (L+T+P)			Examination Scheme		
Theory Marks			Practical Marks			Total Marks		
L	T	P	C	ESE	PA	ESE	PA	100
0	0	4	4	0	0	40	60	

UNIT – 1 INTRODUCTION TO WORKSHOP

1.1 Workshop layout. 1.2 Importance of various sections/shops of workshop. 1.3 Types of jobs done in each shop. 1.4 General safety rules and work procedure in workshop.

UNIT – 2 FITTING

2.1 Sketch, specification and applications of fitting work holding tools-bench vise, V-block with clamp and C-clamp. 2.2 Sketch, specification, material, applications and methods of using fitting marking and measuring tools-marking table, surface plate, angle plate, universal scribing block, try-square, scriber, divider, centre punch, letter punch, calipers, vernier caliper, etc. 2.3 Types, sketch, specification, material, applications and methods of using of fitting cutting toolshacksaw, chisels, twist drill, taps, files, dies. 2.4 Types, sketch, specification, material, applications and methods of using of fitting finishing tools-files, reamers. 2.5 Sketch, specification and applications of miscellaneous tools-hammer, spanners, screw drivers sliding screw wrench. 2.6 Demonstration of various fitting operations such as chipping, filing, scraping, grinding, sawing, marking, drilling, tapping. 2.7 Preparation of simple and male- female joints. 2.8 Safety precautions.

UNIT – 3 TIN SMITHY

3.1 Concept and conversions of SWG and other gauges in use.. 3.2 Use of wire gauge. 3.3 Types of sheet metal joints and applications. 3.4 Types, sketch, specification, material, applications and methods of using tin smithy tools-hammers, stakes, scissors/snips, etc. 3.5 Demonstration of various tin smithy tools and sheet metal operations such as shearing, bending and joining. 3.6 Preparation of tin smithy job. 3.7 Safety precautions.

UNIT – 4 CARPENTRY

4.1 Types, sketch, specification, material, applications and methods of using of carpentry tools-saws, planner, chisels, hammers, pallet, marking gauge, vice, try square, rule, etc. 4.2 Types of woods and their applications. 4.3 Types of carpentry hardwares and their uses. 4.4 Demonstration of carpentry operations such as marking, sawing, planning, chiseling, grooving, boring, joining, etc. 4.5 Preparation of wooden joints. 4.6 Safety precautions

UNIT – 5 PIPE FITTING

5.1 Types, specification, material and applications of pipes. 5.2 Types, specification, material and applications of pipe fittings. 5.3 Types, specifications, material, applications and demonstration of pipe fitting tools. 5.4 Demonstration of pipe fitting operations such as marking, cutting, bending, threading, assembling, dismantling, etc. 5.5 Types and application of various spanners such as flat, fix, ring, box, adjustable, etc. 5.6 Preparation of pipe fitting jobs. 5.7 Safety precautions.

UNIT – 6 METAL JOINING

6.1 Types, specification, material and applications of arc welding transformers. 6.2 Types, specification, material and applications of arc welding accessories and consumables. 6.3 Demonstration of metal joining operations- arc welding, soldering and brazing. Show effect of current and speed. Also demonstrate various welding positions. 6.4 Demonstrate gas cutting operation. 6.5 Preparation of metal joints. 6.6 Safety precautions.