

**GANPAT UNIVERSITY**  
**GANPAT UNIVERSITY INSTITUTE OF TECHNOLOGY**  
**SEMESTER – I (MECH/CIVIL/ ELE)**  
**SUBJECT: (1BS101) MATHEMATICS –I**

Teaching Scheme (In Hours)				Total Credits				Examination Scheme (Marks)					
								Theory				Practical /TW Ass.	Total
L	T	P	Total	L	T	P	Total	Int. Asses.	Sem. End	Hrs.	Total		
03	01	00	04	03	01	00	04	40	60	3	100	00	100

Unit No.	Unit
1	<b>Matrices</b> Types of Matrices, Addition and Subtraction of Matrices, Product of two Matrices, Transpose of a Matrix, Inverse of a Matrix, Solution of equations up to three variables.
2	<b>Vectors</b> Definition of vector, Addition and Subtraction of Vectors, Modulus of Vectors, Unit Vector, Direction of Vectors, Dot and Cross Product of two Vectors, Angle between two Vectors, Work done and Moment of Force.
3	<b>Logarithm</b> Definition and concept, Logarithm rules, Examples based on rules.
4	<b>Mensuration</b> Area of a Triangle, Square, Rectangle, Trapezium, Parallelogram, Rhombus and Circle, Surface Area and Volume of Cube, Cuboid, Cone, Cylinder and Sphere.
5	<b>Trigonometry</b> Standard and Allied Angles, Periodic function and Graphs of Sine and Cosine, Compound Angles, Multiple and Sub Multiple Angles.

**REFERENCE BOOKS:-**

1. Polytechnic Mathematics – By S P Deshpande

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**SEMESTER – I (MECH/CIVIL/ ELE)**  
**SUBJECT- (1HS101) ENGLISH**

Teaching Scheme (In Hours)				Total Credits				Examination Scheme (Marks)					
								Theory				Practical /TW Ass.	Total
L	T	P	Total	L	T	P	Total	Int. Asses.	Sem. End	Hrs.	Total		
03	00	00	03	03	00	00	03	40	60	3	100	00	100

Unit No.	Unit	
1	PART-I GRAMMAR	Auxiliaries Primary: (Be, Do and Have) Modal: (Will, Shall, Can, May, Would, Should, Could, Might, Ought to, Need to Dare to, Used to, Have to)
		Subject-Verb Agreement
		Tenses: Simple Present tense, Simple Past Tense, Simple Future Tense, Present Continuous Tense, Past Continuous Tense, Future Continuous Tense, Present Perfect Tense, Past Perfect Tense, Future Perfect Tense, Present Perfect Continuous Tense. Past Perfect continuous Tense. Future Prefect Tense.
		Prepositions: Time, Place, Direction
		Connectors: But, And, Both, Either...or, Neither...nor, Not only ...but also, So, Therefore, Though, Although, Even though, Even if, Who, Whom, Whose, Which, Where, When Why, etc.
		Passive voice: Tense Structures and Modal Auxiliary Structures.
2	PART-II Comprehension	The Night Train at Deoli by Ruskin Bond
		An Astrologer's Day by R .K. Narayan
		The Bet by Anton Chekhov
		The Gift of Magi by O' Henry
3	PART-III Conversation and Communication Practice	Introducing yourself and others, Describing Pictures, Situations, talking on various situations like weather, examination preparation, birthday celebration, reception party attended etc.
		Writing Leave Note and various office request letters.

**REFERENCE BOOKS:-**

1. Murphy's English Grammar by Raymond Murphy (3<sup>rd</sup> Edition) published by Cambridge University Press.

**Text book: -**

1. Advanced English for College Students written by Rajendrasinh Jadeja and Jagdish Joshi published by Macmillan Publishers India Ltd.

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**SEMESTER – I (MECH/CIVIL/ ELE)**  
**SUBJECT: (1BS102) PHYSICS**

Teaching Scheme (In Hours)				Total Credits				Examination Scheme (Marks)					
								Theory				Practical /TW Ass.	Total
L	T	P	Total	L	T	P	Total	Int. Asses.	Sem. End	Hrs.	Total		
03	00	02	05	03	00	01	04	40	60	3	100	50	150

Unit No.	Unit
1	<p><b>UNITS AND MEASUREMENT :</b></p> <p>1.1: International System of units (FPS, CGS, MKS, MKSA, SI system), Derived physical quantities and its units,</p> <p>1.2: Measuring Instruments: (1) Vernier Calipers (2) Micrometer Screw Gauge.</p> <p>1.3: Fundamental forces in nature: (1) Gravitational Force (2) Electromagnetic Force (3) Strong Nuclear Force (4) Weak Nuclear Force</p>
2	<p><b>MOTION, WORK AND ENERGY</b></p> <p>2.1: Frame of reference, Concept of Path length and Displacement, Average Speed and Average Velocity, Instantaneous Velocity and Instantaneous speed, Acceleration, Kinematic equation for uniformly accelerated motion</p> <p>2.2: Law of Inertia, Newton's First Law of motion, Momentum, Newton's Second law of motion, Impulse of force, Newton's Third law of motion, Conservation of momentum.</p> <p>2.3: Work, Kinetic Energy, Potential Energy</p>
3	<p><b>ELASTICITY:</b></p> <p>Elastic behavior of Solids, Stress and Strain, Stress-Strain curve, Hooke's law, Young's modulus, Determination of Young's Modulus of the material of wire, Bulk modulus, Modulus of rigidity, Application of Elastic behavior of material</p>
4	<p><b>WAVES</b></p> <p>4.1: Introduction, Transverse and Longitudinal waves, Progressive wave equation, Amplitude, phase, frequency, Angular frequency, period, Newton's formula of velocity of Sound and Laplace's correction</p> <p>4.2: Introduction, Absorption co-efficient and its measurement, Reverberation and Reverberation time, Sabine's formula, Factors affecting acoustics of building and their Remedies</p> <p>4.3: Classification of Ultrasonic waves, Properties of Ultrasonic waves, Application of Ultrasonic waves</p>

5	<p><b>OPTICS AND NANOTECHNOLOGY:</b></p> <p>5.1: Reflection, Total Internal Reflection, Refraction, Snell's law, Diffraction, Polarization, Interference of light, Dispersion.</p> <p>5.2: Introduction to Nanotechnology, Nanoscale, Surface to Volume ratio, Properties of nanomaterials, Application of nanomaterials.</p>
6	<p><b>ELECTRIC CHARGES AND FIELD</b></p> <p>6.1: Introduction, Electric charge, Quantization of Charge, Coulomb's law, Electric field, Electric potential.</p> <p>6.2: Electric current, Ohm's law, Electrical Resistivity and Conductivity, Series and parallel connections of resistors.</p> <p>6.3: Classification of Material on the basis of resistivity, Intrinsic and Extrinsic Semiconductor, P-type Semiconductor, N-type Semiconductor, P-N junction diode</p>
7	<p><b>RADIOACTIVITY AND NUCLEAR PHYSICS :</b></p> <p>Radioactivity, Laws of radioactive decay, Half Life, Average Life, Properties of alpha particles, beta particles and gamma rays, Nuclear fission, Chain reactions, Nuclear fusion, Nuclear reactor, Waste disposal of nuclear reactor</p>

**SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS:-**

1. Study of fundamental physical quantity
2. Study of linear measurement by Vernier calipers.
3. Study of precision measurement by Micrometer screw.
4. Measurement of Young's Modulus of a sample wire.
5. Measurement of gravitational acceleration using simple pendulum.
6. Study of force constant of elastic spring.
7. Measurement of resistance using Ohm's law.
8. Study of series and parallel combination of resistance.
9. Measurement of unknown resistance using Wheatstone bridge.
10. Investigation of characteristic of PN junction diode.
11. Study of refractive index of prism using spectrometer.
12. Study of SA/V ratio of simple objects.

**REFERENCE BOOKS:-**

1. Fundamentals of Physics, David Halliday, John Wiley & Sons.
2. Principles of Electronics, V. K. Mehta. S. Chand & Co. Ltd.
3. Nuclear physics: An introduction, S.B.Patel, Anshan Ltd.
4. Engineering Physics, G.Vijayakumari, Vikas Publishing House Pvt Ltd.

**GANPAT UNIVERSITY**  
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**SEMESTER – I (MECH/CIVIL/ ELE)**  
**SUBJECT- (1CE101) COMPUTER APPLICATION**

Teaching Scheme (In Hours)				Total Credits				Examination Scheme (Marks)					
								Theory				Practical /TW Ass.	Total
L	T	P	Total	L	T	P	Total	Int. Asses.	Sem. End	Hrs.	Total		
00	00	04	04	00	00	02	02	00	00	0	00	50	50

Unit No.	Unit
1	<p><b>Basics of computer System:</b></p> <ol style="list-style-type: none"> <li>1. Concept of hardware and software, computer block diagram, input output unit, CPU, Control unit ALU, /memory unit , Monitor, printer , system software and application software.</li> <li>2. Operating system concept, purpose and function.</li> <li>3. Operation on windows OS</li> <li>4. Creating and naming of file and folder</li> <li>5. Copying file renaming and deleting of file and folders.</li> <li>6. Searching file and folder, installation application, creating shortcut of application on the desktop.</li> <li>7. Overview of control panel , Taskbar</li> </ol>
2	<p><b>Using MS Word:</b></p> <ol style="list-style-type: none"> <li>1. Basics of Font types, size and color</li> <li>2. Effect like bold, italic, underline, subscript and superscript</li> <li>3. Case changing option</li> <li>4. Inserting, deleting, undo and redo, copy and moving text within a document.</li> <li>5. Formatting paragraphs and list</li> <li>6. Setting line spacing</li> <li>7. Page setting and margin including header and footer.</li> <li>8. Spelling and grammatical checks.</li> <li>9. Table and its option. Inserting row or columns, merging and splitting cell, arithmetic calculation in a table.</li> <li>10. Working with picture, inserting picture with file.</li> <li>11. Using drawing and word art: - line and shapes, modifying drawn objects, formatting drawn objects.</li> </ol>
3	<p><b>Using MS – Excel:</b></p> <ol style="list-style-type: none"> <li>1. Intro. To data, Cell Address, excel data type, concept of hyperlinks.</li> <li>2. Introduction to formatting, number, text and data formatting.</li> <li>3. Concept of worksheet and workbook</li> </ol>

	<ol style="list-style-type: none"> <li>4. Understanding the formula, operators in excel, operators precedence, understanding function, common excel function like sum, average, min, max, date, transpose, in, and, or, sqrt power, upper and lower.</li> <li>5. Types of graphics:- word art, auto shape and image</li> <li>6. Intro. To chart, overview of different types of chart available with excel</li> <li>7. Concept of print area, margin, header, footer, and other page setup option.</li> </ol>
4	<p><b>Using MS- PowerPoint:</b></p> <ol style="list-style-type: none"> <li>1. Outline of effective presentation</li> <li>2. Starting a new presentation file , saving work</li> <li>3. Creating new slides, working with textbooks,</li> <li>4. Changing a slide layout, applying a theme, changing color, fonts and effect, creating and managing custom color, changing the background.</li> <li>5. Changing the fonts, size and color text fill.</li> <li>6. Adjusting character spacing and line spacing formatting text box word art styles</li> <li>7. Formatting bulleted list and numbered list</li> <li>8. Finding and replacing text and correcting your spelling.</li> <li>9. Selecting, deleting, moving copying, resizing and arranging objects.</li> <li>10. Working with drawing tool, applying shape or picture style, applying object border, object effect.</li> <li>11. Embed a video, link to a video, size a video, video playback option.</li> <li>12. Configuration a sound, assigning sound to an object, adding a digital music sound track.</li> <li>13. Creating hyperlink using action button</li> </ol>
5	<p><b>Basic Structure of HTML:</b></p> <ol style="list-style-type: none"> <li>1. Structure of HTML Page</li> <li>2. Inserting formatting tag for text. Bold , italic, underline, line break, special character ,predefine heading and paragraph , comments</li> <li>3. Font color size and alignment.</li> <li>4. Margin with body tag, background and text color.</li> <li>5. Order and unorder list.</li> <li>6. Use of frame for structure viewing</li> <li>7. Table:- basic structure ,using TD, TR, and TH tag, use of basic element in table, border, cell padding, cell spacing, width, caption align and bgcolor.</li> <li>8. Image in webpage:- inserting and formation an image using SRC, border V space , H space , align , ALT , height , width and back ground in HTML page.</li> <li>9. Types of link:- linking two or more webpage, linking to external page, linking to specific point in another web page, linking image file.</li> </ol>

**SUGGESTED LIST OF EXERCISES/PRACTICAL/EXPERIMENTS:-**

1. Create and manage file and folder tree.
2. Use accessories utilities of Windows OS
3. Entering and editing text in doc file
4. Apply formatting feature like bold, italic, underline, color , size, etc
5. Apply feature like bullet and numbering

6. Create doc ,insert image format table
7. Create and manipulate table
8. Entering and editing data in worksheet
9. Apply formula and function in the sheet
10. Use graphics and auto shapes in excel sheet
11. Create and manipulate excel chart
12. Create pay bill , pay slip, electricity bills using excel
13. Print sheet using print area
14. Basic Operation of power point , create ppt, and insert delete slide
15. Create project presentation ,lecturer presentation
16. Use of master slide in presentation
17. Apply basic formatting features in presentation like font, size, color, text fill, spacing, line spacing, formatting text boxes, word art, style bullet and numbering
18. Working with drawing tool, applying shape or picture styles, applying object borders, object fill, object effect.
19. Working with video, link to video and sound file.
20. Creating hyperlinks, using action buttons.

**REFERENCE BOOKS:-**

**A. List of Book**

1. Computer Course – By R. Taxali - Tata Mcgraw Hills
2. MS- Office for Dummies – By Wallace Wang - Wiley India
3. Basic Computer Engineering - By Dr. Shailendra singh, pawan thakur, anurag jain - Satya Prakashan

**B. List of Major Equipments:-**

1. Compute system with Latest configuration along with windows Operating System

**C. List of Software /Learning Websites**

1. Windows 7 Professional
2. MS Office 2007
3. HTML Tutorials , <http://www.w3school.com.html/default.asp>



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**SEMESTER – I (MECH/CIVIL/ ELE)**  
**SUBJECT- (1CI101) ELEMENTS OF CIVIL ENGINEERING**

Teaching Scheme (In Hours)				Total Credits				Examination Scheme (Marks)					
								Theory				Practical /TW Ass.	Total
L	T	P	Total	L	T	P	Total	Int. Asses.	Sem. End	Hrs.	Total		
02	00	02	04	02	00	01	03	40	60	03	100	50	150

Unit No.	Unit
1	<b>Introduction</b> 1.1 Branches & Scope of civil engineering. 1.2 Various engineering structures. 1.3 Role of Civil Engineers, 1.4 Importance of Planning, Scheduling and Construction management.
2	<b>Construction Materials</b> 2.1 Introduction. 2.2 Properties and Usages of different materials like Stones, Bricks, Lime, Cement, Sand, Aggregates, Mortar, and Concrete & Timber. 2.3 Quality parameters of materials 2.4 Storage of various construction material 2.5 Calculation of material cost
3	<b>Surveying &amp; Levelling</b> 3.1 Purpose, importance and principles of surveying 3.2 Introduction of Plan, Scale & map, Plane & Geodetic surveying, Classification of survey. 3.3 Linear Measurements: Instruments used in chaining, Ranging out of Survey lines. 3.4 Angular Measurements: Introduction, Prismatic & Surveyors Compass, Types of Bearings and Meridians, Whole Circle Bearing and Reduced Bearings, Fore bearing & Back bearing, Calculation of Angles from bearings and bearings from angle, Included Angles. 3.5 Introduction, Purpose, use of leveling 3.6 Terms related to leveling. 3.7 Introduction about types of levels like a Dumpy Level, Levelling staff. 3.8 Methods of Calculating Reduce level
4	<b>Civil Engineering Drawings</b> 4.1 Introduction 4.2 Principles of planning, Requirements of building,

	<p>4.3 Plan, Elevation &amp; Section, Building Components.</p> <p>4.4 Abbreviation, conventions and symbols used in drawing.</p> <p>4.5 Types of building drawings and its scales.</p> <p>4.6 Building bylaws for residential and nonresidential building.</p> <p>4.7 Methods of projection</p>
5	<p><b>Machine Foundations</b></p> <p>5.1 Procedure of design consideration in machine foundation, purpose</p> <p>5.2 Factors to be consider while designing machine foundation</p> <p>5.3 Various types of failure of machine foundation</p> <p>5.4 Governing factors causing failure</p> <p>5.5 Section of appropriate foundation design for withstanding dynamic loads referring IS 2974 (part - I &amp; II)</p>

**REFERENCE BOOKS:-**

1. Building Construction – By B. C. Punmia ,Laxmi Pub.House
2. Surveying – I By B. C. Punmia ,Laxmi Pub.House
3. Materials of Construction By D. N. Ghose
4. Engineering Materials By S.C. Rangwala
5. Text book of surveying & levelling By T. P. Kanitkar
6. Civil Engineering Drawing By Shah Kalel & Patkil

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**SEMESTER – I (MECH/CIVIL/ ELE)**  
**SUBJECT- (1ME101) ELEMENT OF MECHANICAL ENGINEERING**

Teaching Scheme (In Hours)				Total Credits				Examination Scheme (Marks)					
								Theory				Practical /TW Ass.	Total
L	T	P	Total	L	T	P	Total	Int. Asses.	Sem. End	Hrs.	Total		
02	00	02	04	02	00	01	03	40	60	03	100	50	150

Unit No.	Unit
1	<b>Power transmission and safety:</b> Importance of power transmission, modes of power transmission, applications, belt & rope drive systems, power transmission by gears & chains, role of coupling & journal in power transmission. Causes of accidents & their remedies. Personal safety and tool safety in shops
2	<b>Gas &amp; Arc Welding:</b> Principle of welding, types of welding, gas welding, arc welding, soldering & brazing
3	<b>Boiler &amp; Accessories:</b> Functions & classifications, working principles of boiler & accessories, uses
4	<b>Internal Combustion (I.C.) Engine:</b> Functions & classifications, working principles, uses
5	<b>Steam Prime Movers:</b> Meaning of the term prime movers, function and classification of prime movers, working principle of turbine, function and working of steam turbine
6	<b>Fluid devices:</b> Concept of theory of fluid flow, general properties of fluids, pump-working principle, types, working of centrifugal and reciprocating pumps, performance parameters, main parts of pumps and their functions, common troubles and remedies, water turbines-working principle, types and applications, common troubles and remedies of water turbine, air compressor-working principle, types, performance parameters, applications, other hydraulic/pneumatic/hydro-pneumatic equipments-principle of working-hydraulic lift, hydraulic pump, hydraulic power pack, hydraulic jack, applications of above.
7	<b>Material handling:</b> Need of material handling, types of material handling equipment, hoisting equipment, conveying equipment, surface and overhead equipment, criteria for selection, factors affecting the selection, selection of suitable material handling equipment for the given situation

- Practical, assignments and tutorials are based on above syllabus.

**REFERENCE BOOKS:**

1. Theory of Machines - By R. S. Khurmi and J. K. Gupta
2. Heat engine - By Shah & Pandya
3. Hydraulic machines - By Jagdish lal
4. Elements of Workshop Technology ( Vol. 1,2) - By Hazara Chaudhary
5. Pumps operation and maintenance - By Tyler and Hicks
6. Material Handling equipments - By M.Rundenko

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**SEMESTER – I (MECH/CIVIL/ ELE)**  
**SUBJECT- (1ME102) ENGINEERING DRAWING**

Teaching Scheme (In Hours)				Total Credits				Examination Scheme (Marks)					
								Theory				Practical /TW Ass.	Total
L	T	P	Total	L	T	P	Total	Int. Asses.	Sem. End	Hrs.	Total		
02	00	04	06	02	00	02	04	40	60	03	100	50	150

Unit No.	Unit
1	<b>Introduction:</b> Importance of engineering drawing, engineering drawing instruments and uses, pencils-grades, applications. Vertical capital and lower case letters. Inclined capital and lower case letters. Dimensioning methods. (A) Aligned method. (B) Unidirectional with chain, parallel dimensioning.
2	<b>Geometric Construction:</b> Develop the ability to draw polygons, circles and lines with different geometric conditions. To construct polygon. Triangle, square / rectangle, pentagon with special method. Hexagon with special method.
3	<b>Engineering Curves:</b> Classification and application of engineering curves, construction of conics curves with different methods, construction of ellipse (Arc of circle method, concentric circle, oblong Method), parabola (rectangle method, tangent method), hyperbola (Rectangle method), cycloid curves (Cycloid, epicycloids, hypocycloid), involutes (Involutes of a circle, Involute of a polygon), spiral (Archimedean spiral)
4	<b>Projection of Points and Straight Lines:</b> Notation system- points in first, second, third and fourth quadrants, different types of lines: Projections of line parallel to two and perpendicular to one of the principal planes, line parallel to one and inclined to two principal planes, line inclined to all the three principal planes, true length of the line and its inclination with the reference planes.
5	<b>Projection of Planes:</b> Concept of different planes, projections of planes with its inclination to one principal plane and with two principal planes.
6	<b>Orthographic Projections:</b> Principle of projection, principal planes of projection, projections from the pictorial view of the object on the principal planes for view from front, view from top and view from side using first angle projection method and third angle projection method.

7	<b>Isometric Projections and Isometric View or Drawing:</b> Isometric scale, conversion of orthographic views into isometric projection containing lines, circles and arcs. Isometric view or drawing.
8	<b>Pie Charts and Bar Charts:</b>

**REFERENCE BOOKS:**

1. Elements of Engg. Drawing – By N.D. Bhatt
2. Engineering Drawing – By P.J.Shah
3. Engineering Graphics - By Arunoday Kumar
4. Laboratory Manual