

| GANPAT UNIVERSITY | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------------|-----------------|----|---------|-----------------|-------------------------------------|-------|------------------|----|-------|-----------------|----|----------------------------|--------|-------|-----------|-----|-------|------------|--|--|
| FACULTY OF ENGINEERING AND TECHNOLOGY(DIPLOMA PROGRAMMES) | | | | | | | | | | | | | | | | | | | | | |
| TEACHING AND EXAMINATION SCHEME | | | | | | | | | | | | | | | | | | | | | |
| Program | Diploma Engineering | | | | | | | Branch/Spec | | | | | | | | | | | AUTOMOBILE | | |
| Semeste | I | | | | | | | | | | | | | | | | | | | | |
| Effective | from Academic Year | | | 2018-19 | | Effective for the batch Admitted in | | | | | | | | Jun-18 | | | | | | | |
| Subject Code | Subject Name | Teaching scheme | | | | | | | | | | | Examination scheme (Marks) | | | | | | | | |
| | | Credit | | | | | | Hours (per week) | | | | | Theory | | | Practical | | | | | |
| | | Lecture(DT) | | | Practical(Lab.) | | | Lecture(DT) | | | Practical(Lab.) | | CE | SEE | Total | CE | SEE | Total | | | |
| | | L | TU | Total | P | TW | Total | L | TU | Total | P | TW | | | | | | | Total | | |
| 1BS101 | MATHEMATICS-I | 3 | 1 | 4 | 0 | 0 | 0 | 3 | 1 | 4 | 0 | 0 | 0 | 40 | 60 | 100 | 0 | 0 | 0 | | |
| 1HS101 | ENGLISH | 4 | 0 | 4 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 40 | 60 | 100 | 0 | 0 | 0 | | |
| 1BS103 | PHYSICS | 3 | 0 | 3 | 1 | 0 | 1 | 3 | 0 | 3 | 2 | 0 | 2 | 40 | 60 | 100 | 30 | 20 | 50 | | |
| 1ES114 | ENGINEERING DRAWING | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 2 | 4 | 0 | 4 | 40 | 60 | 100 | 60 | 40 | 100 | | |
| 1ES202 | ENGINEERING MECHANICS | 3 | 0 | 3 | 1 | 0 | 1 | 3 | 0 | 3 | 2 | 0 | 2 | 40 | 60 | 100 | 30 | 20 | 50 | | |
| 1ES115 | MECHANICAL WORKSHOP | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 60 | 40 | 100 | | |
| Total | | 15 | 1 | 16 | 6 | 0 | 6 | 15 | 1 | 16 | 12 | 0 | 12 | 200 | 300 | 500 | 180 | 120 | 300 | | |

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|---|---|-----------------|----|---------|-----------------|-------------------------------------|-------|------------------|----|-------|-----------------|----|----------------------------|--------|-------|-----------|-----|-------|------------|--|--|
| FACULTY OF ENGINEERING AND TECHNOLOGY(DIPLOMA PROGRAMMES) | | | | | | | | | | | | | | | | | | | | | |
| TEACHING AND EXAMINATION SCHEME | | | | | | | | | | | | | | | | | | | | | |
| Program | Diploma Engineering | | | | | | | Branch/Spec | | | | | | | | | | | AUTOMOBILE | | |
| Semeste | II | | | | | | | | | | | | | | | | | | | | |
| Effective | from Academic Year | | | 2018-19 | | Effective for the batch Admitted in | | | | | | | | Jun-18 | | | | | | | |
| Subject Code | Subject Name | Teaching scheme | | | | | | | | | | | Examination scheme (Marks) | | | | | | | | |
| | | Credit | | | | | | Hours (per week) | | | | | Theory | | | Practical | | | | | |
| | | Lecture(DT) | | | Practical(Lab.) | | | Lecture(DT) | | | Practical(Lab.) | | CE | SEE | Total | CE | SEE | Total | | | |
| | | L | TU | Total | P | TW | Total | L | TU | Total | P | TW | | | | | | | Total | | |
| 1BS201 | MATHEMATICS-II | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 40 | 60 | 100 | 0 | 0 | 0 | | |
| 1HS201 | COMMUNICATION SKILLS | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 30 | 20 | 50 | | |
| 1ES101 | ENVIRONMENTAL STUDIES AND DISASTER MANAGEMENT | 2 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 40 | 60 | 100 | 0 | 0 | 0 | | |
| 1ES109 | ELEMENT OF ELECTRICAL ENGINEERING | 2 | 0 | 2 | 1 | 0 | 1 | 3 | 0 | 3 | 2 | 0 | 2 | 40 | 60 | 100 | 30 | 20 | 50 | | |
| 1ES208 | MATERIAL SCIENCE & METALLURGY | 3 | 0 | 3 | 1 | 0 | 1 | 3 | 0 | 3 | 2 | 0 | 2 | 40 | 60 | 100 | 30 | 20 | 50 | | |
| 1ES104 | COMPUTER APPLICATION | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 60 | 40 | 100 | | |
| 1ES201 | AUTOMOBILE TRADE PRACTICE | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 4 | 0 | 0 | 0 | 60 | 40 | 100 | | |
| | CEU | | | | | | | | | | | | | | | | | | | | |
| Total | | 11 | 0 | 7 | 6 | 1 | 7 | 12 | 0 | 12 | 12 | 0 | 12 | 120 | 180 | 300 | 210 | 140 | 350 | | |

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|---|--|----|-----------------|--------------|----------------------------|---|----|-----|-------------|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | Diploma Programme | | | | Branch/Spec. | All | | | |
| Semester | I | | | | Version | 1.0.0.0 | | | |
| Effective from Academic Year | | | | 2018-19 | | Effective for the batch Admitted in : June-2018 | | | |
| Subject code | 1BS101 | | | Subject Name | Mathematics - I | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 3 | 1 | - | - | 4 | Theory | 40 | 60 | 100 |
| Hours | 3 | 1 | - | - | 4 | Practical | - | - | - |
| Pre- requisite: | | | | | | | | | |
| <ul style="list-style-type: none"> None | | | | | | | | | |
| Learning outcomes: | | | | | | | | | |
| <ul style="list-style-type: none"> The subject is classified under Basic Sciences and students are intended to know about the basic concepts and principles of Mathematics as a tool to analyze the Engineering problems. The course content should be taught so as to understand and perform the Engineering concepts and computations. Mathematics has the potential to understand the core Technological studies. Prepare him/herself for finding Area and Volume. | | | | | | | | | |
| Theory syllabus | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs. |
| 1 | Determinants and Matrices: Idea of Determinant and related Examples, Definition ,Order $m \times n$, types of Matrices, Addition/Subtraction of Matrix, Product of Matrix, Adjoint and Inverse up to 3×3 matrix, Solution of Simultaneous Equations (up to two variables). | | | | | | | | 14 |
| 2 | Vectors: Basic concept of Vector, addition & subtraction of Vectors, Modulus vector , Unit vector and Direction of vectors, Angle between two vectors, Applications of Dot and Cross Product of Vectors, Work Done by Force. | | | | | | | | 12 |
| 3 | Logarithm: Concept ,Working Rules and related Examples, Logarithm Base changed rule and related Examples, Relation between Logarithm and Indices and related Examples | | | | | | | | 08 |
| 4 | Menstruation: Calculate the surface area of different shapes and bodies (Triangle, Square, Rectangle, Trapezium, Parallelogram, Rhombus and Circle) Calculate the Surface & Volume of different shapes and bodies Surface & Volume (Cuboids, Cone, Cylinder and Sphere) | | | | | | | | 08 |
| 5 | Trigonometry: Solve simple problems using concepts of 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 | | | | | | | | 18 |

Practical content:

Experiments/Practical/Tutorials/Simulations would be carried out based on syllabus

SUGGESTED LEARNING RESOURCES**List of Books**

| | |
|---|--|
| 1 | Engineering Mathematics (3rd edition) by Anthony Croft |
| 2 | Applied Mathematics – I by W. R. Neelkanth |
| 3 | Polytechnic mathematics by S.P. Deshpande |

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|--|---|----|-----------------|---------|---|-----------|----|-----|-------------|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | Diploma Programme | | | | Branch/Spec. | All | | | |
| Semester | I | | | | Version | 1.0.0.0 | | | |
| Effective from Academic Year | 2018-19 | | | | Effective for the batch Admitted in : June-2018 | | | | |
| Subject code | 1HS101 | | Subject Name | ENGLISH | | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 4 | 0 | 0 | - | 4 | Theory | 40 | 60 | 100 |
| Hours | 4 | 0 | 0 | - | 4 | Practical | 00 | 00 | 00 |
| Pre-requisites: | | | | | | | | | |
| None | | | | | | | | | |
| Learning Outcome: | | | | | | | | | |
| At the end of the course, the students shall acquire satisfactory competency in the fundamental English language skills so as to be able to: | | | | | | | | | |
| <ul style="list-style-type: none"> • listen, understand and respond effectively in English • read, comprehend and apply the acquired knowledge/information in various real-life communication situations • speak efficiently on various occasions • write various drafts in clear, correct, concise and courteous manner | | | | | | | | | |
| Syllabus | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs. |
| 1. | Vocabulary Building Vocabulary development (formation of nouns, adjectives, verbs and adverbs, synonyms-antonyms, homophones, homonymous, word-analogies, one word substitutes, prefix-suffix, idioms and phrases, dictionary usage skills and drills using online and off-line digital dictionaries) | | | | | | | | 10 |
| 2. | Fundamentals of English Grammar and Practice Parts of speech; noun, adjective, pronoun, verb, adverb, prepositions, conjunctions. Explanation of singular and plural, uses of articles, determiners, Rules of word formation, capitalization and punctuation. | | | | | | | | 10 |
| 3. | Forming Verbs and practice Verbs –finite and non-finite, Sentence formation and sentence transformation (affirmative, negative and interrogative) Sentence types (function and structure based), concord (subject-verb agreement) | | | | | | | | 10 |

| | | |
|-----------|--|----|
| 4. | Verb forms in Sentence Structures Verb forms: Simple, progressive, perfect, and perfect continuous, Causal Verbs (Get, make, have) with Passive patterns. | 10 |
| 5. | Introduction to Communication skills Listening: Small audio clips of day to day conversations, Speaking: Introducing yourself and others, Describing Pictures, Situations, etc. Reading: Reading advertisements for admission and job advertisements, handbills, menu card, invitation cards, news paper cuttings etc. Writing: Diary writing, writing social media messages leave note, use of transitional words and phrases in writing. | 08 |
| 6. | Study Skills (Elementary level) Describing graphs, charts, diagram and figures, Note Making, Note Taking, Summarizing, Basic level Information Transfer from visual to verbal, Matrix, Flow Chart etc. (very basic level) | 08 |

Reference books:

| No | Title of Books | Author | Publication |
|-----------|--|-----------------------------------|-----------------------------|
| 1 | Holy Faith English Grammar and Compositions | J. T. Peechatt. | Holy Faith International |
| 2 | Murphy's English Grammar | Raymond Murphy | Cambridge University Press |
| 3 | A Communicative Grammar of English | Geoffery Leech and Fan Svartvik | Pearson Longman |
| 4 | Study Skills in English | English Team, CIEFL | CIEFL University, Hyderabad |
| 5 | Technical Communication; Principles and Practice | Meenakshi Raman & Sangeeta Sharma | Oxford University Press |
| 6 | The Fundamental Aspects of Communication Skills | Dr. Prashad | S. K. Katariya & Sons. |
| 7 | Effective Technical Communication | M Ashraf Rizvi | TMH Publication |

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FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES)

| | | | | | | | | | |
|------------------------------|-------------------|---------|-----------------|---|----------------------------|-----------|----|-----|-------|
| Programme | Diploma Programme | | | Branch/Spec. | All | | | | |
| Semester | I | | | Version | 1.0.0.0 | | | | |
| Effective from Academic Year | | 2018-19 | | Effective for the batch Admitted in : June-2018 | | | | | |
| Subject code | 1BS103 | | Subject Name | Physics | | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 3 | 0 | 1 | - | 4 | Theory | 40 | 60 | 100 |
| Hours | 3 | 0 | 2 | - | 5 | Practical | 30 | 20 | 50 |

Pre-requisites:

- None

Learning outcomes:

- After successful completion of this course, student will be able to,
- *Understand essential knowledge of units and measurement.
 - *Recognize necessary information of Laws of motion and its applications.
 - *Compre hend important characteristic of phenomenon of elasticity.
 - *Appreciatevital knowledge of heat and thermodynamics.

Theory Syllabus

| Unit | Content | Hrs. |
|----------|---|----------|
| 1 | UNITS AND MEASUREMENT : System of units (FPS, CGS, MKS, SI system), Derived physical quantities and their units, features Measuring Instruments: (1) Vernier Calipers (2)Micrometer Screw Gauge, Errors in measurements, Dimensions of physical quantity, Dimensional formula and dimensional equation, Dimensional analysis and its applications | 5 |
| 2 | MOTION, WORKAND ENERGY Concept of Path length and Displacement, Average Speed and Average Velocity, Acceleration, Kinematic equations for uniformly accelerated motion, 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, Work, Kinetic Energy, Potential Energy, Work energy theorem | 6 |
| 3 | ELASTICITY: Elastic behavior of Solids, Stress and Strain, Stress-Strain curve, Hooke's law, Determination of Young's Modulus, Bulk modulus, Modulus of rigidity, Application of Elastic behavior of material | 4 |
| 4 | HEAT AND THERMODYNAMICS: Heat Conduction, heat convection and heat radiation, Thermal conductivity, Heat capacity and specific heat, Zeroth law of thermodynamics, Temperature and internal energy, First law of thermodynamics, Isothermal, isobaric, isochoric and adiabatic process, Units of temperature and equations of their interrelation, Kelvin temperature scale | 6 |
| 5 | SURFACE TENSION AND FLUID DYNAMICS Cohesive and adhesive forces, molecular range, Definition, dimension and SI unit of surface tension, Angle of contact and Capillarity, shape of liquid meniscus in a capillary tube, Formula of surface tension, surface tension and surface energy, Effect of impurity and temperature on surface tension, Viscosity, Streamline flow and turbulent flow of a fluid, Reynolds number, Newton's formula for viscous force, co-efficient of viscosity, Stokes law and terminal velocity | 7 |
| 6 | STATIC AND DYNAMIC ELECTRICITY Introduction, Electric charge, Quantization of Charge, Coulomb's law, Electric field and electric field lines, Electric potential, Electric current, Ohm's law, Electrical Resistivity and Conductivity, Series and parallel connections of resistors. | 5 |

| | | |
|----------|---|----------|
| 7 | RADIOACTIVITY AND NUCLEAR PHYSICS : Introduction to Radioactivity, Laws of Radioactivity, Half Life, and Average Life, Properties of alpha particles, beta particles and gamma rays, Nuclear fission, Chain reactions, Nuclear fusion, Nuclear reactor ,Waste disposal of nuclear reactor | 6 |
| 8 | OPTICS AND NANOTECHNOLOGY: Reflection of light, Total Internal Reflection, Refraction of light and Snell's law, Diffraction Polarization , Interference of light,Dispersion.8.8Introduction to Nanotechnology, Nan scale and Surface to Volume ratio, Properties of nano materials, Application of nanomaterials. | 6 |

SUGGESTED LIST OF EXPERIMENTS

The experiments should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency -

| Sr. No. | Unit no. | Experiment |
|---------|-------------|--|
| 1 | 1 | Study of linear measurement by Vernier calipers. |
| 2 | 2 | Study of precision measurement by Micrometer screw gauge. |
| 3 | 3 | Study of refractive index of prism using spectrometer. |
| 4 | 4 | Measurement of gravitational acceleration using simple pendulum. |
| 5 | 5 | Study of force constant of elastic spring. |
| 6 | 6 | Measurement of resistance using Ohm's law. |
| 7 | 7 | Determination of viscosity of fluid. |
| 8 | 8 | Measurement of unknown resistance using Wheatstone bridge. |
| 9 | 9 | Measurement of Young's Modulus of a sample wire. |
| 10 | 10 | Study of SA/V ratio of simple objects. |
| 11 | 11 | Investigations of Stokes law |
| 12 | 12 | Determination of surface tension of a liquid. |
| | Note | Minimum Ten Experiments should be performed by the students from the above given list or experiment related to above topics |

SUGGESTED LEARNING RESOURCES

List of Books

| Sr.No | Title of Books | Author | Publication |
|-------|------------------------------|---------------------------|--------------------------------|
| 1 | Applied Physics | Arthur Beiser | Tata McGraw- Hill publication |
| 2 | Fundamentals of Physics | David Halliday and Resnik | John Wiley & Sons publication |
| 3 | Nuclear physics | S.B.Patel | Anshan Ltd publication. |
| 4 | General Properties of matter | D. S. Mathur | S. Chand publication |
| 5 | Engineering Physics | G.Vijayakumari | Vikas Publishing House Pvt Ltd |

SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- Teacher guided self learning activities.
- Course/topic based internet based assignments.
- Library survey regarding Engineering Material used in different industries.
- Industrial Visits of one or Two Industries.
- Quiz & Brain storming session related to Fuel properties & Utilization of fuel for different purposes.
- Sampling & Testing of water collected from different places.
- These could be individual or group-based.

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|---|--|----|-----------------|----|-------------------------------------|------------------------|-----|-------|-----|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | DIPLOMA | | | | Branch/Spec. | Mechanical Engineering | | | |
| Semester | I | | | | Version | 1.0.0.0 | | | |
| Effective from Academic Year | 2018-19 | | | | Effective for the batch Admitted in | June 2018 | | | |
| Subject code | 1ES114 | | Subject Name | | Engineering Drawing | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | CE | SEE | Total | |
| | L | TU | P | TW | | | | | |
| Credit | 2 | 0 | 2 | 0 | 4 | Theory | 40 | 60 | 100 |
| Hours | 2 | 0 | 4 | 0 | 6 | Practical | 60 | 40 | 100 |
| Pre-requisites: | | | | | | | | | |
| Learning Outcome: | | | | | | | | | |
| After completions of this course, students will able to: | | | | | | | | | |
| <ol style="list-style-type: none"> 1. Develop the ability to draw polygons, circles and lines with different geometric conditions. 2. Able to draw engineering curves with proficiency and speed as per given dimensions. 3. Find out true shape and size of inclined line and plane. 4. Understand the orthographic views of object containing lines, circles and arc geometry. 5. Understand the isometric view from orthographic views of objects containing lines, circles and arcs. | | | | | | | | | |
| Theory syllabus | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs |
| 1. | <u>Introduction</u> Importance of engineering drawing, engineering drawing instruments and their uses, pencil grades and its applications. Different types of Lines. Types of lettering. Types of Dimensioning methods. (Aligned, Unidirectional, Parallel and Chain). | | | | | | | | 1 |
| 2. | <u>Geometric Construction</u> <ul style="list-style-type: none"> • Geometric construction related example with line like bisecting a line, divide a line, etc. • Geometric construction related example with angle like bisect an angle, trisect an angle, etc. • To construct polygon with different methods (Special method, General Method). • To draw tangents. • Geometric construction related example with circle and arc. | | | | | | | | 3 |
| 3. | <u>Engineering Curves</u> Classification and application of engineering curves, construction of conic curves (like parabola, ellipse, hyperbola) with different methods, construction of cycloidal curves (like cycloid, epicycloid, hypocycloid), Archimedean Spiral, Involute of different shapes (like polygon, circle). | | | | | | | | 6 |
| 4. | <u>Projection of Points and Lines</u> <ul style="list-style-type: none"> • Reference planes, Concept of quadrant. • Projection of points. • Projection of lines – determination of true length and inclinations for following cases - <ol style="list-style-type: none"> a) Line parallel to one or both the plane. b) Line perpendicular to one plane. c) Line inclined to one plane and parallel to another plane. d) Line inclined to both the planes. | | | | | | | | 4 |
| 5. | <u>Projection of Planes</u> <ul style="list-style-type: none"> • Types of Planes. • Projection of planes for following different conditions - <ol style="list-style-type: none"> a) Plane parallel to one of the reference planes. b) Plane inclined to one reference plane and perpendicular to another plane. c) Plane inclined to both reference planes. | | | | | | | | 5 |

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| 6. | <u>Orthographic Projections</u> <ul style="list-style-type: none"> • Method of projections with their symbol – 1st and 3rd angle projection. • Conversion of simple pictorial views into orthographic views, Illustrative problems on orthographic projection. (Problem restricted up to four views like front view, top view and side view). | 5 |
| 7. | <u>Isometric Projections</u> <ul style="list-style-type: none"> • Isometric axis, lines and planes, Isometric scales. • Difference between isometric view (projection) and isometric drawing. • Conversion of orthographic views into isometric projection containing lines, circles and arcs only. | 4 |
| Practical content | | |
| Practicals are based on above syllabus. <ol style="list-style-type: none"> 1. Draw Geometric Construction problems. 2. Draw Engineering Curves problems. 3. Draw Projection of Lines problems. 4. Draw Projection of Planes problems. 5. Draw Orthographic Projections problems. 6. Draw Isometric Projections problems. | | |
| Text Books | | |
| 1. | Mechanical Drafting, S. V. Gosai, Atul Prakashan. | |
| Reference Books | | |
| 1. | Elements of Engineering Drawing, N. D. Bhatt, Charotar Publishing House, Anand. | |
| 2. | Engineering Drawing, P. J. Shah, S. Chand Publication, New Delhi. | |
| 3. | Engineering Graphics, Arunoday Kumar, Tech-Max Publications, Pune. | |

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| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | | Diploma Engineering | | | Branch/Spec. | | Civil Engineering | | |
| Semester | | II | | | Version | | 1.0.0.0 | | |
| Effective from Academic Year | | | 2018-19 | | Effective for the batch Admitted in | | | June 2018 | |
| Subject code | | 1ES202 | Subject Name | | Engineering Mechanics | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 3 | 0 | 2 | 0 | 5 | Theory | 40 | 60 | 100 |
| Hours | 3 | 0 | 2 | 0 | 5 | Practical | 30 | 20 | 50 |
| Pre-requisites: | | | | | | | | | |
| Learning Outcome: | | | | | | | | | |
| Attend of this course, students will be able to : | | | | | | | | | |
| <ul style="list-style-type: none"> • Understand concepts of forces in Static and Dynamics. • Understand mechanical properties of engineering materials. • To apply different laws of science. • To solve Static and Kinetic problems. • To understand geometrical properties such as centroid, etc of sections of different shapes. | | | | | | | | | |
| Theory syllabus | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs |
| 1 | INTRODUCTION <ul style="list-style-type: none"> • Scope of engineering mechanics • Static , Dynamics (a) Kinetics (b) Kinematics • Scalar and Vector quantities • Different systems of units & Conversions | | | | | | | | 2 |
| 2 | COPLANAR CONCURRENT FORCES <ul style="list-style-type: none"> • Understand Co - planar Concurrent Force system, Units of Force, Principles of superposition, Principle of Transmissibility. • Composition & Resolution of Resultant Forces, equilibrium conditions of coplanar Concurrent Forces, • Analytical and graphical method for Law of Parallelogram, Lami's Theorems , Law of Polygon, Law of Triangle. | | | | | | | | 10 |
| 3 | COPLANAR – PARALLEL AND NON–CONCURRENT FORCES <ul style="list-style-type: none"> • Moment, Couple, Principal of Moment , application of Moment & Couple, properties of couple • Equilibrium conditions of Non-coplanar concurrent Forces • Reactions in Beams • Types of Beams, Types of supports, Types of Load on beam | | | | | | | | 8 |
| 4 | CENTROID AND CENTRE OF GRAVITY <ul style="list-style-type: none"> • Centroid • Centroid of Standard shape • Centre of Gravity. • Centre of Gravity of standard solids | | | | | | | | 6 |

| | | |
|---|---|---|
| | <ul style="list-style-type: none"> • Distinguish between Centroid and Centre of Gravity • Moment area method for finding out Centroid and Centre of Gravity • Compute Centroid & Centre of gravity of 1-D, 2- D and 3-D objects. | |
| 5 | FRICITION <ul style="list-style-type: none"> • Appreciate Friction and its Engineering applications, Angle of Friction , Angle of Repose • Types of friction • Coefficient of friction and its effect. • Laws of Friction | 6 |
| 6 | WORK, POWER & ENERGY <ul style="list-style-type: none"> • Demonstrate relation between Work, Power & Energy • Work – work done , force displacement diagram , torque , work done by torque • Equation of H.P. in terms of torque and R.P.M. • Engineering Problems on it. • Energy, Kinetic and potential energy & Engineering problems on it | 4 |
| 7 | SIMPLE MACHINE <ul style="list-style-type: none"> • Types of Simple Machines • Technical terms related to simple machines • Law of Machine • Reversible and Non-reversible machines, Condition of reversible machines • Line sketch of different systems of Pulley Blocks, Different simple machines and their velocity ratio | 6 |
| Practical content | | |
| Practicals are based on above syllabus. | | |
| Text Books | | |
| 1 | Engineering Mechanics, R. P. Rethaliya, Atul Prakashan | |
| 2 | | |
| Reference Books | | |
| 1 | Engineering Mechanics, R S Khurmi S. Chand , New Delhi | |
| 2 | Engineering Mechanics, S.B.Junarkar, Sarita Prakashan | |
| 3 | Engineering Mechanics – By D S Kumar | |

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| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | | DIPLOMA | | | | Branch/Spec. | | Mechanical Engineering. | |
| Semester | | I | | | | Version | | 1.0.0.0 | |
| Effective from Academic Year | | | 2018-19 | | | Effective for the batch Admitted in | | | June 2018 |
| Subject code | | 1ES115 | | Subject Name | | Mechanical Workshop | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | CE | | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 0 | 0 | 2 | 0 | 2 | Theory | 0 | 0 | 0 |
| Hours | 0 | 0 | 4 | 0 | 4 | Practical | 40 | 60 | 100 |
| Pre-requisites: | | | | | | | | | |
| Learning Outcome: | | | | | | | | | |
| <p>Practical should be carried out in such a manner that students are able to acquire different learning outcomes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.</p> <p>Sketch general workshop layout. Follow preliminary safety rules in workshop. Select appropriate fitting tools for the required application. Prepare the simple jobs as per specification using fitting tools. 1Select appropriate tin smithy tool for the required application. Prepare the simple job as per specification using tin smithy tools. Select appropriate carpentry tool for the required application. Prepare the simple job as per specification using carpentry tools. Select appropriate pipe fitting tool for the required application. Prepare the simple job as per specification using pipe fitting tools. Select appropriate equipment and consumables for required application. Prepare the simple jobs as per specification using proper metal joining and cutting method.</p> | | | | | | | | | |
| Practical content | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs |
| 1. | Prepare carpentry and fitting shop layout. | | | | | | | | 02 |
| 2. | Demonstrate use of different fitting tools –like work holding, marking, measuring, cutting, finishing and miscellaneous. Student will also prepare the report with sketch, specifications and applications of fitting tools demonstrated. | | | | | | | | 04 |
| 3. | Prepare one simple and another male-female type fitting jobs as per given drawings- 2 jobs. | | | | | | | | 10 |
| 4. | Demonstrate use of different tin smithy tools. Student will also prepare the report with sketch, specifications and applications of tin smithy tools demonstrated. | | | | | | | | 02 |
| 5. | Prepare one tin smithy job as per drawing having shearing, bending, joining and riveting. | | | | | | | | 04 |
| 6. | Demonstrate use of different carpentry tools. Student will also prepare the report with sketch, specifications and applications of carpentry tools demonstrated. | | | | | | | | 04 |
| 7. | Prepare two wooden joints as per given drawings | | | | | | | | 08 |
| 8. | Demonstrate use of different pipe fitting tools. Student will also prepare the report with sketch, specifications and applications of pipe fitting tools demonstrated. | | | | | | | | 02 |
| 9. | Prepare pipe fitting jobs as per drawings-two jobs | | | | | | | | 04 |
| 10. | Demonstrate use of different welding transformers and consumables. Also demonstrate arc welding, gas cutting, soldering and brazing operations. Student will also prepare the report with sketch, specifications and applications of fitting tools demonstrated. | | | | | | | | 04 |
| 11. | Prepare jobs using arc welding, gas cutting, spot welding, brazing and soldering process- three jobs. | | | | | | | | 08 |
| 12. | PROBLEM BASED LEARNING: (Assignment) Group of 6 students will take rejected work pieces in workshop practice (at least two in each fitting, carpentry, tin smithy, pipe fitting and welding). Group will draw the work pieces, will identify type of defects and will discuss the reasons of such defects. Outcome of discussion has to be written in logbook and report. | | | | | | | | 02 |
| 13. | SCHOOL WITHIN SCHOOL: (Assignment) | | | | | | | | 02 |

| | | |
|------------------------|--|--|
| | <p>i: Each student will demonstrate and explain at least one tool (to be assigned by teacher) to all batch colleagues.</p> <p>ii: Each student will share his/her student activities outcome. He/she will also share the experience for the student activities he/she has carried out.</p> | |
| Text Books | | |
| 1. | 1 Workshop Technology-I. By Hazra and Chaudhary. | |
| 2 | Workshop Technology-I. By W.A. J. Chapman Taylor & Francis. | |
| 3 | Comprehensive Workshop Technology (Manufacturing Processes). | |
| 4 | I.T.B. Handbooks. – by Engineering industry Training Board. | |
| 5 | Workshop practice manual. By K.Venkata Reddy B.S.Publications. | |
| Reference Books | | |
| 1. | 1 Mechanical workshop practice. K.C. John. | |
| 2. | 2 Workshop familiarization. E.Wilkinson. | |

| GANPAT UNIVERSITY | | | | | | | | | |
|---|--|----|-----------------|----|---|-----------|----|-----|-------------|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | Diploma Programme | | | | Branch/Spec. | All | | | |
| Semester | II | | | | Version | 1.0.0.0 | | | |
| Effective from Academic Year | | | 2018-19 | | Effective for the batch Admitted in : June-2018 | | | | |
| Subject code | 1BS201 | | Subject Name | | Mathematics - II | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 3 | 1 | - | - | 4 | Theory | 40 | 60 | 100 |
| Hours | 3 | 1 | - | - | 4 | Practical | - | - | - |
| Pre- requisite: | | | | | | | | | |
| <ul style="list-style-type: none"> None | | | | | | | | | |
| Learning outcomes: | | | | | | | | | |
| <ul style="list-style-type: none"> The course content should be taught so as to understand and perform the Engineering concepts and computations. Use proper Mathematical tool to understand engineering principles and concepts and the core Technological studies. Understand all basic fundamentals of Differentiation and Integration. | | | | | | | | | |
| Theory Syllabus | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs. |
| 1 | Co-ordinate Geometry: Point : Distance Formula, Mid-point, Area of a Triangle. Straight Line : Forms of Equation of St Lines, Slope & Intercepts of a line, Parallel and Perpendicular lines. Circle : Equation of Circle, Centre and radius, Tangent and Normal. | | | | | | | | 10 |
| 2 | Function & Limit: Function: Concept and Examples Limit: Concept of Limit, Standard Formulae and related Examples. | | | | | | | | 10 |
| 3 | Differentiation & it's Applications: Differentiation: Definition and Formulas , Rules of Sum, Product, Quotient of Functions, Chain Rule, Derivative of Implicit functions and Parametric functions, Logarithmic Differentiation, Successive Differentiation, Taylor's & Maclaurin's expansions of single variable. Application: Velocity & Acceleration. | | | | | | | | 16 |
| 4 | Integration & its application: Integration: Concept , Integral of Standard Functions, Working Rules of Integration, Integration by Parts, Integration by Substitution Method, Partial Fraction Method, Definite Integral and its properties. Leibniz's theorem. Application: Apply the Integration for finding Area. | | | | | | | | 14 |
| 5 | Statistics: Measures of Central Tendency: for Ungrouped and Grouped Data : Mean, Median and Mode Measure of Dispersion: for Grouped and Ungrouped data : Standard deviation | | | | | | | | 10 |

Practical content :

Experiments/Practical/Tutorials/Simulations would be carried out based on syllabus

SUGGESTED LEARNING RESOURCES**List of Books**

| Sr.No | Title of Books | Author |
|--------------|--------------------------------|---------------|
| 1 | Advance Mathematics | N R Pandya |
| 2 | Applied Mathematics | Prakash D S |
| 3 | Polytechnic Mathematics | S P Deshpande |
| 4 | Higher Engineering-Mathematics | B.S.Grewal |

| GANPAT UNIVERSITY | | | | | | | | | |
|---|---|----|-----------------|--------------|----------------------------|---|----|-----|-------------|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | Diploma Programme | | | | Branch/Spec. | All | | | |
| Semester | II | | | | Version | 1.0.0.0 | | | |
| Effective from Academic Year | | | | 2018-19 | | Effective for the batch Admitted in : June-2018 | | | |
| Subject code | 1HS201 | | | Subject Name | Communication Skill | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 0 | 0 | 1 | - | 1 | Theory | - | - | - |
| Hours | 0 | 0 | 2 | - | 4 | Practical | 20 | 30 | 50 |
| Pre- requisite: | | | | | | | | | |
| <ul style="list-style-type: none"> • Familiarity with basics of English language, strong determination and will-power for skill-set enhancement | | | | | | | | | |
| Learning outcomes: | | | | | | | | | |
| <p>At the end of the course, the students shall acquire satisfactory competency in the fundamental Language skills so as to be able to:</p> <ul style="list-style-type: none"> • listen, understand and respond effectively • read, comprehend and apply the acquired knowledge/information in various real-life communication situations • speak efficiently on various occasions • write various drafts in clear, correct, concise and courteous manner | | | | | | | | | |
| Theory syllabus | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs. |
| 1 | Receptive Skills of Communication Listening: Role play based on everyday communication situations, Uses of English in academic and non-academic situations, Listening to Announcements- (railway/ bus stations/ airport /sports announcement/ commentaries etc.), Listening to Lectures , Listening to Talks and Presentations (TED) Listening comprehension practice using audio-visuals (IELTS Listening) | | | | | | | | 15 |
| 2 | Productive Skills of Communication Speaking: Introduceoneself with correct pronunciation, intonation, using verbal and non-verbal gestures.Give extempore talks with correct pronunciation, intonation, using verbal and nonverbal gestures for the given theme/situation. Familiarity with tone, stress and voice modulations and paralinguistic features Asking for and giving information, Offering and responding to offers, Requesting and responding to requests, Congratulating people on their success, Expressing condolences, Asking questions and responding politely, Apologizing and forgiving, Giving instructions, Seeking and giving permission, Expressing opinions(likes and dislikes), Agreeing and disagreeing, Demanding explanations, Asking for and giving advice and suggestions, Expressing sympathy, Describing objects., <i>Oral practice of speaking in different situations (IELTSSpeaking)</i> | | | | | | | | 15 |
| 3 | Receptive Skills of Communication Reading: Extensive and intensive reading, Arrange jumbled sentences and make meaningful story , Separate two stories, Objectives types of questions on based of paragraph, Newspaper | | | | | | | | 15 |

| | | |
|---|--|----|
| | articles, stories, etc, True, false, Summery completion, Match heading with paragraph, Complete Flow chart, Table completion, MCQ type question, One, two, three words question, Sentence completion, Who said to whom, etc., <i>Reading comprehension practice using paper based and digital text (IELTSReading)</i> | |
| 4 | <p>Productive Skills of Communication Writing: Draft of formal and informal letters ; to issue library card, hostel accommodation, late fees pay, permission to use lab, to issue bona fide certificate, Paragraph Writing (Linkage and Cohesion and Coherence) Dialogue writing used at Institute level; meeting in students new Institute, institute enquiry, visitor enquires about the office, parent enquires about the timing of the institute, regarding the schedule of final exam, enquires about the other's reason of absence in college, Class Representative and Principal about asking for permission to go for a visit to IT Park, regarding permission to celebrate Teacher's Day, asking for permission to leave early due to illness, extension of time limit for the Technical Presentation Assignment, apologizing for using mobile phone in class, a clerk and a student about scholarship, Registrar and student about the attestation of documents, Short Speeches: Develop a welcome speech on the given theme/situation. Develop a farewell speech for the given theme/situation., Formulate a speech for introducing a guest in the given situation. Develop a vote of thanks for the given situation. Essay writing, Technical topic, Agree or disagree situation, Discuss advantages or disadvantages topic Report writing, School Annual day, Science fair, Technical event, etc. Email writing, Based on academic situations <i>Writing practice for preparing drafts of various informal, semi-formal and formal letters (IELTS General Training Writing task-1)</i></p> | 15 |

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|--|
| Practical content: |
| Role play / Practical/presentation/Simulations / Group Discussion would be carried out based on syllabus |

| |
|-------------------------------------|
| SUGGESTED LEARNING RESOURCES |
| List of Books |

| Sr.No | Title of Books | Author |
|-------|---|----------------------------|
| 1 | 1. Cambridge IELTS 1-10, My Book of English; Listening and Speaking, Book 1 to 8, Macmillan | Cambridge University Press |
| 2 | Online resources: You Tube - Daily Video Vocabulary, Vocab 24, TED Lectures, Inspirational speeches/addresses of success people, parliamentary speeches, interviews, various internet channels devoted to learning and improving communication in English | Online resources |
| 3 | My Book of English; Listening and Speaking, Book 1 to 8, | Macmillan |

| GANPAT UNIVERSITY | | | | | | | | | | |
|--|--------------|---------------------|------------------|--------------|----------------------------|---|----|------------|-----------|--|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | | |
| Programme | | Diploma Engineering | | | | Branch/Spec. | | All Branch | | |
| Semester | | I / II | | | | Version | | 1.0.0.0 | | |
| Effective from Academic Year | | | 2018-19 | | | Effective for the batch Admitted in | | | June 2018 | |
| Subject code | | 1ES101 | | Subject Name | | Environmental Studies and Disaster Management | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | | |
| (Per week) | Lecture (DT) | | Practical (Lab.) | | Total | | CE | SEE | Total | |
| | L | TU | P | TW | | | | | | |
| Credit | 2 | 0 | 0 | 0 | 2 | Theory | 40 | 60 | 100 | |
| Hours | 2 | 0 | 0 | 0 | 2 | Practical | 0 | 0 | 0 | |
| Pre-requisites: | | | | | | | | | | |

LEARNING OUTCOME:

We study about environment engineering is very essential for engineers as it guide for use of water, air and other resources must be available as required for human kind and polluted component must be disposed off in nature by giving proper treatment.

We also attention solid waste, Noise, Air pollution, land pollution also wants etc. This course focuses on students' acquisition of knowledge, skills & practices in environmental engineering and pollution control .Knowledge about Environment Impact Assessment,

The knowledge and application of such aspects is essential in developing a good technician who should be conversant with environmental problems and their solutions.

1. Appreciate components of Environment. and Elaborate Ecology and Ecosystem
2. Explain Green House effect
3. Describe Acid Rain, and Ozone layer depletion
4. Pollutants – sampling, Physical characteristics, chemical characteristics ,biological characteristics
5. Explain control measures to prevent land pollution and quality of environmental impact assessment
6. Assess the problems of various kinds of pollution in the environment and Prepare proper EIA report for impact of pollution
7. Explain the principles of seismic, engineering in design of structure.
8. State the appropriate actions to be taken during disasters.

| <u>COURSE CONTENT:</u> | | | | | | | | | <u>HRS</u> |
|-------------------------------|--|--|--|--|--|--|--|--|-------------------|
| UNIT I | Ecology and Environment | | | | | | | | 06 |
| | <ul style="list-style-type: none"> • Importance of environment and scope • Engineering and environment issues | | | | | | | | |
| | <ul style="list-style-type: none"> • The natural system, Biotic and a-Biotic components and processes of natural system. | | | | | | | | |
| | <ul style="list-style-type: none"> • Eco system, food chain and webs and other biological Systems, | | | | | | | | |
| | <ul style="list-style-type: none"> • Causes of environmental pollution | | | | | | | | |
| | <ul style="list-style-type: none"> • Pollution due to solid waste | | | | | | | | |
| | <ul style="list-style-type: none"> • water pollution, air pollution, the Noise as pollution | | | | | | | | |
| | <ul style="list-style-type: none"> • Pollution of land due to industrial and chemical waste | | | | | | | | |
| UNIT II | Wind Power | | | | | | | | 06 |
| | <ul style="list-style-type: none"> • Growth of wind power in India | | | | | | | | |
| | <ul style="list-style-type: none"> • Types of wind turbines – Vertical axis wind turbines (VAWT) and horizontal axis wind turbines (HAWT) | | | | | | | | |

| | | |
|--|--|--|
| | <ul style="list-style-type: none"> Types of HAWTs – drag and lift types | |
| | <ul style="list-style-type: none"> Working of large wind turbines | |
| | <ul style="list-style-type: none"> Aerodynamic control of large and small wind turbines | |
| | <ul style="list-style-type: none"> Types of electrical generators used in small and large wind turbines | |
| UNIT III | Solar Power | 05 |
| | <ul style="list-style-type: none"> Features of solar thermal and PV systems | |
| | <ul style="list-style-type: none"> Types of solar cookers and solar water heaters | |
| | <ul style="list-style-type: none"> Solar PV systems and its components and their working | |
| | <ul style="list-style-type: none"> Types of solar PV cells | |
| | <ul style="list-style-type: none"> Solar PV and solar water heaters, rating and costing | |
| UNIT IV | Biomass Energy | 05 |
| | <ul style="list-style-type: none"> Types of Biomass Energy Sources | |
| | <ul style="list-style-type: none"> Energy content in biomass of different types | |
| | <ul style="list-style-type: none"> Types of Biomass conversion processes | |
| | <ul style="list-style-type: none"> Biogas production | |
| UNIT V | Seismic Engineering and Disaster Management | 06 |
| | <ul style="list-style-type: none"> Introduction of seismic engineering and its application civil engineering designs | |
| | <ul style="list-style-type: none"> Features of disasters such as Floods, Earthquakes, Fires, Epidemics, Gas/radioactive leaks etc. | |
| | <ul style="list-style-type: none"> Management and mitigation of above disasters | |
| Home Assignment : Based on above syllabus | | |
| REFERENCE BOOKS: | | |
| Sr. No. | Title of Books | Author |
| 1 | Renewable Energy Technologies | Solanki, Chetan Singh |
| 2 | Ecology and Control of the Natural Environment | Izrael, Y.A. |
| 3 | Environment Engineering and Disaster Management | Sharma, Sanjay K. |
| 4 | Environmental Noise Pollution and Its Control | Chhatwal, G.R.; Katyal, T. Katyal, |
| 5 | Wind Power Plants and Project Development | Earnest, Joshua & Wizelius, Tore |
| 6 | Renewable Energy Sources and Emerging Technologies | Kothari, D.P. Singal, K.C., Ranjan, Rakesh |
| 7 | Environmental Studies | Anandita Basak |
| 8 | Environmental Science and Engineering | Alka Debi |
| 9 | Coping With Natural Hazards, Indian Context | K. S. Valadia |
| 10 | Engineering and Environment | Edward S. Rubin |

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|--|---|---------------------|-----------------|--------------|----------------------------|-------------------------------------|----|--------------------------------|-----------|--|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | | |
| Programme | | Diploma Engineering | | | | Branch/Spec. | | Mechanical / Civil Engineering | | |
| Semester | | I/II | | | | Version | | 1.0.0.0 | | |
| Effective from Academic Year | | | 2018-19 | | | Effective for the batch Admitted in | | | June 2018 | |
| Subject code | | 1ES109 | | Subject Name | | Elements of Electrical Engineering | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | | |
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total | |
| | L | TU | P | TW | | | | | | |
| Credit | 2 | 0 | 1 | 0 | 3 | Theory | 40 | 60 | 100 | |
| Hours | 2 | 0 | 2 | 0 | 4 | Practical | 30 | 20 | 50 | |
| Pre-requisites: | | | | | | | | | | |
| None | | | | | | | | | | |
| Learning Outcome: | | | | | | | | | | |
| After successful completion of the course, student will be able to | | | | | | | | | | |
| <ul style="list-style-type: none"> • Explain various terms regarding electric and magnetic circuits • Know various basic theories of transformer and its use in electrical engineering. • Know about various types of dc and ac motors; their construction and working. • Identify various electrical instruments and safety devices. • Know about basic electronic components and colour coding of resistor. | | | | | | | | | | |
| Theory syllabus | | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs | |
| 1 | Fundamentals of Electric and Magnetic Circuits Definitions of EMF, Current, Potential Difference, Power and Energy. Ohm's law, Study of terms: - M.M.F, magnetic force, magnetic field strength, permeability, hysteresis loop, reluctance, leakage factor etc. Comparison of magnetic and electric circuit. Magnetic field of permanent magnet and current carrying conductor, Faraday's law of electromagnetic induction, Concept of AC and DC current. Study of AC terms; cycle, instantaneous value, amplitude, frequency, time period, R.M.S. value, average value | | | | | | | | 6 | |
| 2 | Single Phase Transformer Basic principle, types; core and shell type, construction, ideal transformer, transformation ratio, EMF equation, losses & efficiency, Auto transformer; types, construction, working, applications, advantages, disadvantages | | | | | | | | 6 | |
| 3 | Electrical Machines DC Generator; construction, working, EMF equation, applications, losses and efficiency. DC motor; types, construction, working, applications, speed control of dc motor. 3-phase induction motor; Types, construction, working, applications. 1-phase induction motor; types, construction, working, applications. | | | | | | | | 8 | |
| 4 | Electrical Instruments and Safety Types of electrical instruments; voltmeter, ammeter, multimeter, clip-on meter, cathode ray oscilloscope (CRO); connection diagram and applications. Electric shock and safety, protective devices such as Fuse, MCB, ELCB. | | | | | | | | 4 | |
| 5 | Electronic Components and Circuits Types of resistor and its colour coding, Energy band diagram, P-type and N-type semiconductor, PN junction diode, transistor, diac, triac, SCR; construction, working and applications, rectifier circuits; half, full and bridge wave. | | | | | | | | 6 | |

| List of Practical | |
|--------------------------|---|
| 1 | Verify ohm's law. |
| 2 | Demonstrate difference between AC and DC. |
| 3 | Identify the various electrical components use in electrical engineering |
| 4 | Identify the different parts of transformer. |
| 5 | Identify the different parts of dc machines in laboratory. |
| 6 | Connect the 1-phase induction motor. |
| 7 | Connect the 3-phase induction motor. |
| 8 | Use the various electrical instruments for measurement of electrical parameters |
| 9 | Use of CRO for measurement of various electrical parameters |
| 10 | Perform practical on PN junction diode. |
| 11 | Perform practical on rectifier circuit and shown input and output waveforms. |
| Text Books | |
| 1 | Applied Electrical and Electronics Engineering, D. R. Mehta, D. K. Publishing House |
| Reference Books | |
| 1 | A text book of Electrical Technology vol. I & II, B. L. Theraja, S.Chand Publication, New Delhi |
| 2 | Electrical and electronic measurement and instrumentation by A.K. Sawhney |
| 3 | Basic electronics by V. K. Mehta, S.Chand Publication, New Delhi |

| GANPAT UNIVERSITY | | | | | | | | | |
|--|--|---------|-----------------|----|-------------------------------------|------------------------|-----------|-------|-----|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | Diploma Engineering | | | | Branch/Spec. | Mechanical Engineering | | | |
| Semester | II | | | | Version | 1.0.0.0 | | | |
| Effective from Academic Year | | 2018-19 | | | Effective for the batch Admitted in | | July 2018 | | |
| Subject code | 1ES208 | | Subject Name | | Material Science and Metallurgy | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | CE | SEE | Total | |
| | L | TU | P | TW | | | | | |
| Credit | 3 | 0 | 1 | 0 | 4 | Theory | 40 | 60 | 100 |
| Hours | 3 | 0 | 2 | 0 | 5 | Practical | 30 | 20 | 50 |
| Pre-requisites: | | | | | | | | | |
| Learning Outcome: | | | | | | | | | |
| <p>The theory should be taught and practical should be carried out in such a manner that students are able to</p> <ul style="list-style-type: none"> ❖ Identify metal and non-metal and describe various properties of material. ❖ Prepare specimens for microscopic examination ❖ Explain various heat treatment processes ❖ Identify various ferrous and non-ferrous metals and alloys based on composition and properties for prescribed application ❖ Select the materials for various engineering application. | | | | | | | | | |
| Theory syllabus | | | | | | | | | |
| Unit | Content | | | | | | | Hrs | |
| 1. | INTRODUCTION OF ENGINEERING MATERIALS AND METALLURGICAL MICROSCOPE [A] General requirements of engineering materials. Need of engineering materials. Mechanical, Chemical and Electrical properties of materials. Classification of metals and non-metals. Types of bonds. [B] Need and importance of metallographic examination. Working principle of Metallurgical microscope. Preparation of specimen for microscopic examination. | | | | | | | 06 | |
| 2. | PHASE DIAGRAMS Molecular arrangement of atom in solid, liquid and gases. Structure of solids. Solidification of metals. Equilibrium diagram. Iron carbon diagrams. T.T.T diagram | | | | | | | 07 | |
| 3. | FERROUS METALS AND ITS ALLOYS Need, concept and classification of Ferrous metals and its alloys. Types of cast iron, their properties and applications. Types of steel, their properties and applications. Effect of alloying elements on steel and cast iron. Standards and designations of steel and cast iron as per BIS. | | | | | | | 09 | |
| 4. | HEAT TREATMENT OF STEEL. Definition and advantages of heat treatment. Types of heat treatment process. Types of Annealing process. Normalizing process. Hardening and Tempering. Various hardening process. | | | | | | | 05 | |
| 5. | NONFERROUS METALS AND ITS ALLOYS Introduction about Nonferrous metals. Classification and importance of Nonferrous metals and its alloys. Properties and applications of copper and its alloys. Concept of aluminium and its alloys. Other nonferrous metals of engineering applications. | | | | | | | 04 | |
| 6. | NONMETALLIC MATERIALS Introduction and classification of non-metallic materials. Types, applications and properties of non-metallic materials such as Plastics, Ceramics, Rubber, Refractory materials, Composite materials, oils etc. Factors to be considered while selecting the materials. | | | | | | | 06 | |
| 7. | ELECTROLYSIS Basic concept of Electrolysis. Electrochemical cell. Concept of EMF series and Galvanic series. Engineering applications of electrolysis. Corrosion. Types and reasons of corrosion. | | | | | | | 02 | |
| 8. | POWDER METALLURGY Basic concept of powder metallurgy and its application, merits, demerits. Flow diagram of powder metallurgy. Sintering, pre-sintering. Manufacturing processes of powder metallurgy. | | | | | | | 03 | |

| Practical content | | |
|--|--|---------------|
| Study type and performing type seven practicals based on above syllabus. | | |
| Practical No. | Title of Practical | Hours. |
| 1 | Identify ten to fifteen materials by laboratory surrounding (metallic and non metallic). List properties and applications of each above identified materials also identify main alloying elements and reasons to add them. | 4 |
| 2 | Study Metallurgical Microscope and examine the given specimen by use of Metallurgical Microscope | 2 |
| 3 | Prepare ferrous micro specimens and examine them. Also prepare report on this. | 4 |
| 4 | Study various heat treatment furnaces. | 2 |
| 5 | Study various heat treatment processes and perform hardening process on ferrous material. Measure the hardness before and after hardening | 4 |
| 6 | Study corrosive materials to identify different types of corrosion of metals. | 4 |
| 7 | Each student will explain at least one diagram (assigned by teacher-may be part of iron-carbon diagram, TTT curve for specific material etc.) to all batch colleagues. | 8 |
| Text Books | | |
| 1. | Materials Technology Publication: Atul Prakashan | |
| Reference Books | | |
| 1. | Material Science, GBS Narang, Khanna Publishers, New Delhi. | |
| 2. | Material Science, R.K. Rajput, Laxmi Publication, Dariyaganj, New Delhi | |
| 3. | Material Science, R.S. Khurmi & R.S. Sedha, S.Chand | |
| 4. | Physical Metallurgy, Sidney Avner, Tata McGraw-Hill Education | |

| GANPAT UNIVERSITY | | | | | | | | | |
|--|--|---------|-----------------|----|-------------------------------------|-------------------------------|----|-----------|-------|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | Diploma Engineering | | | | Branch/Spec. | Automobile /Civil Engineering | | | |
| Semester | II | | | | Version | 1.0.0.0 | | | |
| Effective from Academic Year | | 2018-19 | | | Effective for the batch Admitted in | | | June 2018 | |
| Subject code | 1ES104 | | Subject Name | | Computer Application | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | | CE | SEE | Total |
| | L | TU | P | TW | | | | | |
| Credit | 0 | 0 | 1 | 0 | 1 | Theory | 00 | 00 | 00 |
| Hours | 0 | 0 | 2 | 0 | 2 | Practical | 30 | 20 | 50 |
| Pre-requisites: | | | | | | | | | |
| None | | | | | | | | | |
| Learning Outcome: | | | | | | | | | |
| The theory should be taught and practical should be carried out in such a manner that students are able to acquire different learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes. | | | | | | | | | |
| <ul style="list-style-type: none"> • Students can able to learn basic terminology of computers. • Student can make practice on Microsoft Office. • Student can make basic drawing using CAD software. | | | | | | | | | |
| Practical syllabus | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs |
| 1 | Basic Knowledge of Computer Generations of Computer, Block Diagram of a Computer, Input & Output Devices, Types of Memory primary memory, secondary memory, Types of Software | | | | | | | | 4 |
| 2 | Microsoft Word Introduction, Starting word document, Managing document, Creating and formatting document, Working with tables, Adding paragraphs, Copying and moving text, Page layout Page number ,printing pages, Mail merge | | | | | | | | 4 |
| 3 | Microsoft Excel Introduction, Starting Spreadsheet, Worksheet, Selecting cells and ranges, entering and editing data, Print, page break up, print preview, Use of Formulas, Use of Functions Creating different Charts, Formatting worksheet, formatting rows and columns Saving Worksheet | | | | | | | | 6 |
| 4 | Microsoft Office Power Point Introduction, Creating presentations, Design templates, Embed audio and video Viewing slides ,Working with slides, Creating and applying animations, Saving and printing | | | | | | | | 4 |
| 5 | Introduction to AutoCAD File menu of AutoCAD with New, Open, Save, Save as and Close, Methods of Specifying points :Absolute Coordinates, Relative Cartesian, Polar Coordinates, Basic 2D commands: Line, Circle , Ellipse , Multi Line, Construction Line ,Polyline , Point, Donut, Ellipse, Polygon, Rectangle, Arc, Erase, Snap, Zoom, Pan | | | | | | | | 12 |

| Practical content | |
|-------------------|---|
| | <ol style="list-style-type: none"> 1. To study about computer hardware and software. 2. Entering and editing text in document file. 3. Apply formatting features on Text like Bold, Italics, Underline, font type, color and size. 4. Create documents, insert images, drawing shapes. 5. Create and manipulate tables. 6. Create document using Mail merge. 7. Entering and editing data in worksheet. 8. Apply formula and functions in the sheet. 9. Create and manipulate EXCEL charts. 10. Print sheet using print area. 11. Basic operations of Power point, Create PPT and insert and delete slides. 12. Create Project presentations, Lecture presentations. 13. Perform Different commands like Line, Circle, Ellipse, Multi Line, Construction Line, Polyline, Point, Donut, Ellipse, Polygon, Rectangle, Arc, Erase, Snap, Zoom, and Pan in AUTO CAD. |
| Text Books | |
| | Computer Course – by R.K.Taxali Tata McGrawHills MS Office for dummies by wallacewang AutoCAD 2004 by Sham Tickoo (GalgotiaPublications,New Delhi) |
| Reference Books | |
| | Autodesk Inc. Latest AutoCAD Manual (Autodesk Inc.) |

| GANPAT UNIVERSITY | | | | | | | | | |
|--|--|---------|-----------------|----|-------------------------------------|------------------------|-----|-----------|-----|
| FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES) | | | | | | | | | |
| Programme | Diploma Engineering | | | | Branch/Spec. | Automobile Engineering | | | |
| Semester | II | | | | Version | 1.0.0.0 | | | |
| Effective from Academic Year | | 2018-19 | | | Effective for the batch Admitted in | | | June 2018 | |
| Subject code | 1ES201 | | Subject Name | | Automobile Trade Practice | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | CE | SEE | Total | |
| | L | TU | P | TW | | | | | |
| Credit | 0 | 0 | 2 | 0 | 2 | Theory | 00 | 00 | 00 |
| Hours | 0 | 0 | 4 | 0 | 4 | Practical | 60 | 40 | 100 |
| Pre-requisites: | | | | | | | | | |
| None | | | | | | | | | |
| Learning Outcome: | | | | | | | | | |
| After completion of this course, student will be able to | | | | | | | | | |
| <ul style="list-style-type: none"> ▪ Prepare modern garage layout by following preliminary safety rules ▪ Select appropriate hand tool or power tool for required application. ▪ Use appropriate testing and servicing tools or instruments for given situation | | | | | | | | | |
| Practical syllabus | | | | | | | | | |
| Unit | Content | | | | | | | | Hrs |
| 1 | Introduction To Automobile Garage: Garage layout, Importance of various sections in garage, Types of job done in various sections, General safety rules while working in garage | | | | | | | | 15 |
| 2 | Automobile Tools, Measuring And Testing Instruments : Application of various hand & power tools used in garage Application of special purpose tools used in garage, Use of various measuring & testing instruments like Vernier callipers, Dial gauge, micrometer, thickness gauge, wire gauge, pressure gauge etc. Various engines testing equipment. Various transmission systems testing equipment. A.C System & electrical system testing equipment | | | | | | | | 15 |
| 3 | Servicing & Maintenance: Role of service advisor & service executive. Prepare a job card, Over view of car inspection, exterior inspection, interior inspection, inspecting engine components, inspecting trunk, inspecting bottom. Service equipments. Servicing of vehicle | | | | | | | | 15 |
| 4 | Major Operation And Inspection Methodology: Introduction to major operation, engine operation, transmission operation, wheel operation, steering operation diagnose various problem on road and off road. | | | | | | | | 15 |
| Practical content | | | | | | | | | |
| 1 Prepare a layout of a modern Garage for given vehicle. | | | | | | | | | |
| 2 Demonstrate use of safety equipments and procedures in garage. | | | | | | | | | |
| 3 Demonstrate use and care of hand tools. | | | | | | | | | |
| 4 Demonstrate features and use of instruments, power tools, special purpose tools. | | | | | | | | | |
| 5 Demonstrate features and use of various types of measuring instruments. | | | | | | | | | |
| 6 Demonstrate features and use of various types of testing instruments and equipment. | | | | | | | | | |
| 7 Carryout maintenance of bearing and bushes. | | | | | | | | | |
| 8 Demonstrate features and use of servicing equipment. | | | | | | | | | |
| 9 Perform role of service advisor, service executive, job card preparation and customer care. | | | | | | | | | |

10 Demonstrate Procedure for Servicing of two wheeler/four wheeler.

Text Books

1 Automobile engines Vol-1 by Kripal sinh, standard publication.

Reference Books

1 Automobile Engineering by R.B. gupta , Satya Prakasan, New Delhi

2 Automotive Mechanics by W.H.Crouse & D.L. Anglin ,Tata Mc-Graw Hill Publishing Co. Ltd.-New Delhi

3 Automotive Service ,Inspection, Maintenance, Repair by Tim Gills, Cengage Learning, 2011

4 Total Automotive Technology by Anthony E. Schwaller, Cengage Learning, 2004

5 Automobile engine Vol-2 by Anil Chikara,Satya Prakasan