SARDAR PATEL UNIVERSITY BALAGHAT (M.P.)

SCHOOL OF ENGINEERING & TECHNOLOGY

CURRICULUM OF EXAMINATION

Session 2024-2025

DIPLOMA IN ENGINEERING FIRST YEAR

COMMON For:

Mining & Mine Surveying (MMS),
Mechanical Engineering (ME)
Civil Engineering (CE)
Computer Science Engineering (CSE)
Electrical Engineering (EE)

DIE021: FUNDAMENTAL OF COMPUTER

Course Objectives

- Familiarize with Computer Hardware.
- Proficiency in Software Applications.
- Develop Skills in Microsoft Office Suite.
- Understand Database Concepts.

Course Outcomes

- Practical Skills in MS Office: Students will be able to create, edit, and format documents in MS Word, manage data and perform calculations in MS Excel, design presentations in PowerPoint, and organize databases in MS Access.
- Database Management Skills: Students will understand database structures and relationships, and perform basic operations such as querying, updating, and managing data in MS Access.
- Critical Thinking and Problem Solving: Students will develop critical thinking skills by solving practical problems using computer applications and databases, preparing them for real-world scenarios in engineering fields.

COURSE CONTENT

UNIT I: Introduction to Computers

Basic Concepts: Generation of Computers, Overview of computer Systems, Classifications of Computers, Characteristics of Computers, Applications of Computers, Number System & Codes.

Computer Hardware: Input Devices, Output Devices, Storage Devices, Microprocessor, Registers, Arithmetic Unit, Control Unit, Buses, Instruction Set, Processor Speed,

Memory Concept: Unit of Memory, Types of Memory RAM, ROM, PROM, EPROM, EEPROM, Cache Memory.

Computer Software: Computer Software, define System software & Application Software, Operating system Programs, Language Processor, Assembler, compiler & Interpreter, Application Software, Types of Application Software and their Examples. High Level Language, Low Level Language, Assembly Language.

Windows Operating System: Overview of different versions of Windows, Characteristics and Facilities of Windows, Terminologies of Windows- Desktop, Icon, Menu etc., Components of Desktop, working with Files and Folders.

UNIT II: MS-Office

WORD PROCESSING: Saving, Closing, Opening of Documents, Selecting Text, Editing text, Finding and replacing text, Printing Document, Merge Document, Character and paragraph Formatting, Page Design and layout, Spell Check, Creating Tables and Charts. Handling Graphics.

UNIT III: **MS-Excel**

Spreadsheet concept – Need, advantage, Terminology like cell, row, column etc.
Working with Spreadsheet – Creating, Saving, Editing and printing, **Entering data:** Entering Number, text, date, time, etc. **Selecting cells** – Cut, Copy, Paste date, editing worksheet data, **Formatting** – Text and Cells, Applying border shading, background patterns, conditional formats, positioning cells, formatting numbers, text, Date, time.
Creating formulas- Entering, Editing, Using Functions, controlling calculations. **Working with Charts** – Creating charts Adding & changing text, changing the view and display, Types of charts.

UNIT IV: **MS-Powerpoint**

Introduction, Presentation design tools, Presentation terminologies, Creating, Opening and Saving Presentation, Working with different views, Creating and Organizing slides, Adding and Formatting text in slides, Formatting paragraphs, Adding drawings and objects, Creating special effects, Working with table and charts, Printing Presentation.

UNIT V: **MS-Access**

Introduction- need, Characteristics and terminologies of database, Types of database – relational, Hierarchical and Network, Basic entities – Tables, Records, Data types, data, validation and constraints, key relation between tables. Query- Select, Insert, Update, delete.

DIE021P: FUNDAMENTAL OF COMPUTER

LIST OF EXPERIMENTS

1. Study of various components of computer like CPU, keyboard, mouse, monitor, printer, CVT, and storage devices.

2. Using Windows operating system, study of desktop, control panel, accessories and settings.

3. Study of Linux operating system.

4. Study of MS-word – opening and saving of documents, formatting, editing and spell check, find and replace, printing, merging. Creating Table, Charts and Graphics.

5. Study of Spreadsheet – creating, opening, editing and saving of slides. Adding and formatting text, applying border shades and backgrounds, creating formulas, creating charts.

6. Study of Power Point – creating, opening, editing and saving of slides. Adding and formatting text, creating animations, working with images and special effects. Printing presentation.

7. Study of MS Access- creating, saving, editing and printing of tables. Managing relationships, writing queries e.g. SELECT UPDATE, DELETE, INSERT. Forms designing and report printing.

8. Study of Web Browser and mailing programs.

Reference Books

1. A First Course in Computers S. Jaiswal Golgotha Publication
2. Computers & Application Slotnick, Butterfield, Colantonio and Kopetzky C.C. Health & Company
3. Computers Today Sursesh K. Basandra Galgotia Publication
4. The Complete Guide to Microsoft Office Professional Ron Mansfield Sybex/BPB Asian Edition
5. Inside IBM PC Norton Peter
6. Hardware Bible BPB Publication
7. Computer Hardware Osborne Series
8. DOS & Utilities BPB Publication
9. Multimedia Making it work Tay Vaughan Tata McGraw Hill

DIE022: APPLIED CHEMISTRY

Course Objectives

- To bring adaptability to the concepts of chemistry and to acquire the required skills to become a perfect engineer.
- To impart the basic knowledge of atomic, molecular and electronic modifications which makes the student to understand the technology based on them.
- To acquire the knowledge of electrochemistry, corrosion and water treatment which are essential for the Engineers and in industry.
- To acquire the skills pertaining to spectroscopy and to apply them for medical and other fields.
- To impart the knowledge of stereochemistry and synthetic aspects useful for understanding reaction pathways

Course Outcomes

- The knowledge of atomic, molecular and electronic changes, band theory related to conductivity.
- The required principles and concepts of electrochemistry, corrosion and in understanding the problem of water and its treatments.
- The required skills to get clear concepts on basic spectroscopy and application to medical and other fields.
- The knowledge of configurational and conformational analysis of molecules and reaction mechanisms.

COURSE CONTENT

UNIT I: Atomic Structure and Radio Activity

Electronic structure of atoms, Discovery of electrons, protons and neutrons. Rutherford, model and Bohr's, Bohr's– Burry scheme of distributions of electrons. Dual nature of matter and Radiations, De-Broglie's Equation, Heisenber's uncertainty principle, quantum numbers, sub energy level and distribution of electrons in sub-shells and concept of electronic configuration of atoms, Auffbaus's rule, Pauli's exclusion principle. Hund's rule of maximum multiplicity.

Nuclear Chemistry

Nuclear rays, method of Detection, properties, disintegration theory of radio activity Nuclear eactions, Mass defect and Binding energy, Nuclear Fission, Nuclear Fusion.

UNIT II: Periodic Properties

Introduction, modern Periodic law classification of elements In to s-, p, d & f-block elements Periodic properties of elements, Periodicity atomic and ionic radii, ionization potential, electron affinity, Electro negativity

Chemical Bonding

Theory of Chemical Bonding, Types of Bonds, Ionic or electrovalent bonds, Covalent bond, coordination bond, Hydrogen bonding concept of resonance.

UNIT-III: **Electro Chemistry**

Electrolytes and conductors, strong and weak electrolyte, conductivity, Arrhenius theory of electrolysis, Kohlrausch law, Ostwald dilution laws, Transport no. Faraday's Law of Electrolysis Electrochemical equivalent, Definition, pH, Law of mass action, Buffer solutions, calculation of pH Value of a Buffer solution, Acid Base Concept

Colloids

Types of colloidal solution, preparation of colloids, properties of colloidal solutions, Origin of change on colloidal particles, precipitation of Coagulation of colloidal solution. Protective colloids and Gold number, Emulsions cleansing action of soaps, Detergents, Gels.

UNIT IV: **Metals and Alloys**

Occurrence, extraction, properties and engineering uses of heavy metals with special reference to Cu, Fe, Zn, Al, Si, Ge, C Electromagnetic properties of Fe, Ni, Co, Cr

Properties, constitution and Engineering uses of common alloys like Brass, Bronze, German Silver, Duralumin, Solder, stainless steel pressure and die casting alloy, Bearing alloys.

Corrosion

Corrosion of metals, Types of corrosion, Galvanic Series, corrosion control, protective coatings. Coating processes with special emphasis on electroplating and electro typing

UNIT V: **High Polymers and Water Analysis**

Physical properties of the polymers condensation and addition polymerization. Copolymers, effect of structure of polymer on properties, classification of polymers, Rubber, Vulcanization and compounding reclaimed rubber, Bunas SBR Neoprene, Polyurethanes silicon's, Fibers-Nylon, Dacron, orlon, polyester,

Plastics and Resins – Thermoplastics and Thermosetting resins, Thermocol and glass wool

Water Analysis: Water hardness, types and units, Determination of hardness of water by E.D.T.A. method and O Hehners method. Softening of hard water, lime soda process and permutation process

UNIT VI: **Fuels, Explosive & Lubricants**

Classification of fuels, solid fuels, liquid fuels, gaseous fuels, characteristics of a good fuel, calorific value, Determination of calorific value by Bomb calorimeter, Explosives- classification

Lubricant- meaning types, theory of lubrication, properties of a good lubricants with special emphasis on Flash, Fire point, pour paint and cloud point. Specification number and viscosity, Paints and Varnish – Constituents, properties and uses

LIST OF EXPERIMENTS

1. To identify one Anion and Cation in a given sample.

2. Determination of flesh point and fire point of a given sample of oil by Abel's apparatus.

3. Determination of viscosity by Red Wood Viscometer No.1 and No.2.

4. Redoximetry Titration.

- Percentage of Iron in given sample of alloy.

- Determination of strength of ferrous ammonium sulphate.

- Determination of strength of anhydrous ferrous sulphate and ferrous sulphate.

5 Determination of hardness of water by:

- EDTA Method and Soap Solution Method

6 Determination of solid content in the given sample of water.

7 Determination of percentage of moisture in the given sample of coal by proximate analysis.

Reference Books
1.   Physical Chemistry- Bahl and Tuli
2.   Inorganic Chemistry- Satya Prakash
3.   Modern Text Book of Applied Chemistry- Dr. G.C. Saxena, Jain Prakashan, Indore
4.   Applied Chemistry- Dr. G.C. Saxena, Deepak Prakashan, Gwalior
5.   Applied Chemistry- Shrivastava & Singhal, Pbs Publication, Bhopal
6.   Engineering Chemistry- Uppal
7.   Engineering Chemistry- Rao and Agarwal

DIE023: APPLIED MATHEMATICS

Course Objectives

- **Co-ordinate Geometry Proficiency**: Familiarize students with coordinate systems, including Cartesian and polar coordinates, and develop their skills in calculating distances, areas, slopes, and equations of lines.
- **Vector Algebra Skills**: Introduce the concepts of vector and scalar quantities, and provide students with the tools to perform vector operations and apply these concepts in engineering contexts.
- **Statistical Analysis**: Teach students the fundamental measures of central tendency and dispersion, enabling them to analyze and interpret data effectively.
- **Foundational Knowledge in Calculus**: Develop an understanding of differential and integral calculus, focusing on limits, derivatives, and integration techniques that are essential for engineering applications.

Course Outcomes

- **Geometric Interpretation**: Students will be able to analyze geometric problems using coordinate systems, calculate distances and areas, and derive equations for lines and their intersections.
- **Vector Operations Mastery**: Students will be able to perform vector addition, subtraction, and multiplication, and apply these operations to solve engineering-related problems involving work and power.
- **Statistical Understanding**: Students will compute and interpret measures of central tendency and dispersion, enabling them to make informed decisions based on data analysis.
- **Calculus Application Skills**: Students will demonstrate the ability to differentiate and integrate functions, apply standard calculus techniques, and solve practical engineering problems involving rates of change and areas under curves.

COURSE CONTENT

UNIT I: Algebra

- **Permutation:** Meaning of factorial n, Permutation of 'n' dissimilar thing taken 'r' at a time,
- **Combination**: Combination of n dissimilar things taken 'r' at a time,
- **Binomial Theorem**: Statement of the theorem for positive integer, General Term, Middle term, Constant term.
- **Partial Fractions**: Define a proper-improper fraction, Break a fraction in to partial fraction whose denominator contains Linear, Repeated linear and Non repeated quadratic factors.
- **Determinant:** Concept& principles of determinants, Properties of determinant, Simple examples.
- **Matrix:** Definition of Matrix, Types of Matrix, Row, Column, Square, Unit, Upper and lower triangular, Symmetric & Skew Symmetric, Singular and non-Singular Matrix, Adjoint of a Matrix, Inverse of a Matrix.

UNIT II: **Co–ordinate Geometry**

- Co-ordinate System: Cartesian and Polar, Distance, Division, Area of a triangle, Locus of a point and its equation, Slope of straight Line, Angle between two straight lines, Parallel and perpendicular straight lines, Standard and general equation of straight line. Point of intersection of two straight lines.

UNIT III: **Vector Algebra**

- Concept of Vector and Scalar Quantities, Different types of vectors, Addition and subtraction of vectors, Components of a vector, Multiplication of two vectors; Scalar Product, Vector Product, Applications (Work done, power& reactive power)

UNIT IV: **Statistics**

- **Measures of Central tendency:** Mean, Mode, Median
- **Measures of Dispersion:** Mean deviation, standard deviation

UNIT- V: **Calculus**

Differential calculus
- Define constant, variable, function, Value of the function, Concept of limit of a function, Definition and concept of differential coefficient as a limit, Standard results, Derivatives of sum, difference, product, quotient of two functions, Differential coefficient of a function, Differential coefficient of implicit function, Logarithmic Differentiation, Differential coefficient of Parametric function.

Integral Calculus
- Definition as a inverse process of differentiation, Standard Results (including inverse function), Methods of Integration, Substitution, Integration by parts, Breaking up into partial fraction, Concept of Definite Integral.

Reference Books

1. Mathematics for Polytechnics Vol. I and II - Prepared by T.T.T.I. Bhopal
2. Differential Calculus - Gorakh Prasad
3. Integral Calculus - Gorakh Prasad
4. Co-ordinate Geometry- S.L. Loni
5. Engineering Mathematics (M.P. Hindi Granth Akadami)- Dr. S.K. Chouksey.
6. Mathematical Statistics -Rayand Sharma
7. Higher Engineering Mathematics -B.S. Grewal

DIE024: BASICS OF CIVIL ENGINEERING AND APPLIED MECHANICS

Course Objectives

- **Foundational Construction Techniques**: Familiarize students with essential construction elements, including foundations, walls, roofs, and openings,
- **Surveying Principles**: Introduce students to surveying instruments and techniques, enabling them to measure distances, directions, and elevations accurately in fieldwork.
- **Mapping and Transportation**: Teach students the fundamentals of mapping, contouring, and area measurement, alongside the importance of transportation systems and their engineering aspects.
- **Engineering Mechanics Fundamentals**: Develop students' ability to analyze forces, equilibrium, centroids, and moments of inertia.

Course Outcomes

- **Construction Techniques Mastery**: Students will be able to identify and describe various construction elements and their suitability.
- **Surveying Skills**: Students will gain practical skills in using surveying instruments and techniques, allowing them to perform accurate measurements
- **Mapping and Quantity Computation**: Students will be able to create maps, perform contouring, and compute quantities, facilitating effective project planning and resource management.
- **Mechanics Analysis**: Students will analyze forces in structures, calculate support reactions, and draw shear force and bending moment diagrams for various beam configurations, preparing them for practical engineering applications.

COURSE CONTENT

UNIT I: Building Materials & Construction

Stones, bricks, cement, lime, timber-types, properties, test & uses, laboratory tests concrete and mortar Materials: Workability, Strength properties of Concrete, Nominal proportion of Concrete preparation of concrete, compaction, curing.

Elements of Building Construction, Foundations conventional spread footings, RCC footings, brick masonry walls, plastering and pointing, floors, roofs, Doors, windows, lintels, staircases – types and their suitability

UNIT II: Surveying & Positioning

Introduction to surveying Instruments – levels, theodolites, plane tables and related devices. Electronic surveying instruments etc. Measurement of distances – conventional and EDM methods, measurement of directions by different methods, measurement of elevations by different methods. Reciprocal leveling.

UNIT III: Mapping & Sensing:

Mapping details and contouring, Profile Cross sectioning and measurement of areas, volumes, application of measurements in quantity computations, Survey stations, Introduction of remote sensing and its applications.

Transportation – Role of transportation, NH, SH, MDR, VR, Transportation ways, Surface transportation, Aviation.

Basics of Pavement - Flexible & Rigid Pavement, Element of traffic engineering & traffic control.

UNIT IV: Engineering Mechanics

Forces and Equilibrium: Graphical and Analytical Treatment of Concurrent and non-concurrent Co- planner forces, free Diagram, Force Diagram and Bow's notations, Application of Equilibrium Concepts: Analysis of plane Trusses: Method of joints, Method of Sections. Frictional force in equilibrium problems

UNIT V: Centre of Gravity and Moment of Inertia

Centroid and Centre of Gravity, Moment Inertia of Area and Mass, Radius of Gyration, Introduction to product of Inertia and Principle Axes.

Support Reactions, Shear force and bending moment Diagram for Cantilever & simply supported beam with concentrated, distributed load and Couple.

DIE024P: BASICS OF CIVIL ENGINEERING AND APPLIED MECHANICS

List of suggestive core Experiments:

Students are expected to perform minimum ten experiments from the list suggestedbelow by preferably selecting experiments from each unit of syllabus.

1. To perform traverse surveying with prismatic compass, check for local attraction anddetermine corrected bearings and to balance the traverse by Bowditch's rule.
2. To perform leveling exercise by height of instrument of Rise and fall method.
3. To measure horizontal and vertical angles in the field by using Theodolite.
4. To determine (a) normal consistency (b) Initial and Final Setting time of a cement Sample.
5. To determine the workability of fresh concrete of given proportions by slump test orcompaction factor test.
6. To determine the Compressive Strength of brick.
7. To determine particle size distribution and fineness modulus of course and fineAggregate.
8. To verify the law of Triangle of forces and Lami's theorem.
9. To verify the law of parallelogram of forces.
10. To verify law of polygon of forces
11. To find the support reactions of a given truss and verify analytically.
12. To determine support reaction and shear force at a given section of a simply Supported beam and verify in analytically using parallel beam apparatus.
13. To determine the moment of inertia of fly wheel by falling weight method.
14. To verify bending moment at a given section of a simply supported beam.

REFERENCE BOOKS

1. S. Ramamrutam & R.Narayanan; Basic Civil Engineering, Dhanpat Rai Pub.
2. Prasad I.B., Applied Mechanics, Khanna Publication.
3. Punmia, B.C., Surveying, Standard book depot.
4. Shesha Prakash and Mogaveer: Elements of Civil Engg & Engg. Mechanics; PHI
5. S.P, Timoshenko, Mechanics of stricture, East West press Pvt. Ltd.
6. Surveying by Duggal – Tata McGraw Hill New Delhi.
7. Building Construction by S.C. Rangwala- Charotar publications House, Anand.
8. Building Construction by Gurucharan Singh- Standard Book House, New Delhi
9. Global Positioning System Principles and application- Gopi, TMH
10. R.C. Hibbler – Engineering Mechanics: Statics & Dynamics.
11. A. Boresi & Schmidt- Engineering Mechines- statics dynamics, Thomson' Books
12. R.K. Rajput, Engineering Mechanics S.Chand & Co.

DIE025: BASICS OF MECHNICAL ENGINEERING

Course Objectives

- Understanding Engineering Materials.
- Measurement Techniques.
- Thermodynamics Fundamentals.
- Internal Combustion Engines.
- Develop an understanding of fluid properties

Course Outcomes

- **Material Knowledge**: Students will be able to identify and classify various engineering materials, understand their mechanical properties, and explain heat treatment processes and their effects.
- **Measurement Proficiency**: Students will demonstrate the ability to use measurement tools effectively and understand the importance of accuracy and error analysis in engineering measurements.
- **Thermodynamics Application**: Students will grasp the fundamental laws of thermodynamics, apply them to various processes, and analyze boiler systems for efficiency and performance.
- **IC Engine Understanding**: Students will be able to classify internal combustion engines, describe their working mechanisms, and calculate key performance indicators such as indicated and brake horsepower.
- **Fluid Mechanics Insight**: Students will understand various fluid properties, measure fluid pressure accurately, and apply concepts such as Pascal's law to solve practical engineering problems related to fluids.

COURSE CONTENT

UNIT I: Engineering Materials & Heat Treatment

Introduction & Classification of engineering material, Metal & alloys, Ferrous & Non-Ferrous Metals. Iron-Carbon diagram. Mechanical properties like strength, hardness, toughness, ductility, brittleness, malleability etc. of materials, Tensile test- Stress-strain diagram of ductile and brittle materials, Hooks law and modulus of elasticity, Hardness and Impact testing of materials, BHN etc.

Definition and objectives of Heat treatment Effect of different factors in heat treatments, Heat treatment Process: Annealing, Normalizing, Hardening by Quenching, Tempering, Case hardening, Carburizing

UNIT II: Measurement And Production Process

Measurement: Concept of measurements, errors in measurement, Temperature, Pressure, Velocity, Flow strain, Force and torque measurement, Vernier caliper, Micrometer, Dial gauge, Slip gauge, Sine-bar and Combination set.

![Sardar Patel University logo]

SARDAR PATEL UNIVERSITY, BALAGHAT (MP)

School of Engineering and Technology

Syllabus

Course: Diploma in engineering   Branch: MMS, ME, CE, CSE, ELE
Academic Session: 2024-25   w.e.f-02/09/2024

Production: Elementary theoretical aspects of production processes like casting, carpentry, welding, Arc welding, gas welding, TIG and MIG etc. Introduction to Lathe, drilling machines, milling machine and shaper their various operations.

UNIT III: Thermodynamics

Thermodynamics: Thermodynamic system, properties, state, process, Zeroth, First and second law of thermodynamics, thermodynamic processes at constant pressure, volume, enthalpy & entropy.
Steam Engineering: Classification and working of boilers, mountings and accessories of boilers, Efficiency and performance analysis, natural and artificial draught, Boilers, Sketch and description of Simple vertical boiler, Lancashire boiler, Babcock and Wilcox.

UNIT IV: I.C. Engine

Define Heat Engine Differentiate I.C. Engine and E.C. Engine Classification of I.C. Engines. Explain the working of two strokes and four stroke petrol engine with line diagram, Explain the working of two stroke and four stroke diesel engine with line diagram
  (i)   Indicated Horse Power (1HP)
  (ii)   Brake Horse Power (B HP)
  (iii)   Mechanical Efficiency

UNIT V: Fluids

Definition of various fluid properties Fluid pressure and its measurement Pascal's Law Static Pressure Intensity of pressure at a point in fluid at rest, Pressure head, Absolute and gauge pressure
Simple and differential U type mano meters. Total and center of pressure on the plate surface immersed in water Horizontally and vertically.

DIE025P: BASICS OF MECHNICAL ENGINEERING

LIST OF EXPERIMENT

1. Tension Test on mild steel, Aluminum & compression test on cast iron on Universal Testing Machine.
2. To Study of Brinell Hardness Test on Mild Steel.
3. Study of various components used in auto vehicles.
   a. Engine.
   b. Transmission system.
   c. Final Drive.
   d. Braking system.
4. Study of working of Two stroke and four stroke engine.
5. Measurement of various parameters of different objects using vernier caliper & Micro-meter
6. Study of Boiler, Mountings and Accessories.
7. To study the venturimeter

Reference Books

1. General Mechanical Engineering by S.B. Mathur
2. Elements of Mechanical Engineering by Mathur, Mehta & Tiwari
3. Elements of Mechanical Engineering by Raw & Choudhary
4. Fluid Mechanics by R.S. Khurmi.
5. Elementary Mechanical Engineering by Dr. Biplab Paul

DIE026P: GROUP DISCUSSION/SEMINAR

Detailed Instructions to Conduct GD/Seminar

A. Study hours, if possible should be given greater times lot with a minimum of two hrs/week to a maximum of four hrs/week.

B. This course should be evaluated on the basis of performance of students, should have a separate mention of the grade awarded. There will be no pass/fail in GD/SEMINAR.

C. Following scale of evaluation of performance in GD/SEMINAR has been established.

MARKS	LEVEL OF PERFORMANCE
10	excellence
09	very good
08	good
07	above average
06	below average

D. Marks once obtained in a particular examination shall be come final and no chance of improvement in marks will be given to the students.

E. Assessment of performance in GD/SEMINAR is to be done internally by the Institution, twice in a Semester/Term through a simultaneous evaluation of the candidate by a group of three teachers, of the department Concerned.

F. While a warding the marks for performance in GD/Seminar, examining teacher should reach the final consensus based on the attendance, punctuality, interest etc.

G. Rubrics for focus Group discussion criteria:
   I. Team preparation
  II. Leader professionalism in starting, Moderating & closing
 III. Participants: Level of engagement in sharing opinions, Level of Engagement in sharing objections
 IV. Critical thinking
  V. Use of expressions and language of discussion (phrases of asking question, answering questions, interrupting asking for clarification inviting others to.

H. GD/ Seminar is not a descriptive course to be taught in the class room by a particular teacher. Various activities involved in the achievement of objectives of this course should be distributed to a number of teachers so that the talent and creativity of group of teacher's benefit the treatment of the course content.

These activities should preferably be conducted in English language to maintain continuity and provide reinforcement to skill development.

Small groups shall be formed like in tutorials, group discussion, case studies, seminar, project methods, roll play and simulation to make the development of personality affective.