

DIPLOMA SEM III CE

Dip IIIrd Sem													
			Periods			Evaluation Scheme				Subject Total	Credit	Hours	
S.No	Subject Code	Name of Subject	L	T	P	Assign ment	TA	Total	ESE				
1	9D.204	Applied Mathematics	3	0	0	20	10	30	70	100	3	3	
2	7D.205	Strength of Material	3	0	0	20	10	30	70	100	3	3	
3	5AD.201	Fluid Mechanics	3	0	0	20	10	30	70	100	3	3	
4	5AD.202	Construction Technology	3	0	0	20	10	30	70	100	3	3	
5	5AD.203	Surveying	3	0	0	20	10	30	70	100	3	3	
6	40D.201	Communication & Soft Skills2	2	0	0	20	10	30	70	100	2	2	
5	14D.201	**Disaster Management	3	0	0	20	10	30	70	100	0	3	
7	40D.101	Life Skills I ** (Lateral)	2	0	0	20	10	30	70	100	0	2	
PRACTICAL/DESIGN/DRAWING/SESSIONAL													
1	7DP.205	Strength of Material Lab	0	0	2		30	30	20	50	1	2	
2	5ADP.201	Fluid Mechanics Lab	0	0	2		30	30	20	50	1	2	
3	5ADP.203	Surveying Field Work	0	0	2		30	30	20	50	1	2	
										950	20	23	
*Note: Only Viva voce is conducted													
**Note: Non Credit Course													

Program: Diploma

Semester: Third

Course: Applied Mathematics

Course Code: 9D.204

L	T	P	C
3	0	0	3

Course Objective:

- Students will use mathematics concepts in real world situations.
- Students will simplify and perform operations with nonlinear expressions.
- Apply the principles of Vector algebra to solve a variety of basic problems in engineering and Applied Science.

Unit I

Complex Variable: Continuity, Differentiability, and analyticity of a function of a complex variable, Cauchy – Riemann equations in Cartesian and Polar form, Harmonic Function.

Unit II

Ordinary Differential Equation: Formation of Ordinary differential equation, Variable Separable Homogeneous Equation, Solution of Bernoulli's Equation, Exact-Differential Equation.

Unit III

Graph Theory: Graph, Sub graph, Walk travel and Path, Connected and Disconnected graph. Handshaking theorem or Edge and Vertex of a graph. Matrix representation of graph (Incidence and Adjacency Matrices). Spanning Tree. Kruskal's Algorithms for minimal Spanning tree.

Unit IV

Numerical Solution of Algebraic Equation and Simultaneous Equation: Bisection Method, Regula –Falsi Method, Newton-Raphson Method, and Gauss elimination Method, Iterative Method –Gauss Siedal and Jacobi's Method. Laplace Transform: Definition of Laplace Transform, Inverse Laplace Transform.

Suggested Readings:

1. *Higher Engineering Mathematics –Dr.B.S.Grewal Khanna Publication*
2. *Higher Engineering Mathematics –H.K.Das*
3. *Engineering Mathematic -N.P.Bali Laxmi Publication*
4. *Advance Engineering Mathematics –Erwin Kreyszig Wiley Publication.*
5. *Graph Theory: Prabhakar Gupta and Vineet Agarwal Pragati Prakashan.*

Program: Diploma

Semester: Third

Course: Strength of Material

Course Code: 7D.205

L	T	P	C
3	0	0	3

Course Objective:

- Determine the important mechanical properties of materials
- Apply the different methods of unsymmetrical bending analysis
- Apply the principles of structural dynamics
- Demonstrate the significance and concept of shear centre

Unit I

Mechanical Properties of Materials: Simple stresses & Strains: Mechanical properties— Elasticity, Plasticity, Rigidity, Ductility, Malleability, Toughness, Hardness, Brittleness, Creep, and Fatigue. Concept & Definition of Simple stresses & strains Types—tensile, compressive, Shear, single & double shear Punching shear, Thermal stresses, Hoop stresses & corresponding strains. Hooke's law, Young's modulus, Modulus of Rigidity, Change in length of the bar having uniform & stepped cross section stress-strain curves for ductile & brittle materials. Volumetric Strain, Bulk modulus, Poisson's ratio, Bi-axial & Tri-axial stresses & strains, Relationship among E, G, & K. Stresses & strains in bars of uniformly varying section subjected to axial load at ends only, Composite sections having same length. Temperature stresses & strains of uniform & composite sections.

Unit II

Bending Moment & Shear Force: Concept & definition of Shear force & bending moment, Relation between rate of loading, shear force & bending moment, Shear force & bending moment diagrams for cantilevers, simply supported beam & overhanging beam subjected to point loads & Uniformly distributed load. Location of point of Contra flexure

Moment of Inertia: Concept & definition of Moment of inertia, radius of gyration. Parallel & perpendicular axis theorem, Moment of inertia of square, rectangular, circular, semicircular, Triangular, Hollow Square, Rectangular & circular only, MI of angle section, Channel section, Tee-section, I section about centroidal axis & any other axis parallel to centroidal axis. Polar moment of inertia

Unit III

Bending stresses: Theory of simple bending, Assumptions in the theory of bending, moment of resistance, section modulus & neutral axis. Stress distribution diagram for Cantilever & simply supported beam, Equation of bending, simple numerical problem, Concept of direct & transverse shear stress, Shear stress equation, Shear stress distribution diagrams Average shear stress & Maximum shear stress for rectangular & circular section.

Direct and Bending stresses: Concept of Axial load, eccentric load, direct stresses, bending stresses, maximum & minimum stresses. Stress distribution diagram.

Unit IV

Torsion: Concept of Pure Torsion, Assumptions in theory of pure Torsion, Torsion equation for solid and hollow circular shafts. Power transmitted by a shaft. Comparison between Solid and Hollow Shafts subjected to pure torsion (no problem on composite and non-homogeneous shaft).

Suggested Readings:

1. *Strength of Materials*, F.L. Singer, Harpe Collins Publishers India, Delhi
2. *Strength of Materials*, R.S. Khurmi, S. Chand & Company Delhi
3. *Mechanics of Structures volume I&II*, S.B. Junnarkar, Charotar Publishing House, Anand.
4. *Strength of Material*, R.K. Rajput, S. Chand

Semester: Third

Course: Strength of Material Lab

Course Code: 7DP.205

L	T	P	C
0	0	2	1

List of experiments:

1. Tensile test: To prepare the tensile test upon the given specimen (Mild Steel).
2. Compression Test: To determine the compressive strength of the given specimen.
3. Torsion test: To perform the Torsion test on given specimen.
4. Impact Test: To determine the impact toughness of the given material.
5. Brinell hardness test: To determine the hardness of the given specimen.
6. Vicker's Hardness Test: To determine the hardness of the given specimen.
7. Rockwell Hardness Test: To determine the hardness of the given specimen.

Program: Diploma

L	T	P	C
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Semester: Third
Course: Fluid Mechanics
Course Code: 5AD.201

3	0	0	3
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Course Objective:

- To familiarize with the properties of fluids and the applications of fluid mechanics.
- To formulate and analyze problems related to calculation of forces in fluid structure interaction.
- To understand the concept of fluid measurement, types of flows and dimensional analysis.
- To provide practice in estimating friction losses.
- To impart training to use various flow measuring devices for making engineering judgments.

Unit I

Introduction: Fluid and flow –definition and types, properties of ideal and real fluids, continuum concept, Newton’s law of Viscosity, Compressibility, Bulk modulus and Surface Tension, Pressure inside Drop, Bubble and Jet, Capillary action.

Dimensional analysis: Buckingham’s π theorem; Non –dimensional number and their application; similitude.

Unit II

Fluid Static’s: General differential equation, Hydrostatic manometer, Force on plane and curved surfaces, stability of floating and submerged bodies; Relative equilibrium, Bouncy and Flotation,

Unit III

Kinematics of fluid: Steady and Unsteady flow uniform and Non-Uniform flow ;Stream, Streak and path line ;continuity equation ;stream function ;irrotational flow ;velocity potential ;flow net circulation ;simple flow around half body circular cylinder with and without rotation ;lift and drag.

Unit IV

Dynamics of fluids: Concept of system and control volume Reynolds transportation theorem, Euler’s equation, Bernoulli’s equation , Navier stock’s equation to nozzle venturimeter, Orifices and Mouth pieces time taken in emptying a vessel; Pitot Tube

Suggested Readings:

1. *A Text Book of Fluids Mechanics Hydraulics Machines, Bansal, Laxmi Publications (P) Ltd.*
2. *Hydraulics and hydraulic machines, R.K.Rajput, S.Chand.*
3. *Hydraulics & Fluids Mechanics. Dr.P.N.Modi&Dr.S.M.Seth, StandardBookHouse,Dehli*

Program: Diploma

Semester: Third

Course: Fluid Mechanics Lab

Course Code: 5ADP.201

L	T	P	C
0	0	2	1

List of Experiments

1. Verification of Bernoulli's theorem
2. Determination of Co-efficient of discharge for a venturimeter.
3. Determination of loss of head of water flowing in a pipe, through different climates.
4. Determination of loss of head due to friction.
5. Determination of Co-efficient of discharge for orifice meter.
6. Determination of meta-centric height of a boat model.
7. Verification of Reynolds law.
8. Viscosity determination of a liquid by capillary tube method.

Program: Diploma

Semester: Third

Course: Construction Technology

Course Code: 5AD.202

L	T	P	C
3	0	0	3

Course Objective:

- Understand the roles and responsibilities of a project manager
- Prepare schedule of activities in a construction project
- Understand safety practices in construction industry
- Identify the equipment used in construction

Unit I

Buildings-Introduction Components, Types of Building, Loads Functional Planning of Buildings

Site Investigation and Ground Techniques

Unit II

Foundation- Introduction, Objective of Foundation, Types of foundation, Design Criteria

Masonry work- Brick Masonry, Stone Masonry, Bonds Types of Wall, Partition of Cavity Wall

Damp Proofing

Unit III

Arches and Lintels

Door and Windows-Sizes and Locations, Material

Roofs

Unit IV

Painting-White Washing, Color Washing Painting, Distempering

Shuttering: Scaffolding and Centering, Expansions and Construction Join

Stair and Staircase: Types Material and Proportion

Surface Finishes

Concept of Seismic

Suggested Readings:

1. *Building Construction, S.P. Arora and Bindra, Dhanpat Rai Publication*
2. *Building Construction, Sushil Kumar, Standard Publication*
3. *Building Construction, B.C.Punmia, Laxmi Publication*
4. *Building Construction, S.K. Sharma, Tata McGraw-Hill*

Program: Diploma

Semester: Third

Course: Surveying

Course Code: 7DP.205

L	T	P	C
3	0	0	3

Course Objective:

- Learn different steps involved in map preparations.
- Learn how to use map for different purpose
- Set out curves, buildings, culverts and tunnels
- Apply mathematical adjustment of accidental errors involved in surveying measurements

Unit I

Linear Measurement: Methods of measuring distance, their merits and demerits, Suitability
Instruments for measuring distance: Tapes- types, description (demonstration in class/lab), purposes, suitability. Chains- types, description (demonstration in class/ lab), purposes, suitability, merits and demerits.

Unit II

Chaining-Equipment and accessories for chaining- description (demonstration in class/lab), purpose; Use of chain- unfolding & folding, use of arrows, reading a chain, testing and adjustment of chain (demonstration in class/lab).Ranging- Purpose, signaling, direct and indirect ranging, Line ranger-features and use, error due to incorrect ranging; Method of chaining- Role of leader and follower, Chaining on flat ground, Chaining on sloping ground-stepping method, Clinometers-features and use, slope correction. (Demonstration in field)

Field problems- Setting perpendicular with chain & tape, Chaining across different types of obstacles-chaining around obstacle possible: Vision free but chaining obstructed both vision and chaining obstructed. Chaining around obstacle not possible: Vision free but chaining obstructed, chaining free but vision obstructed. Numerical problems on chaining across obstacles Errors and mistakes in linear measurement -classification, Sources of errors and remedies, Correction to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections, Precautions during chaining, maintenance of equipment.

Chain surveying-Purpose of chain surveying, Principles of chain surveying-well conditioned and ill conditioned triangles, Accessories in chain surveying- features and use (detailed description to be covered in practical); Field books- single line & double line entry, field book recording (detailed description to be covered in practical); Reconnaissance survey- method, index map, reference sketch; Selection of survey stations, Base line, Tie lines, Check lines; Offsets- Necessity, Perpendicular and Oblique offsets, Setting offset with chain & tape, Instruments for setting offset- Cross Staff, Optical Square, features, use & handling(demonstration in field), merits & demerits, suitability, sources of error & remedies, limiting length of offsets; Method of chain surveying, locating objects, recording entry in field book; Plotting- selection of scale, conventional signs, plotting on drawing sheet from field book data; Errors in chain surveying- causes & remedies, Precautions during chain surveying.

Unit III

Angular Measurement-Measurement of angles with chain & tape, with compass; Compass- types- Surveyors' compass, Prismatic compass, features, parts, (detailed description to be covered in practical),

merits & demerits, suitability of different types, testing & adjustment of compass; Designation of angles-concept of meridians-Magnetic, True, Arbitrary Concept of bearings-Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of application, numerical problems on conversion of bearings; Use of compasses -setting in field-centering, leveling, taking readings (demonstration in field), concepts of Fore bearing, Back bearing, Numerical problems on computation of interior & exterior angles from bearings; Effect of earth's magnetism- dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination; Errors in angle measurement with compass- sources & remedies, precaution during use of compass, maintenance of compass.

Unit IV

Leveling-Purpose of leveling; Definition of terms used in leveling- concepts of level surface, Horizontal surface, vertical surface, datum, R.L., B.M; Description of essential features and uses of different types of leveling instruments; Concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis; Leveling staff- types, features and use; Temporary adjustments of level, taking reading with level; Concept of bench mark, BS, IS, FS, CP, HI; Principles of leveling-Simple leveling, Differential leveling; Field data entry- level Book-Height of Collimation method and Rise & Fall method, comparison,; Numerical problems on reduction of levels applying both methods, Arithmetic checks; Different types of leveling, uses and methods - Fly leveling, Check leveling, Profile leveling-longitudinal sections and cross-sections; Plotting of profiles; Effects of curvature and refraction, numerical problems on application of correction; Reciprocal leveling-principles, methods, numerical problems, Precise leveling; Difficulties in leveling, errors in leveling and precautions; Sensitiveness of bubble tube, determination of sensitiveness; Permanent adjustments of different types of levels; Setting grades and stakes, setting out grades of sewers and related problems

Suggested Readings:

1. *Surveying and Levelling, N.N.BASAK, McGraw-Hill Education*
2. *Surveying Volume-1, B.C.Punamia, Laxmi Publications*
3. *A Text book of Surveying, C.L.Kochar, Dhanpat Rai Publication*
4. *A Text book of Surveying, S.K.Husain, M.S. Nagaraj, S. Chand and company*

Program: Diploma

L	T	P	C
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Semester: Third
Course: Surveying Field Work-I
Course Code: 5ADP.203

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1. Measurement of distance by Ranging and Chaining
 2. Locating various object by chain & cross staff survey
 3. Measurement of bearings of sides of traverse with prismatic compass and computation of correct included angle.
 4. To find the difference in elevation between two points using Differential or Fly leveling.
 5. Calculation of R.L. for different points involving 2 instrument stations & reduction by Height of Instrument & Rise and Fall methods.
 6. To study different parts of a Transit Theodolite and Temporary Adjustments
 7. To measure a horizontal angle by repetition method.

Program: Diploma

Semester: Third

Course: Communication & Soft Skills

Course Code: 40D.201

L	T	P	C
2	0	0	2

Course Objective: The aim is to develop students' soft skills, communication, leadership and teamwork skills; and personal development skills using practical approach and exposure of students to the realities of the world.

- To enhance Leadership – assessing the requirements of a task, identifying the strengths/weaknesses within the team, utilising the diverse skills of the group to achieve the set objectives.
- To improve Communication – demonstrating clear briefing and listening /speaking skills.
- To make them realize that effective communication and interpersonal skills are crucial to increase employment opportunities and to compete successfully in the business environment.
- The course aims to cause a basic awareness about the significance of soft skills in professional and inter-personal communications and facilitate an all-round development of personality. Hard or technical skills help securing a basic position in one's life and career. But only soft skills can ensure a person retain it, climb.

Unit-I

COMMUNICATION SKILLS

Introduction
 Role of Communication in Today's World
 Objective of Communication
 Process of Communication
 Elements of Communication
 Essentials of Communication
 Barriers/ Factors Inhibiting Communication
 Flow of Communication
 Verbal Mode of Communication

Unit -II

COMMUNICATION NETWORK

Non Verbal Mode of Communication
 Kinesics/Body Language, proxemics , chronemics, para lingual
 Style in Technical Communication
 Communication Skills; Reading, Writing, Speaking, Listening & Talking

Unit -III

GRAPHICS

Introduction
 Planning of Graphics
 Placing of Graphics
 Construction of Graphics

Types of Graphics(textual ,visual, tables, bar Charts, pie charts, line charts, organizational charts, flow charts, maps & Pictographs)

Unit –IV

TELEPHONIC CONVERSATION SKILLS

Introduction
Stages in Telephonic Conversation
Listening & Speaking Skills
Telephonic Skills
Problems in Telephonic Conversation
Intensive Listening

Suggested Books & Readings:

- *Monippally, Matthukutty. M. 2001. Business Communication Strategies. 11th Reprint. Tata McGraw-Hill. New Delhi*
- *Swets, Paul. W. 1983. The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates. Prentice Hall Press. New York*
- *Lewis, Norman. 1991. Word Power Made Easy. Pocket Books*
- *Sen , Leena .Communication Skills ; Eastern Economy Edition*
- *Ghanekar , Dr. Anjali . Essentials of Business Communication Skills ; Everest Publishing House*
- *David Green . Contemporary English Grammar, Structure & Composition ; MacMillan*
- *Dictionary; Oxford*
- *Dictionary ; Longman*

Websites

- www.tatamcgrawhill.com/digital_solutions/monippally
- www.dictionary.cambridge.org
- www.wordsmith.org
- www.edufind.com
- www.english_the_easy_eay.com
- www.englishclub.com

Program: Diploma

Semester: Three
Course: Disaster Management
Course Code: 14D.201

L	T	P	C
3	0	0	0

Course Objective:

- Develop an understanding of the key concepts, definitions a key perspectives of All Hazards Emergency Management
- Understand the Emergency/Disaster Management Cycle
- Have a basic understanding for the history of Emergency Management
- Develop a basic under understanding of Prevention, Mitigation, Preparedness, Response and Recovery
- Develop a basic understanding for the role of public a private partnerships.

Unit I

Understanding Disasters: Understanding the concepts and definitions of disaster, hazard, vulnerability, risk, importance, dimensions & scope of Disaster Management, Disaster Management cycle and disaster profile of India.

Unit II

Types, Trends, Causes, Consequences and Control of Disaster: Geological Disasters (earthquakes, landslides, tsunami, mining); Hydro-Meteorological Disasters (floods, cyclones, lightning, thunder-storms, hail storms, avalanches, droughts, cold and heat waves); Biological Disasters (epidemics, pest attacks, forest fire); Technological Disasters (chemical, industrial, radiological, nuclear, bomb threat, explosion) and Man-made Disasters (building collapse, rural and urban fire, road and rail accidents, nuclear, radiological, chemicals and biological disasters; terrorist attack, , sudden shooting); Global Disaster Trends–Emerging Risks of Disasters–Climate Change and Urban Disasters; Financial emergency(risk of eviction, risk in arrears, sudden health emergency, family emergency, unexpected loss of income).

Unit III

Prevention and Mitigation of Disaster: Disaster Mitigation: meaning and concept, Disaster Mitigation Strategies Emerging Trends in Disaster Mitigation, Mitigation management, Role of Team and Coordination. Disaster Preparedness: Concept & Nature, Disaster Preparedness Plan, Preventions. Roles & Responsibilities of Different Agencies and Government, Technologies for Disaster Management. Early Warning System; Preparedness, Capacity Development; Awareness during Disaster.

Unit IV

Applications of Science and Technology for Disaster Management & Mitigation: Geo-informatics in Disaster Management (RS, GIS, GPS and RS) Disaster Communication System (Early Warning and Its Dissemination) Land Use Planning and Development, Regulations, Disaster Safe Designs and Constructions, Structural and Non Structural Mitigation of Disasters.

Suggested Reading:

1. *Disaster Management- J. P. Singhal, Laxmi Publications.*
2. *Disaster Management - Dr. Mrinalini Pandey, Wiley India Pvt. Ltd.*

3. *Disaster Science and Management- Tushar Bhattacharya, McGraw Hill Education (India) Pvt. Ltd.*
4. *Disaster Management: Future Challenges and Opportunities - Jagbir Singh, K W Publishers Pvt. Ltd.*