3.1 FLUID MECHANICS

L	P
2	4

RATIONALE

Subject of Fluid Mechanics is a basic engineering subject and helps in solving fluid flow problems in the field of Civil Engineering. The subject deals with basic concepts and principles in hydrostatics, hydro kinematics and hydrodynamics and their applications in solving fluid mechanics problems.

LEARNING OUTCOMES

After undergoing the subject, the student will be able to:

- Interpret the different terms related to fluids.
- Calculate the pressure exerted by fluids on the walls of containers.
- Calculate discharge through pipes, irrigation channels, water supply pipe lines.
- Use different flow measurement devices like venturimeter, mouthpiece, notches, weir, orificemeter.
- Calculate size of the pipe for carrying a particular discharge.
- Prepare the details like dimensions, slope of the irrigation, canals and water courses.
- Differentiate between different type of water pumps used in the field.
- Measure the loss of head in pipes and channels.

DETAILED CONTENTS

1. Introduction: (1 hr)

   Fluids: Real and ideal fluids with examples.
   Fluid Mechanics, Hydrostatics, Hydrodynamics, Hydraulics

2. Properties of Fluids (3 hrs)

   Mass density, specific weight, specific gravity, viscosity, surface tension - cohesion, adhesion and, capillarity, vapour pressure and compressibility.(definitions along with mathematical expressions and units)

3. Hydrostatic Pressure (5 hrs)

Pressure, intensity of pressure, pressure head, Pascal's law and its applications. (Without derivations)

Total pressure, resultant pressure, and centre of pressure.

Total pressure and centre of pressure on horizontal, vertical plane surfaces of rectangular, triangular, and circular shapes.

(No derivation - Simple Numerical Problems)

4. Measurement of Pressure (3 hrs)

Atmospheric pressure, gauge pressure, vacuum pressure and absolute pressure & their relationship.

Piezometer, simple manometer and differential manometer, Bourden gauge and dead weight pressure gauge.(Only theoretical concept)

5. Fundamentals of Fluid Flow (4 hrs)

Types of Flow: Steady and unsteady flow, laminar and turbulent flow, uniform and non-uniform flow (Description with examples)

Discharge and continuity equation (flow equation) {No derivation}

Types of hydraulic energy: Potential energy, kinetic energy, pressure energy and total energy of fluid.

Bernoulli's theorem; statement, assumptions and limitations. (without proof of theorem)

6. Flow Measurements (4 hrs)

Venturimeter and orificemeter.

Pitot tube

Orifices and mouthpieces

Current meters

Notches and weirs

7. Flow through Pipes (5 hrs)

Definition of pipe flow; Reynolds number, laminar and turbulent flow

Critical velocity and velocity distributions in a pipe for laminar and turbulent flow.

Head loss in pipe lines due to friction, sudden expansion and sudden contraction, entrance, exit, obstruction and change of direction (No derivation of formula)

Hydraulic gradient line and total energy line

Water hammer phenomenon and its effects (only definition and description)

8. Flow through Open Channels (4 hrs)

Definition of an open channel and its types.

Introduction to Chezy's formula and Manning's formula.

Most economical channel sections (simple numerical problems)

i) Rectangular(conditions only)

ii) Trapezoidal (conditions only)

Head loss in open channel due to friction

Difference between pipe flow and open channel flow.

9. Hydraulic Pumps (1 hr)

Hydraulic pump, brief description about working of reciprocating pump and centrifugal pumps (No numericals and derivations)

PRACTICAL EXERCISES

1. Measurement of pressure in a pipeline using simple manometer and differential manometer.
2. Measurement of difference of pressure between two pipe lines using differential manometer.
3. To verify Bernoullis Theorem
4. To find out venturimeter coefficient
5. To determine coefficient of velocity (C_v), Coefficient of discharge (C_d) Coefficient of contraction (C_c) of an orifice and verify the relation between them
6. To perform Reynold's experiment
7. To determine Darcy's Coefficient of friction for flow through pipes.
8. To verify loss of head in pipe flow due to
   a) Sudden enlargement

b) Sudden contraction
c) Sudden bend

9. To determine velocity of flow of an open channel using current meter and pitot tube
10. To determine coefficient of discharge of a rectangular notch/triangular notch.
11. To demonstrate working of reciprocating and centrifugal pumps with working model.
12. Visit to Hydraulic research station is must to explain the various concepts.

INSTRUCTIONAL STRATEGY

Fluid Mechanics being a fundamental subject, teachers are expected to lay considerable stress on understanding the basic concepts, principles and their applications. For this purpose, teachers are expected to give simple problems in the class room and provide tutorial exercises so as to develop necessary knowledge for comprehending the basic concepts and principles. As far as possible, the teaching of the subject be supplemented by demonstrations and practical work in the laboratory. Basic hydraulic bench may be used to perform various experiments. Visit to hydraulic research stations must be carried out.

RECOMMENDED BOOKS

1. Jagdish, Lal, "Fluid Mechanics and Hydraulics", Delhi Metropolitan Book Co. Pvt Ltd.
2. Modi, PN, and Seth, SM; "Hydraulics and Fluid Mechanics", Delhi Standard Publishers Distributors.
3. Khurmi, RS, "Hydraulics and Hydraulics Machines", Delhi S Chand and Co.
4. Poonia MP, and Jakhar "Laboratory Manual for Fluid Mechanics"OP, , Standard Publishers Distributors, Delhi.
4. Likhi, SK., "Laboratory Manual in Hydraulics ", Delhi Wiley Eastern.
5. Birinder Singh, "Fluid Mechanics", Kaption Publishing, New Delhi.
6. Sarao A.S., "Fluid Mechanics", Tech. India Publication, New Delhi.

WEBSITES FOR REFERENCES

1. https://nptel.ac.in/courses/112104118
2. https://nptel.ac.in/courses/105103192

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (out of 50)
1	1	1
2	3	4
3	5	9
4	3	5
5	4	7
6	4	7
7	5	9
8	4	6
9	1	2
Total	**30**	**50**

SURVEYING

L	P
2	6

RATIONALE

The important functions of a diploma civil engineer include the jobs of detailed surveying, plotting of survey data, preparation of survey maps and setting out works. While framing the curriculum for the subject of surveying, stress has been given on the development of the skills in each type of survey like chain surveying, compass surveying, plane table survey, leveling and theodolite surveying. Field work should be a selected one so that student can check his work and have an idea of the results and the extent of error in the work done by him. As far as possible, the surveys done should be got plotted, as this will also reveal errors in the work and develop skills in plotting.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Measure a long line with chain or tape
- Measure and setting offsets
- Measure and convert bearings of lines
- Calculate reduce levels
- Prepare map of small area using Plane Table Instruments
- Prepare Topographic maps with Traversing by using survey instruments

DETAILED CONTENTS

1. Introduction (3 Hrs)

Basic principles of surveying, Concept and purpose of surveying,
Measurements: linear and angular, units of measurements, Instruments used for taking these measurements.
Classification based on surveying instruments

2. Chain Survey (3 Hrs)

Introduction, Advantages and Disadvantages of chain survey, Types of Chains

Ranging (Direct and indirect),offsets (Short, Long, Perpendicular and Oblique)

Triangulation and recording of field notes

3. Compass Survey (5 Hrs)

Purpose of compass surveying. Use of prismatic compass: Study of Parts, Setting and taking observations

Concept of following with simple numerical problems:

a) Meridian: Magnetic and true
b) Bearing: Magnetic, True and Arbitrary
c) Whole circle bearing and reduced bearing
d) Fore Bearing and Back Bearing
e) Magnetic Dip and Declination
f) Local attraction - Causes, Detection, Errors and Corrections

Numerical problems on Bearing Conversion, Local Attraction, Magnetic Declination and calculation of included angles in a compass traverse

4. Plane Table Survey (5 Hrs)

Purpose of plane table surveying, Equipment used in plane table survey:

Setting of a plane table: Centering, Levelling, Orientation

Methods of plane table surveying: Radiation, Intersection, Traversing, Resection, Concept of Two point and Three-point problems (Concept only).

Errors in plane table survey and precautions to control them.

Advantages and disadvantages of Plane table Survey

5. Levelling (6 Hrs)

Purpose of levelling, concept of a level surface, horizontal surface, vertical surface, datum, reduced level and benchmarks.

Identification of various parts of Dumpy level, Auto level and Digital Level; use of Dumpy level, Auto level and Digital Level. Their Advantages and disadvantages.

Concepts of line of collimation, axis of the bubble tube, axis of the telescope and vertical axis, Auto compensator mechanism.

Levelling staff: Single Piece, Folding, Telescopic Staff, Invar precision staff, and Bar-Coded Staff

Concept of back sight, foresight, intermediate sight, change point, to determine reduce levels

Temporary adjustment and Permanent Adjustments.

Level book and reduction of levels by

- Height of instrument method or Line of Collimation Method and
- Rise and fall method

Arithmetic checks, problem on reduction of levels, fly levelling and profile levelling (L-section and X-section), errors in levelling, permissible limits,

Numerical problems on Reduction of Levels

6. Theodolite Survey (8 Hrs)

Working of a Transit Vernier Theodolite and Electronic Digital Theodolite

Axes of a theodolite and their relation; concept of transiting, swinging, face left, face right and changing face

Temporary adjustments of a transit theodolite

Measurement of horizontal angles by repetition method and reiteration method, Measurement of vertical angles.

Traversing by included angles and deflection angle method; plotting a traverse; concept of coordinate, errors in theodolite survey, Theodolite triangulation,

Height of objects with accessible and non-accessible bases (Without Derivation)

PRACTICAL EXERCISES

1. Chain Surveying

Preparation of Map with Chain Survey of a small area with triangulation which include:

- Ranging of a line
- Chaining a line and recording in the field book
- Taking offsets - perpendicular and oblique (with a tape only)
- Setting out right angle with a tape

2. Compass Surveying

Study of prismatic compass and Preparation of map a small area using Chain and Compass with Traversing which include:

- Setting the compass and taking observations.
- Calculation of angles between the traverse lines.
- Detailed Survey of Area using chain and tape.

3. Plane Table Survey

Preparation of map of small area with Plane Table Survey of a small area which include:

- Setting the plane table.
- Marking the North direction.
- Traversing with a plane table (at least five lines)
- Plotting a few points by radiation method.
- Plotting few points by intersection method.
- Orientation by Trough compasses and Back sighting.

4. Leveling

Study of dumpy level and levelling staff, Temporary adjustments of various levels, taking staff readings on different stations from the single setting and finding differences of level between them

To find out difference of level between two distant points by shifting the instrument

Longitudinal and cross sectioning of a road.

Setting a gradient by using any leveling Instrument

5. Theodolite Survey

Taking out the Transit Vernier Theodolite Electronic Digital Theodolite, mounting on the tripod, study of a transit vernier theodolite; Measuring horizontal angle. temporary adjustments of theodolite and placing it back in the box

Survey of a closed traverse with a theodolite (at least five sides) and its plotting which includes:

- Measurement of Horizontal angles with Transit vernier theodolite by repetition and reiteration methods
- Measurement of Horizontal angles with Digital theodolite by repetition and reiteration methods
- Measurement of magnetic bearing of a line
- Latitude and Longitude computation and correction
- Calculations using Gale's traverse table

Determination of Height of objects with and without accessible bases

6. Layout of A Building

Layout of two room residential building by using previously used surveying instruments.

INSTRUCTIONAL STRATEGY

This is highly practice-oriented course. While imparting theoretical instructions, teachers are expected to demonstrate the use of various instruments in surveying, stress should be laid on correct use of various instruments to avoid/minimize errors during surveying. It is further recommended that more emphasis should be laid in conducting practical work by individual students. Technical visit to Survey of India, Northern Region and Great Trigonometrical Survey (GTS), Dehradun.

RECOMMENDED BOOKS

1. Kochar, CL, "A Textbook of Surveying", Ludhiana, Katson Publishing House.
2. Hussain, SK, and Nagraj, MS, "Text Book of Surveying", New Delhi, S Chand and Co Ltd.
3. Deshpande, RS, "A Text Book Surveying and Levelling", Poona, United Book Corporation.
4. Kanetkar, TP, and Kulkarni, SV., "Surveying and Leveling", Poona, AVG Parkashan.
5. Mahajan, Sanjay, "Surveying -I", Tech. Publication, Delhi.
6. Punmia, BC, "Surveying and Leveling", Delhi Standard Publishers Distributors.
7. Shahai, PB, "A Text Book of Surveying", Oxford and IBH Publishing Co.

WEBSITES FOR REFERENCES

1. https://nptel.ac.in/courses/105107122
2. https://www.youtube.com/playlist?list=PL20A0651466E8A776

SUGGESTED DISTRIBUTION OF MARKS

Topic No	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	3	5
2	3	5
3	5	8
4	5	8
5	6	10
6	8	14
Total	**30**	**50**

STRUCTURAL MECHANICS

L	P
3	2

RATIONALE

This is a basic engineering subject. The purpose of the subject is to impart basic knowledge and skill regarding properties of materials, concept of stresses and strains, types of beams and loads, bending moment and shear force diagrams, second moment of area, bending and shear stresses, slope and deflection of beams and analysis of trusses. The above knowledge will be useful for designing simple structural components. This subject is very important to develop basic concepts and principles related to strength of materials. This subject will also enablethe students to continue their further education in the field of civil engineering.

LEARNING OUTCOMES

After undergoing the subject, students will be able to:

- Conduct different tests on mild steelCalculate modulus of elasticity
- Analyse and explain stress-strain diagram of mild and HYSD steelCalculate various forces used in design of structures
- Calculate shear force, bending moment for simply supported, cantilever and overhanging beams with concentrated and uniformly distributed loads
- Calculate moment of inertia, second moments of inertia, radius of gyration,section modulus for L, T, channel and I sections
- Calculate the bending stresses, moment of resistance of simply supported beams Explain shear stress, stress distribution diagram for rectangular, circular, I, T and L sections
- Calculate slope and deflection of determinate structuresVerify forces in a framed structure

DETAILED CONTENTS

1. Properties of Materials (02 hrs)

Classification of materials, elastic materials, plastic materials, ductile materials, brittle materials.
Mechanical properties of materials: strength, elasticity, plasticity, ductility, brittleness, malleability, toughness and hardness.

2. Simple Stresses and Strains:(simple numerical problems) (8 hrs)

Concept of stress, normal and shear stresses,
Concept of strain and deformation, longitudinal and transverse strain,poisson's ratio, volumetric strain, elastic limit, Hooke's law and modulus of elasticity.
Stresses and strains in bars subjected to tension and compression.
Temperature stresses and strains

3. Shear Force and Bending Moment (12 hrs)

Concept of a beam and supports (Hinges, Roller and Fixed), types of beams: simply supported, cantilever, propped, over hang, cantilever and continuous beams (only concept).
Types of loads (dead load, live load, snow load, wind load, seismic load as per IS Codes etc) and types of loading (point, uniformly distributed and uniformly varying loads)
Concept of bending moment and shear force, sign conventions
Bending Moment and shear force diagrams for cantilever, simply supported and overhanging beams subjected to concentrated, uniformly distributed and under combination of both loads.
Point ofmaximum bending moment, and point of contraflexure.

4. Moment of Inertia (simple numerical problems) (04 hrs)

Concept of moment of inertia and second moment of area and radius of gyration, theorems of parallel and perpendicular axis(statement only), second moment of area of common geometrical sections: rectangle, triangle, circle (without derivations). Second moment of area for L, T and I sections.

5. Bending Stresses in Beams (06 hrs)

Concept of pure/simple bending
Neutral axis, assumptions made in the theory of simple bending, bending equations and its applications, moment of resistance, section modulus.
Calculations of bending stresses in rectangular, circular, I, T & L crosssectional simply supported beams.

6. Shear Stresses in Beams (04 hrs)

Concept of shear stresses in beams, shear stress distribution in rectangular, circular, I, T, L sections for Steel and timber beams.

7. Slope and Deflection (02 hrs)

Determination of slope and deflection using Moment Area Theorem for simply supported beam for pointed load and U.D.L. (no derivation, numerical problems only)

8. Columns (03 hrs)

Theory of columns; Types, failure, slenderness ratio, end conditions, effective length, Euler's and Rankine's formula and their assumptions. (without derivation)

9. Problem solving using Eulers and Rankine Formula Analysis of Trusses (04 hrs)

Concept of a perfect, redundant and deficient frames
Assumptions and analysis of trusses by method of joints

PRACTICAL EXERCISES

1. Determination of yield stress, ultimate stress, percentage elongation and plot the stress strain diagram and compute the value of young's modulus on mild steel
2. Testing of HYSD Steel
3. Determination of Young's modulus of elasticity for steel wire with searl'sapparatus
4. Determination of elastic critical load of metallic columns with different end conditions.
5. Determination of maximum deflection and young's modulus of elasticity in simply supported beam with load at middle third point
6. Verification of forces in a framed structure

INSTRUCTIONAL STRATEGY

Teachers are expected to give simple exercises involving the applications of various concepts and principles being taught in the subject. Efforts should be made to prepare tutorial sheets on various topics and students should be encouraged/guided to solve tutorial sheets independently. In the practical works, individual students should be given opportunities to do practical work, make observations and draw conclusions. Teachers should also conduct viva examination in which stress should be given on the understanding of basic concepts and principles.

RECOMMENDED BOOKS

1. Ramamrutham, S., "Strength of Materials", Dhanpat Rai and Sons, New Delhi.
2. Ram Chandra, "Applied Mechanics and Strength of Materials", Standard Publishers. Delhi.
3. Punmia, BC., "Strength of Materials", Standard Publishers, Delhi.
4. Prasad, VS, "Structural Mechanics", Galgotia Publications Pvt Ltd, Delhi.
5. Singh, Sadhu, "Strengths of Materials", Standard Publishers, New Delhi.
6. Singh, Birinder, "Structural Mechanics", Kaption Publishers, Ludhiana.

WEBSITE FOR REFERENCES

1. https://www.youtube.com/watch?v=whB7IX3NQpg&list=PL4C9BB8DDD5D888A6

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (out of 50)
1	02	03
2	08	09
3	12	13
4	04	04
5	06	06
6	04	05
7	02	03
8	03	03
9	04	04
Total	**45**	**50**

3.4 BUILDING CONSTRUCTION

L	P
3	2

RATIONALE

Diploma holders in Civil Engineering are supposed to effectively supervise construction of buildings. Effective supervision is essential to obtain/provide a fault free service from contractors to users. To perform above task, it is essential that students should have knowledge of various sub components of buildings like foundations, walls, roofs, staircases, floors etc., and their constructional details as well as preventive, remedial and corrective methods of common construction faults. Therefore, the subject of Building Construction is very important for Civil Engineering diploma holders.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Select a foundation for particular type of building
- Explain different types of walls, scaffolding, shoring, underpinning and their constructional methodology
- Carry out the construction of brick wall.
- Supervise rubble and ashlar types of stone masonry construction
- Select different types of doors, windows, floors and stairs cases in building
- Recognise different parts of roof trusses and drainage system of roofs
- Identify and select application procedure for different types of surfaces finishes in building i.e. plastering, pointing, painting, white washing and distempering

DETAILED CONTENTS

1. Introduction (01 hr)

   Definition of a building, classification of buildings based on occupancy
   Different parts of a building

2. Foundations (03 hrs)

   Concept of foundation and its purpose
   Types of foundation-shallow and deep Introduction to shallow foundations and their typesIntroduction to deep foundation and their types

Earthwork

Layout/setting out for surface excavation, cutting and filling

Excavation of foundation, trenches, shoring, timbering and de- watering

3. Walls (05 hrs)

Purpose of walls

Classification of walls: load bearing, non-load bearing, shear wall, partition walls and cavity wall.

Classification of walls as per materials of construction: Brick, Stone, Reinforced brick, Reinforced concrete, precast, hollow and solid concrete block, AAC blocks and composite masonry walls.

Partition walls: Constructional details, suitability and uses of brick, glass and aluminium partition walls.

Introduction to Scaffolding, Shoring and Underpinning.

4. Masonry (05 hrs)

Brick Masonry

Definition of terms like header, stretcher, queen closer, king closer, frog and quoin, course, bond, facing, backing, hearting, jambs, reveals, soffit, plinth, pillars and pilasters

Bond –meaning and necessity; English, flemish bond and other types of bonds

Construction of brick walls –methods of laying bricks in walls, precautions observed in the construction of walls.

Stone Masonry

Glossary of terms –natural bed, bedding planes, string course, corbel, cornice, block in course grouting, moulding, templates, corner stone, bond stone, throating, through stone, parapet, coping, pilasters and buttress

Types of stone masonry: rubble masonry - random and coursed; Ashlar masonry, principles to be observed in construction of stone masonry walls

5. Arches and Lintels (04 hrs)

Meaning and use of arches and lintels

Glossary of terms used in arches and lintels - abutment, pier, arch ring, intrados, soffit, extrados, voussoirs, springer, springing line, crown, key stone,

skew back, span, rise, depth of an arch, haunch, spandril, jambs, bearing, thickness of lintel, effective span

Arches

Types of Arches - Semi circular, segmental, elliptical and parabolic, flat, inverted and relieving

Lintels

- Purpose of lintel
- Materials used for lintels
- Cast-in-situ and pre-cast lintels
- Lintel along with sun-shade or chhajja

**6. Doors, Windows and Ventilators (03 hrs)

Glossary of terms with neat sketches
Purpose and uses of doors, windows and ventilators. Various fixtures and fasteners and materials used for doors, windows and ventilators.

*7. Damp Proofing and Water Proofing (04 hrs)

Types of Damp proof course (DPC), Sources of dampness and its ill effects on building.
Damp proofing materials and their specifications: rich concrete and mortar, bitumen, bitumen mastic, polymer coating, use of chemicals

**8. Floors (05 hrs)

Glossary of terms-floor finish, topping, under layer, base course, rubble fillingand their purpose
Types of floor finishes - Concrete flooring, tile flooring, stone (marble andkota) flooring. Timber flooring, and their brief description
Special emphasis on level/slope/reverse slope in bathrooms, toilets, kitchen,balcony and staircase

9. Roofs (04 hrs)

Types of roofs, concept of flat, pitched and arched roofs
Glossary of terms for pitched roofs - batten, eaves, facia board, gable, hip, lap,purlin, rafter, rag bolt, valley, ridge, rain water gutter, anchoring bolts
False ceilings using gypsum board, POP, PVC, Wood, Glass

10. Stairs (05 hrs)

Glossary of terms: Staircase, winders, landing, stringer, newel, baluster, riser,tread, width of staircase, hand-rail, nosing

Classification of staircase on the basis of material – RCC, timber, steel, Aluminium

Planning and layout of staircase: Relations between rise and tread, determination of width of stair, landing etc

11. Surface Finishes (06 hrs)

11.1 Plastering - classification according to use and finishes like plain plaster, grit finish, rough cast, concrete and stone cladding etc., dubbing, proportion of mortars used for different plasters, techniques of plastering and curing

11.2 Pointing - different types of pointing

11.3 Painting - preparation of surface, primer coat and application of paints on wooden, steel and plastered wall surfaces

11.4 Application of white washing, colour washing and distempering, polishing, application of cement and plastic paints

11.5 Selection of appropriate paints/finishes for interior and exterior surfaces

11.6 Importance of preparation of surfaces such as hacking, grooving etc before application of surface finishes

Note * An expert may be invited from field/industry for extension lecture

** A field visit may be planned to explain and show the relevant things

PRACTICAL EXERCISES

1. Demonstration of tools and plants used in building construction
2. To prepare Layout of a building: two rooms building with front verandah
3. To construct brick bonds (English bond only) in one, one and half and two brick thick: (a) Walls for L, T and cross junction (b) Columns
4. Demonstration of following types of doors:
   a) Panelled door
   b) Sliding door
   c) Flush door
   d) Rolling shutter
   e) Collapsible door
   f) Revolving door
   g) Folding door

h) Glazed door

5. Demonstration of following types of windows:
   a) Glazed window
   b) Sliding window
   c) Aluminium window
   d) Panelled window
   e) PVC window
   f) Wire gauged window
   6) Demonstration of following types of Stairs:
   a) Straight Stairs
   b) Dog- legged Stairs
   c) Open Well Stairs
   d) Bifurcated stairs
   e) Spiral Stairs
   f) Curved Stairs
   g) Cantilever Stair
   h) Ladder
6. Demonstration of following items of work at construction site by:
   a) Timbering of excavated trenching
   b) Laying damp proof courses
   c) Construction of masonry walls
   d) Laying of tile flooring on an already prepared lime concrete base
   e) Plastering and pointing exercise
   f) Constructing RCC work
   g) Pre-construction and post construction termite treatment of building and woodwork
   h) Interlocking tiles

Note: A report of these activities will be submitted by the students

INSTRUCTIONAL STRATEGY

While imparting instructions in this subject, teachers are expected to take students to work site and explain constructional process and special details for various sub-components of a buildings. It is also important to make use of audio visual aids/video films (if available) to show specialised operations. The practical work should be given due importance and efforts should be made that each student should perform practical work independently. For carrying out practical works, polytechnics should have construction yard where enough raw materials is made available for students to perform practical work

RECOMMENDED BOOKS

1. Rangwala, SC, "Building Construction"; Anand, Charotar Book Stall.
2. Arora, SP, and Bindra, SP, "A Text Book of Building Construction", New Delhi Dhanpt Rai and Sons.
3. Kumar, Sushil, "Building Construction", Standard Publishers Distributors, Delhi.
4. SP – 62 Hand Book of BIS.
5. B.I.S. – 6313 Part 1, 2, 3.
6. National Building Code.

WEBSITES FOR REFERENCES

1. https://www.youtube.com/channel/UC7R0m2JO9EsJNJZPDR2U7YQ
2. https://theconstructor.org/home-page

SUGGESTED DISTRIBUTION OF MARKS

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3	5	6
4	5	6
5	4	4
6	3	3
7	4	4
8	5	6
9	4	4
10	5	6
11	6	6
Total	**45**	**50**

BUILDING DRAWING

L	P
-	6

RATIONALE

Drawing is the language of engineers. Engineering is incomplete without a thorough knowledge of drawing. A Civil Engineering diploma holder must be capable of sketching detailed constructional drawing of various components of building for the purpose of communication with the craftsman. Planning of small buildings, developing a line plan, dimensioning, key plan, drainage plan should be a part of curriculum. The diploma engineer must be conversant with reading and interpretation of drawing for execution of work.

LEARNING OUTCOMES

After undergoing the subject, the students will be able to:

- Layout foundation plan of different types of foundations
- Prepare drawings of small buildings
- Draw building drawing sheets using CAD software
- Prepare details of brick courses in joints
- Draw the sketches of various joints of carpentry
- Demonstrate circular arch and segmental arches
- Read and interpret building drawings

DETAILED CONTENTS CUM PRACTICALS

Section-A

Drawing No. 1: (2 sheets)

Details of spread footing foundations, load bearing and non-load bearing wall for given thickness of walls with the help of given data or rule of the thumb, showing offsets, position of DPC. The details of the concrete and brick apron must be shown in the drawing.

Drawing No. 2: (1 Sheet)

Plans of 'T' and Corner junction of walls of 1 Brick, 1½ Brick and 2 brick thick in English bond

Drawing No. 3: (2 Sheets)

Drawing plan, elevation of arches: circular arch, segmental arch

Drawing No. 4: (3 sheets)
Elevation, sectional plan and sectional side elevation of flush door, glazed door, panelled door with wire gauge shutter.

Drawing No. 5: (2 sheets)

Drawing plan, elevation of a small building by measurement and foundation detail and sectional elevation.

Drawing No. 6: (1 sheet)

Drawings of following floors
Cement concrete floors on ground and at first floor

i) Wooden flooring
ii) Bonded cement concrete flooring
iii) Ceramic/vitrified tile flooring

Drawing No. 7: (1 sheet)

Drawing of flat roof, showing the heat/thermal insulation provisions.

Drawing No. 8: (1 sheet)

Drawing details of damp proofing arrangement of roofs and walls as per BIS Code.
Show the rainwater drainage arrangement also.

Note: Draw at least one sheet of above drawings using CAD software

Section-B

Drawing No. 9: (4 sheets)

Drawing detailed plan, elevation and section of a two-room residential building from a given line plan, showing details of foundations, roof and parapet

NOTE:

a) All drawings should be as per BIS code and specifications in SI Units
b) Intensive practice of reading and interpreting building drawings should be given
c) Some practice should be done to prepare drawings on AutoCAD

RECOMMENDED BOOKS

1. Shah, MG, and CM Kale, "Principles of Building Drawing", MacMillan, Delhi.
2. Zaidi, SKA, and Suhail Siddiqui, "Drawing and Design of Residential and Commercial Buildings", Standard Publishers and Distributors, Delhi.
3. Layal, JS, "Civil Engineering Drawing", Satya Parkashan, New Delhi.
4. Chandel, RP, "Civil Engineering Drawings", Katson Publishing House.
5. Kumar, NS, "Civil Engineering Drawing", IPH, New Delhi.
6. Malik, RS, and Meo GA, "Civil Engineering Drawing", Asian Publishing House, New Delhi.

OPEN ELECTIVE

L	P
2	-

RATIONALE

Open Elective refers to a course that students can opt for in addition to their primary area of study. The open electives is from an unrelated discipline with the intention to provide exposure in that discipline. It provides the students the opportunity to select and learn a subject related to his/her interest, thus allowing them to explore their passion..

LIST OF SUGGESTED OPEN ELECTIVES

The student can opt one course out of the following:

1 Foreign Language
2 NCC
3 Yoga
4 First Aid
5 Creative Writing
6 Sketching, Drawing and Colour Studies
7 Gardening
8 Photography
9 Legal Studies
10 Event Management
11 Diet and Nutrition

Open elective can be offered online or offline.

FOREIGN LANGUAGE

(French, Japanese, German, Spanish)

L	P
2	-

RATIONALE

This course is an introduction to the specific language. Learning to understand and articulate oneself in day to day real life situations, and to begin to make sense of the language as a cultural space are the overall objectives of the course. The student should be able to grasp the basic sentence structure and build a good foundational vocabulary through this course.

LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- Enhance the level of vocabulary in specific language.
- Manage situational communication in specific language.

DETAILED CONTENTS

1. Introduction (06 hrs)

   Self introduction, Numbers, Days, Months, Date, Time, and Counting

2. Vocabulary (06 hrs)

   My home, My family, My friend, Daily routine, Hobbies, Food, Greeting and Thanking

3. Grammar (12 hrs)

   Verb and Verb forms, Articles, Possessive pronouns, Auxiliary verbs, Questions, Present and Past tense

4. Theme (06 hrs)

   Means of transport, Basic directions, Food, Drink, Family, Groceries and Meals

RECOMMENDED BOOKS

1. Annie Berthet, Hugot et al, "Alter Ego - Méthode de Français ," Hachette.
2. 3 A Corporation, "Minna no Nihongo", Goyal Publishers, New Delhi.
3. Stefanie Dengler, "NETZWERK Deutsch als Fremdsprache A1", Goyal Publishers, New Delhi.
4. Jaime Corpas et.al, "Aula International 1 ," Difusión, Madrid.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	06	10
2	06	10
3	12	20
4	06	10
Total	**30**	**50**

NATIONAL CADET CORPS (NCC)

L	P
2	-

RATIONALE

This course is structured to instil in the students qualities like nationalism, patriotism, discipline, team spirit, esprit-de-corps, leadership, self-confidence, national integration and improve their personality. The objective of the course is to expose the students to a regimental way of life, which is essential to inculcate in them the values of discipline, duty, punctuality, orderliness, smartness, and respect for authority, correct work ethos and self-confidence. In addition, it will inculcate defence services work ethos, which is characterized by hard work, sincerity of purpose, honesty, ideals of selfless service, dignity of labour, secular outlook, comradeship, spirit of adventure and sportsmanship.

LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- Explain aims and objectives of NCC.
- Understand the importance of national integration.
- Assist Civil Administration in performance of selective duties during disasters.
- Perform drill without arms.
- Contribute towards nation building.
- Provide voluntary social service.

DETAILED CONTENTS

1. Introduction (08 hrs)

   Aims and objectives of NCC, Organisation structure and training, NCC Song, National Integration and awareness, Religions, Culture, Traditions and Customs of India, National Integration: Importance and Necessity. Freedom Struggle and Nationalist Movement in India, Problems/ Challenges of national integration, Unity in diversity, Famous leaders of India, Images/ Slogans for national integration, Contribution of youth to nation building

2. Civil Affairs (04 hrs)

Civil Defence Organization and its duties/ NDMA, Types of emergencies/ Natural Hazards, Role of NCC during Natural Hazards/ Calamities

3. Drill Without Arms (08 hrs)

General and Words of Command, Attention, Stand at Ease and Stand Easy, turning and inclining at the halt, Sizing, forming up in three ranks and numbering, open and close order march and Dressing, Saluting at the halt, Getting on parade, dismissing and falling out, Marching, length of pace and time of marching in quick time and halt, slow march and halt, Turning on the march and wheeling, Saluting on the March Individual word of command

4. Personality Development and Leadership (04 hrs)

Personality development, self-awareness, Leadership, life/soft skills, time management
and character building.

5. Social Service (06 hrs)

Basics of Social service, and its needs, Social/ Rural Development Projects: MNREGA, SGSY, NSAP; Literacy enhancement and poverty alleviation, Social evils, Contribution of youth towards social welfare.

RECOMMENDED BOOKS

1 "Cadet Hand Book (Common Subjects) ", published by DG, NCC.
2 "Grooming Tomorrow's Leaders", published by DG, NCC.
3 "Youth in Action", published by DG, NCC.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	08	14
2	04	06
3	08	14
4	04	06
5	06	10
Total	**30**	**50**

YOGA

L	P
2	-

RATIONALE

Yoga is a practice that connects the body, breath, and mind. It uses physical postures, breathing exercises, and meditation to improve overall health. It not only improves physical health but also mental and spiritual well-being, which are the foundations of life. The course is aimed at developing skills in yoga for strength, flexibility and relaxation.

LEARNING OUTCOMES

At the end of the course, the students will be able to:

- Explain the importance of yoga and its effect on health
- Perform yoga in various forms and combinations
- Understand the philosophy of heartfulness meditation.
- Promote positive health and holistic wellness through yoga and meditation.

DETAILED CONTENTS

1. Yoga (4 hrs)

   Concept, need and importance, Yogic principles, Rules and precautions to be followed by yoga practitioners, Introduction to Ashtanga yoga and Yoga sutra

2. Asanas and Mudras (14 hrs)

   Basic asanas, Asanas in different postures - Sukshma Vayayam, Pawan Muktasan, Surya Namaskar, Hasta Utthanasana, Padahastasana, Tadasana, Vrikshasana,Tirayak Tadasana, Natarajasana, Vajrasana, Padmasana, Bhujangasana.
   Mudras - Concept, Important mudras - Prana Mudra, Varuna Mudra, Prithvi Mudra, Aakash Mudra, Gyana Mudra.

3. Pranayama (6 hrs)

   Kapalbhati Pranayama, Nadi Shodhan Pranayama (Anulom Vilom), Bhastrika Pranayama, Ujjayi Pranayama.

4. Meditation (3 hrs)

Heartfulness meditation, Practice on meditation

5. Health Benefits of Yoga and Meditation (3 hrs)

Benefits and effect of Asanas, Mudras and Pranayama on various systems and organs of human body. Relaxation and wellness through meditation

RECOMMENDED BOOKS

1. Saraswati, Swami Satyananda, "Asana, Pranayama, Mudra and Bandha", Yoga Publication Trust, Bihar.
2. BKS Iyengar, "Light on Yoga", George Allen and Unwin.
3. Mudras by Heartfulness; Heartfulness Education Trust.
4. Kamlesh D Patel, "The Way of the Heart", Spiritual Hierarchy Publication Trust
5. Goel, Aruna, "Yoga Education: Philosophy and Practice", Deep & Deep Publications, New Delhi.
6. Nagendra, H R, and R Nagarathna, "Yoga for Promotion of Positive Health". Swami Vivekananda Yoga Prakashan.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	06
2	14	24
3	06	10
4	03	05
5	03	05
Total	**30**	**50**

FIRST AID

L	P
2	-

RATIONALE

First aid is a valuable and life-saving course. The objective of this course is to impart knowledge and skills to the students necessary in an emergency to help sustain life, reduce pain, and minimize the consequences of injury or sudden illness until professional medical help arrives.

LEARNING OUTCOMES

At the end of the course, the students will be able to:

- Administer basic life support skills including cardiopulmonary resuscitation
- Provide first aid of simple and multiple system trauma.

DETAILED CONTENTS

1. Basics of First Aid (4 hrs)

   First aid, importance of first aid, first aider, laws of first aid, contents of an ideal first aid kit, dealing with an emergency.

2. Emergency Response (10 hrs)

   CPR, steps for performing CPR,CPR for newborns and infants, recovery position, first aid in drowning, fractures of bones, causes and types of fractures, dislocation.

3. First Aid in Burns (4 hrs)

   Types of burns, danger of burns, first aid in dry burns and scalds, electrical burns, chemical burns, sunburn, heatstroke.

4. First Aid in Wounds and Injuries (6 hrs)

   Types of wounds- small cuts and abrasions, Head injury- nose bleed, bleeding gums, bleeding from varicose veins, Shocks- causes of shock and its first aid.

5. First Aid in Poisoning (3 hrs)

Poisoning by swallowing, gases, injections, skin absorption, Animal bites, snake bites and insect stings.

6. First Aid in Foreign Objects Entering the Sense Organs: (3 hrs)

Foreign body in the eye, ear, nose, skin, swallowing of foreign objects.

Note : Persons from Civil Defence/ National Disaster Response Force (NDRF) etc. can be invited for conduct of first aid classes and demonstration of first aid practices.

RECOMMENDED BOOKS

1. Gauri Goyal, Dr. Kumkum Rajput, Dr. Manjul Mungali,, "First Aid and Health", SBPD Publishing House
2. Williamson, Swapna Naskar and Goswami Mala, "First Aid and Emergency Care", Kumar Publishing House, New Delhi.
3. Mahopatra, R., "First Aid for You and Me", Academic Publishers, New Delhi.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	06
2	10	18
3	04	06
4	06	10
5	03	05
6	03	05
Total	**30**	**50**

CREATIVE WRITING

L	P
2	-

RATIONALE

Creative writing is a written art form that uses the imagination to tell stories and compose essays, poetry, screenplays, novels, lyrics, and more. The objective of this course is to acquaint the students with ideas related to creative writing including art, craft and basic skills required for a creative writer.

LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- Distinguish between literary genres.
- Practice various forms of creative writing.
- Write for various media.

DETAILED CONTENTS

1. Fundamentals of Creative Writing (06 hrs)

   Meaning and significance of creative writing, Genres of creative writing: poetry, fiction, Non-fiction, Drama and other forms, Research for creative writing

2. Elements of Creative Writing (10 hrs)

   Plot, Setting, Character, Dialogue, Point of view, Literary devices and figurative language, Elements of style, Grammar and the structure of language, Proof reading and editing

3. Traditional Forms of Creative Writing (10 hrs)

   Fiction: short story, novella and novel, Poetry, Drama, Essay, Fable, Biography, Memoire and autobiography, Travelogues, Diaries, Self-narrative writing

4. Writing for Media (04 hrs)

   Print media, Broadcast media, Internet - Web content writing and blog writing, Advertising

RECOMMENDED BOOKS

1. Anjana Neira Dev. Anuradha Marwah, Swati Pal, "Creative Writing: A Beginner's Manual", Pearson Longman, Delhi.
2. Robert Scholes, Nancy R. Comley, Carl H. Klaus, Michael Silverman, "Elements of Literature: Essay, Fiction, Poetry, Drama, Film", Delhi.
3. Bell, Julia and Magrs, Paul, "The Creative Writing Course-Book", Macmillan, London.
4. Gardner, John, "The Art of Fiction", Vintage, New York.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	6	10
2	10	16
3	10	16
4	4	08
Total	**30**	**50**

SKETCHING, DRAWING AND COLOUR STUDIES

L	P
2	-

RATIONALE

This course is aimed to develop aesthetic sense of students. It also encompasses training in sketching, drawing and colouring to develop their mental faculties of observation, imagination and creation.

LEARNING OUTCOMES

At the end of the course, the students will be able to:

- Sketch common objects and various geometrical and non-geometrical forms found in life and nature.
- Use different medium and materials.
- Use colour judiciously in creation of visual work.
- Prepare collage using various paper and materials.

DETAILED CONTENTS

1. Sketching of Objects and Nature (8 hrs)

   Sketching of objects at home like cup, plate, glass, book, pencil box etc.
   Sketching of tree, mountain, hills, vegetables flower etc. for Nature study using Pencil, colour Pencil

2. Drawing of Human and Animal Figures (10 hrs)

   Drawing of Human and animal form with the help of Basic Geometrical shapes

3. Collage Making (4 hrs)

   Creating Collage with the help of coloured cut out papers, picture from a magazine or any easily available materials

4. Colours (8 hrs)

Water colour, Poster colour, Colour theory – Colour system, Colour wheel, Colour dimensions, Drawing with oil pastel colour and dry pastel.

RECOMMENDED BOOKS

1. Betty Edwards, "Color: A Course in Mastering the Art of Mixing Colors", Penguin Group Inc., New York.
2. Feisner, E., "Colour Studies", Fairchild Publications, USA.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	08	14
2	10	16
3	04	06
4	08	14
Total	**30**	**50**

GARDENING

L	P
2	-

RATIONALE

Gardening activities are fantastic for helping students engage in a way that is more difficult in the classroom. Watching plants grow is a fun and educational experience for them. Their enormous curiosity and excitement over anything new makes them natural for gardening. Growing plant seeds teaches them how nature works and adds to their interest in environmental sustainability.

LEARNING OUTCOMES

At the end of the course, the students will be able to :

- Explain various techniques of gardening, cultivation, multiplication, raising of seedlings of garden
- Discuss new and modern techniques of plant propagation.
- Develop interest in nature and plant life.

DETAILED CONTENTS

1. Gardening (6 hrs)

   Definition, objectives and scope. Different types of gardening - landscape and home/ terrace gardening, parks and its components. Plant materials and design.

2. Gardening Operations (14 hrs)

   Soil laying, manuring, watering, management of pests and diseases and harvesting.

3. Sowing/Raising of Seeds and Seedlings (10 hrs)

   Structure and types - Seed dormancy; causes and methods of breaking dormancy. Seed storage: Seed banks, factors affecting seed viability, genetic erosion Seed production technology. Seed testing and certification. Transplanting of seedlings.

RECOMMENDED BOOKS

1. Bose T.K., Mukherjee, D., "Gardening in India", Oxford & IBH Publishing Co. New Delhi.
2. Kumar, N., "Introduction to Horticulture", Rajalakshmi Publications. Nagercoil, Tamil Nadu.
3. Sandhu, M.K., "Plant Propagation", New Age International Publishers.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	06	10
2	14	24
3	10	16
Total	**30**	**50**

PHOTOGRAPHY

L	P
2	-

RATIONALE

Photography is a unique and creative medium of self-expression that requires aesthetic sense as well as technical expertise. Students who are highly passionate about learning the workings of cameras and different technologies based on them can pursue this course. The objective of this course is to enable the candidates to understand the utility of different camera parts and the art of taking candid shots.

LEARNING OUTCOMES

At the end of the course, the students will be able to:

- Explain the principles of photography.
- Handle various cameras for taking photographs.
- Apply aesthetics of photography.

DETAILED CONTENTS

1. Basic Photography (04 hrs)

   Meaning and definition of photography, Basic principle in the film and digital photography, History of photography.

2. Camera Function and Accessories (04 hrs)

   Basic camera, Different parts of camera and their basic functions, Camera Accessories

3. Main Controls of Camera (10 hrs)

   Parts of Camera, Types of lenses, Shutter, Diaphragm, Exposure, Film and digital image sensor, Depth of field, Lighting, Photography with flash, Filters in photography.

4. Digital Camera (05 hrs)

Process of digital imaging, Types of digital cameras, Menu operationsof digital cameras, Introduction to colors.

5. Aesthetics of Photography (07 hrs)

Definition of lighting, Principles of lighting, Reflection, Light characteristics, Color, Direct light and indirect light, Light and subject, Light as subject, Shadow as subject, Light sources, Natural light and artificial light, Principles of visualization, Composition guidelines

RECOMMENDED BOOKS

1. Dilwali, Ashok, "All about Photography", National Book Trust, New Delhi.
2. Sharma, O.P., "Practical Photography", Hind Pocket Books.
3. Freeman, "The Photographer's Guide to Light", John Collins & Brown

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

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SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	06
2	04	08
3	10	16
4	05	08
5	07	12
Total	**30**	**50**

LEGAL STUDIES

L	P
2	-

RATIONALE

The course introduces the students to Indian legal system, contracts management, and legal documentation. Further, the course familiarizes students with basic knowledge of labour laws that would be useful.

LEARNING OUTCOMES

At the end of the course, the students will be able to:

- Understand the Indian Legal System.
- Discuss Indian Contract Act.
- Explore labour laws and laws related to women.

DETAIL CONTENTS

1. Introduction to Indian Legal System (4 hrs)

   Constitution of India, Sources of Law and Judicial system.

2. The Indian Contract Act (6 hrs)

   Contract –meaning and kinds. Essentials of a valid contract, Discharge of a contract, Contract of Agency

3. Legal Documentation (10 hrs)

   Drafting of legal documents including Non-Disclosure Agreements (NDA), Request for Proposal (RFP), collaboration agreements, joint venture agreements, tendering and subcontracting

4. Labour Laws (6 hrs)

   Provident Fund, ESIC, Gratuity and Bonus

5. Legislation Related to Women (4 hrs)

Sexual harassment at Work place (Prevention, Prohibition and Redressal), Protection of Women from Domestic Violence Act, Criminal Law (Amendment) Act, The Indecent Representation of Women (Prohibition) Act.

RECOMMENDED BOOKS

1. Joseph Minattur, "Indian Legal System ", Indian Law Institute, New Delhi.
2. Srivastava, S.C., "Industrial Relations and Labour Laws ", Vikas Publishing House Pvt. Ltd.
3. Aggarwal, S K, "Business Law ", Galgotia Publishers, Delhi.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	07
2	06	10
3	10	16
4	06	10
5	04	07
Total	**30**	**50**

EVENT MANAGEMENT

L	P
2	-

RATIONALE

Event Management is a course which deals with the planning, coordinating, and organising of events for people and communities. It is a part of the mass communication course which is offered by many prestigious colleges in India. Event management course aims to imbibe knowledge on analysing, marketing, planning and strategies in business administration to its students.

LEARNING OUTCOMES

After undergoing this course, the students will be able to:

- Explain the purpose of special events in an organization.
- Use techniques and strategies required to plan successful special events.
- Promote and conduct special events.
- Assess the quality and success of special events.

DETAILED CONTENTS

1. Principles of Event Management (04 hrs)

   Introduction to event management, size & type of event, event team, code of ethics, principles of event management, role of event manager –planning, organising, leading and controlling an event

2. Event Planning (08 hrs)

   Objective of event, use of planning tools, protocols, dress codes, staging, staffing.

3. Event Marketing (04 hrs)

   Advertising, publicity, event marketing process, even hospitality

4. Event Leadership (06 hrs)

Teambuilding & work distribution, managing team, managing meetings, written & verbal communication.

5. Event Safety and Security (04 hrs)

Role of Security, Safety, Crowd management, Risk management.

6. Event Accounting (04 hrs)

Budget, Cash flow analysis, Profit & loss statement, Balance sheet.

RECOMMENDED BOOKS

1. Singla, Sita Ram, "Event Management", ATH Publishers, New Delhi.
2. Sharma, Divakar, "Event Planning and Management", Deep & Deep Publication.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	4	06
2	8	12
3	4	08
4	6	10
5	4	08
6	4	06
Total	**30**	**50**

DIET AND NUTRITION

L	P
2	-

RATIONALE

The objective of this course is to help the students to understand the concept of diet and nutrients and provide knowledge about causes and symptoms of Nutrition-related disorders.

LEARNING OUTCOMES

On completion of this course, the students will be able to:

- Comprehend the nutritional value of different food items.
- Explain the need of nutrition during the normal stages of life.
- Calculate normal dietary requirements and balanced diet.

DETAILED CONTENTS

1. Introduction (04 hrs)

   Basic concepts of health, Nutrition, Nutrients, Nutrition requirement, Balanced diet. Relationship between health & nutrition, Assessment of nutritional status.

2. Nutrients (16 hrs)

   Nutrients & their classification. Macro Nutrients -Sources, Functions and Effects on the Body; Micro nutrients - sources, Functions and effects on the Body; Fat soluble nutrients - sources, Functions and effects on the body, Water soluble nutrients - Sources, Functions and effects on the body, Digestion, Absorption of carbohydrates, Lipids, Proteins and energy.

3. Energy and Nutrition-related Disorders (06 hrs)

   Basic concepts, Definition and components of energy requirement, Protein malnutrition, Iodine deficiency disorders, Disease and disorder caused by imbalance of nutrients, Food allergies.

4. Nutritional Needs (04 hrs)

Nutritional need during normal stages of life - Infancy, Childhood, Adolescence, Pregnancy, Lactation and Old age, Disease management with diet.

RECOMMENDED BOOKS

1. Antia, F.P., "Clinical Dietetics and Nutrition", Oxford University Press.
2. Swaminathan, "Essentials of Food and Nutrition", Ganesh and Co., Madras.
3. Subhangini Joshi, "Nutrition and Dietetics", McGraw Hill Publishers.
4. B.S. Narsinga Rao et al, "Nutritive Value of Indian Foods", National Institute of Nutrition, Hyderabad.

INSTRUCTIONAL STRATEGY

Teachers are expected to develop necessary knowledge in the students for comprehending basic concepts and principles of the subject so that they may pursue their passion. As far as possible, the teaching of subject shall be supplemented by demonstration and practices to enhance the relevant skills.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (Out of 50)
1	04	06
2	16	28
3	06	10
4	04	06
Total	**30**	**50**

ENERGY CONSERVATION AWARENESS CAMP

A diploma holder must have knowledge of various tips of energy conservation. Energy conservation has attained priority as it is regarded as additional energy resource. Energy saved is energy produced. This camp covers the basic concepts of energy management and its conservation. It gives the insight to energy conservation opportunities in household appliances and star rating. Lectures will be delivered on following broad topics. There will be no exam for this camp.

1. Classification of energy- primary and secondary energy, commercial and non-commercial energy, non-renewable and renewable energy with special reference to solar energy

2. Introduction to energy management, energy conservation, energy efficiency and its need

3. Salient features of Energy Conservation Act 2001 & The Energy Conservation (Amendment) Act, 2010 and its importance

4. Standards and Labeling

   - Concept of star rating and its importance
   - Types of product available for star rating

5. Salient Features of Punjab Energy Conservation Building Code (ECBC)

6. General Energy Saving Tips in:

   - Lighting System
   - Room Air Conditioners
   - Refrigerators
   - Water Heater
   - Computers
   - Fans, Heaters, Blowers and Washing Machines
   - Colour Television
   - Water Pumps
   - Kitchens
   - Transport

DRUGS USE AND ABUSE AWARENESS CAMP

This is to be organized at a stretch for two to three days during third semester. Lectures will be delivered on the following broad topics. There will be no examination for this subject.

1. Drugs Use and Abuse in Society
    b. Concept and overview
    c. Extent of the problem
    d. Drug use as a social problem
    e. Causes of Drug Use: Biological, Socio-cultural, psychological

2. Types of Dugs and identification of Abuse
    a. Familiar drugs: Tabacco, Caffeine, over the counter drugs
    b. Restricted Drugs: Opiates, Hallucinogens, Marijuana
    c. Reformance enhancing drugs
    d. Uppers and Downers: Stimulants and Depressants

3. Impact of Drug Abuse
    a. Individual level biological and psychological
    b. Family social, National

4. Management and Prevention of Drug Abuse
    a. Medical and psychological
    b. Role of family School , Media and Legislation