

**GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY**

**SYLLABUS FOR DEPARTMENT OF DIPLOMA IN CIVIL ENGINEERING**

**EDITION-2018**

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**GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY**

**DIPLOMA IN CIVIL ENGINEERING (3 Year Course)**

**PROGRAMME OUTCOMES OF DIPLOMA IN CIVIL ENGINEERING**

1. An ability to apply knowledge of mathematics, science, and engineering.
2. An ability to design and conduct experiments, as well as to analyze and interpret data.
3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. An ability to function on multidisciplinary teams.
5. An ability to identify, formulate, and solve engineering problems.
6. An understanding of professional and ethical responsibility.
7. An ability to communicate effectively.
8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. A recognition of the need for, and an ability to engage in life-long learning.
10. A knowledge of contemporary issues.
11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
12. An understanding of critical issues for professional practice such as the procurement of work and the interaction with contractors during the construction phase of a project.

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| **GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY** | | | | | | | | |
| **DIPLOMA IN CIVIL ENGINEERING (3 Year Course)** | | | | | | | | |
| **Course Code** | **Course Name** | **Credits** | **Contact Hrs/Wk.** | | | **Exam Hrs.** | **Weight age (in %)** | |
| **L** | **T/S** | **P** | **CE** | **ESE** |
| DCE231 | Building Materials and construction | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE232 | Concrete technology | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE233 | Surveying -I | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE234 | Hydraulic And Hydraulic Machines | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE236 | Surveying-II | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE 238 | Environmental engineering | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE272 | Hydraulic and Hydraulic Machines Lab. | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE273 | Materials testing Lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE274 | Surveying lab-II | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE275 | Building drawing Lab-I. | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE276 | Building drawing lab & CAD Lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE277 | Surveying lab-I | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE278 | Environmental engineering lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE 279 | Building Construction lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE280 | CAD Lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE282 | Concrete technology lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE331 | Transportation engineering | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE332 | Design of Reinforced cement concrete | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE333 | Theory of structure | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE334 | Irrigation engineering. | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE335 | Construction management | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE336 | Quantity survey and valuation | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE 338 | Design of steel structure | 3 | 0 | 0 | 0 | 3 | 40 | 60 |
| DCE371 | Transportation engineering lab | 1 | 0 | 0 | 2 | 3 | 60 | 40 |
| DCE372 | Civil engineering estimating and costing lab | 1 | 0 | 0 | 2 | 3 | 60 | 40 |
| DCE373 | Structural lab | 1 | 0 | 0 | 2 | 3 | 60 | 40 |
| DCE374 | Soil mechanics Lab | 1 | 0 | 0 | 2 | 3 | 60 | 40 |
| DCE375 | Surveying lab-III and camp | 1 | 0 | 0 | 2 | 3 | 60 | 40 |
| DCE376 | R.C.C. LAB | 2 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE377 | Applied mechanics lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE379 | Construction technology lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCS221 | Office automation tools LAB -I | 1 | 0 | 0 | 2 | 3 | 60 | 40 |
| DHS231 | Basic Economics & Social Science | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DHS232 | Entrepreneurship | 2 | 2 | 0 | 0 | 3 | 40 | 60 |
| DHS302 | Industrial management | 2 | 0 | 0 | 0 | 3 | 40 | 60 |
| DEP301 | Industry summer internship project | 3 | 0 | 0 | 3 |  | 100 |  |
| DEP302 | Industry Association project | 6 |  |  |  |  |  |  |
| DME231 | Strength of material | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DME271 | Strength of material Lab | 2 | 0 | 0 | 3 | 2 | 60 | 40 |
| EM102 | Employability Skills-II | 1 | 0 | 2 | 0 | 2 | 60 | 40 |
| EM201 | Employability Skills-III | 1 | 0 | 2 | 0 | 2 | 60 | 40 |
| EM202 | Employability Skills IV | 1 | 0 | 0 | 0 | 2 | 60 | 40 |
| MA231 | Advance Mathematics | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| PC201 | Proficiency in Co-Curricular Activity | 2 | 0 | 0 | 0 | 0 | 100 |  |
| PC202 | Proficiency in Co-Curricular Activity | 1 | 0 | 0 | 0 | 0 | 100 |  |
| PC301 | Proficiency in Co-Curricular Activity | 1 | 0 | 0 | 0 | 0 | 100 |  |
| PC331 | Proficiency in Co-Curricular Activity | 2 | 0 | 0 | 0 | 0 | 100 |  |

**GYAN VIHAR SCHOOL OF ENGINEERING AND TECHNOLOGY**

**DIPLOMA IN CIVIL ENGINEERING(3 Year Course)**

**Year: II Edition-2018 Semester: III**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code** | **Course Name** | **Credits** | **Contact Hrs/Wk.** | | | **Exam Hrs.** | **Weight age (in%)** | |
| **L** | **T/S** | **P** | **CE** | **ESE** |
|  | **University Core** |  |  |  |  |  |  |  |
| MA231 | Advance Mathematics | 3 | 3 | 1 | 0 | 3 | 40 | 60 |
| PC201 | Proficiency in Co-Curricular Activity | 2 | 0 | 0 | 0 | 0 | 100 |  |
| EM102 | Employability Skills-II | 1 | 0 | 2 | 0 | 2 | 60 | 40 |
|  | **Program Core** |  |  |  |  |  |  |  |
| DME231 | Strength of material | 3 | 3 | 1 | 0 | 3 | 40 | 60 |
| DCE231 | Building Materials and construction | 3 | 3 | 1 | 0 | 3 | 40 | 60 |
| DCE233 | Surveying -I | 3 | 3 | 1 | 0 | 3 | 40 | 60 |
| DME271 | Strength of material Lab | 2 | 0 | 0 | 3 | 2 | 60 | 40 |
| DCE273 | Materials testing Lab | 2 | 0 | 0 | 3 | 2 | 60 | 40 |
| DCE275 | Building drawing Lab-I | 2 | 0 | 0 | 3 | 2 | 60 | 40 |
| DCE277 | Surveying lab-I | 2 | 0 | 0 | 3 | 2 | 60 | 40 |
|  | **University Elective** |  |  |  |  |  |  |  |
|  | Consumer affairs | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DHS231 | Basic Economics & Social Science | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
|  | **Program Elective** |  |  |  |  |  |  |  |
| DCE279 | Building construction lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCS221 | Office automation tools LAB –I | 1 | 0 | 0 | 2 | 2 | 60 | 40 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code** | **Course Name** | **Credits** | **Contact Hrs/Wk.** | | | **Exam Hrs.** | **Weight age (in%)** | |
| **L** | **T/S** | **P** | **CE** | **ESE** |
|  | **University Core** |  |  |  |  |  |  |  |
| PC202 | Proficiency in Co-Curricular Activity | 1 | 0 | 0 | 0 | 0 | 100 |  |
| EM201 | Employability Skills-III | 1 | 0 | 2 | 0 | 2 | 60 | 40 |
|  | **Program Core** |  |  |  |  |  |  |  |
| DCE232 | Concrete technology | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE234 | Hydraulic And Hydraulic Machines | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE236 | Surveying-II | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE 238 | Environmental engineering | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE272 | Hydraulic and Hydraulic Machines Lab. | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE274 | Surveying lab-II | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE276 | Building drawing lab-II & CAD Lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE278 | Environmental engineering lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
|  | **University Elective** |  |  |  |  |  |  |  |
|  | Swatch bharat | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DHS232 | Entrepreneurship | 2 | 2 | 0 | 0 | 3 | 40 | 60 |
|  | **Program Elective** |  |  |  |  |  |  |  |
| DCE 280 | CAD lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE 282 | Concrete technology lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |

**Year: II Edition-2018 Semester: IV**

**Year: III Edition-2018 Semester: V**

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| **Course Code** | **Course Name** | **Credits** | **Contact Hrs/Wk.** | | | **Exam Hrs.** | **Weight age (in %)** | |
| **L** | **T/S** | **P** | **CE** | **ESE** |
|  | **University Core** |  |  |  |  |  |  |  |
| PC301 | Proficiency in Co-Curricular Activity | 1 | 0 | 0 | 0 | 0 | 100 |  |
| EM202 | Employability Skills IV | 1 | 0 | 0 | 0 | 2 | 60 | 40 |
| DEP301 | Industry summer internship project | 3 | 0 | 0 | 3 |  | 100 |  |
| ES101/102 | Environmental studies | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
|  | **Program Core** |  |  |  |  |  |  |  |
| DCE331 | Transportation engineering | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE333 | Theory of structure | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE335 | Construction management | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE371 | Transportation engineering lab | 2 | 0 | 0 | 2 | 3 | 60 | 40 |
| DCE373 | Structural lab | 2 | 0 | 0 | 2 | 3 | 60 | 40 |
| DCE375 | Surveying lab-IIIand camp | 2 | 0 | 0 | 2 | 3 | 60 | 40 |
|  | **University Elective** |  |  |  |  |  |  |  |
| DHS302 | Industrial management | 3 | 0 | 0 | 3 | 3 | 40 | 60 |
|  | **Program Elective** |  |  |  |  |  |  |  |
| DCE377 | Applied mechanics lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE379 | Construction technology lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |

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| **Course Code** | **Course Name** | **Credits** | **Contact Hrs/Wk.** | | | **Exam Hrs.** | **Weight age (in%)** | |
| **L** | **T/S** | **P** | **CE** | **ESE** |
|  | **University Core** |  |  |  |  |  |  |  |
| PC331 | Proficiency in Co-Curricular Activity | 2 | 0 | 0 | 0 | 0 | 100 |  |
| DEP302 | Industry Association project | 6 |  |  |  |  |  |  |
|  | **Program Core** |  |  |  |  |  |  |  |
| DCE332 | Design of Reinforced cement concrete | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE372 | Civil engineering estimating and costing lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE374 | Soil mechanics Lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
| DCE376 | R.C.C. LAB | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
|  | **University Elective** |  |  |  |  |  |  |  |
| DEE377 | MAT Lab | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
|  | Disaster management | 2 | 0 | 0 | 3 | 3 | 60 | 40 |
|  | **Program Elective** |  |  |  |  |  |  |  |
| DCE334 | Irrigation engineering. | 3 | 3 | 0 | 0 | 3 | 40 | 60 |
| DCE336 | Quantity survey and valuation | 3 | 0 | 0 | 0 | 3 | 40 | 60 |
| DCE 338 | Design of steel structure | 3 | 0 | 0 | 0 | 3 | 40 | 60 |
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|  |  |  |  |  | **Weight age (in%)** |

**Year: III Edition-2018 Semester: VI**

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| --- | --- |
| Course Title:**BUILDING MATERIAL AND CONSTRUCTION** | Course Code : **DCE231** |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

1. Student should be able to read the building plans.
2. Student should be able to think over the construction problems and their remedies.
3. Student should know the basic properties of material being used in the construction of the building.

**Course Objectives:**

1. Identify various components of buildings and their functions.
2. Mark layout of building on ground.
3. Know the procedure for execution of various constructions activities.
4. Check line, level and plumb of various construction activities.
5. Prepare checklist of operations for supervision of various construction activities.
6. Identify & suggest rectification the various defects in civil engineering works.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** |
| **UNIT-1: BUILDING COMPONENTS AND MATERIALS** | 08 | 20 |
| **1.1BUILDING COMPONENTS AND TYPES OF STRUCTURE** BUILDING COMPONENTS & THEIR FUNCTION. SUBSTRUCTURE–FOUNDATION, PLINTH. SUPERSTRUCTURE–WALLS, SILL, LINTEL, DOORS & WINDOWS, FLOOR, ROOF, PARAPET, BEAMS, COLUMNS. TYPES OF STRUCTURES -LOAD BEARING STRUCTURES, FRAMED STRUCTURES, COMPOSITE STRUCTURES.  **1.2MASONRY MATERIALS** A) BUILDING STONES- CLASSIFICATION OF ROCKS, REQUIREMENT OF GOOD BUILDING STONE, DRESSING OF STONES, QUARRYING OF STONES ,ARTIFICIAL OR CAST STONES B) BRICKS– CONVENTIONAL BRICKS , STANDARD BRICKS COMPOSITION OF CLAY BRICK, STRENGTH OF BRICKS, PROPORTIONS OF BURNT CLAY BRICKS , TESTING OF BRICKS , SPECIAL BRICKS ,HOLLOW BLOCKS , FLY ASH BRICKS. C) MORTARS – CLASSIFICATIONS, LIME MORTAR, CEMENT MORTAR, SPECIAL MORTARS. FUNCTIONS OF MORTAR, PROPORTIONS, PROPERTIES OF MORTAR AND TESTS FOR MORTAR. **1.3TIMBER BASED MATERIAL** USE OF TIMBER, CHARACTERISTICS OF GOOD TIMBER, DEFECTS IN TIMBER, PLYWOOD, PARTICLE BOARD ,VENEER, SUN MICA , FORE MICA, NUWOOD, ARTIFICIAL TIMBER, RUBBER WOOD. **1.4MISCELLANEOUS MATERIALS** GLASS, PLASTIC, FIBERS, ALUMINUM, STEEL , GALVANIZED IRON, ASPHALT BITUMEN ETC .MICRO SILICA, PVC, CPVC, PPF. WATERPROOFING AND TERMITE PROOFING MATERIALS, ADMIXTURES IN CONCRETE, BONDING AGENTS, EPOXY RESINS, POLISHING MATERIALS ETC |  |  |
| **UNITS-2: CONSTRUCTION OF SUBSTRUCTURE** | 06 | 20 |
| **2.1JOB LAYOUT** SITE CLEARANCE, PREPARING JOB LAYOUT, LAYOUT FOR LOAD BEARING STRUCTURE AND FRAMED STRUCTURE BY CENTER LINE AND FACE LINE METHOD, PRECAUTIONS WHILE MARKING LAYOUT ON GROUND . 06 12 **2.2EARTHWORK** EXCAVATION FOR FOUNDATION, TIMBERING AND STRUTTING EARTHWORK FOR EMBANKMENT MATERIAL FOR PLINTH FILLING. TOOLS AND PLANTS USED FOR EXCAVATION AND EARTHWORK. **2.3FOUNDATION** TYPES OF FOUNDATION – OPEN FOUNDATIONS, SHALLOW FOUNDATION, STEPPED FOUNDATION, ISOLATED AND COMBINED COLUMN FOOTING, RAFT FOUNDATION, DEEP FOUNDATION AND PILE FOUNDATION. PUMPING METHOD OF DEWATERING, COFFERDAMS. BEARING CAPACITY OF FOUNDATION SOIL, UNDER REAMED PILE FOUNDATION. |  |  |
| **UNITS-3: CONSTRUCTION OF SUBSTRUCTURE** | 08 | 20 |
| **3.1STONE MASONRY** TERMS USED IN STONE MASONRY – FACING, BACKING, HEARTING, THROUGH STONE, CORNER STONE. UNCOURSED RUBBLE MASONRY, COURSED RUBBLE MASONRY, POINT TO BE OBSERVED IN CONSTRUCTION OF STONE MASONRY, MORTARS FOR STONE MASONRY, TOOLS AND PLANTS USED FOR STONE MASONRY, COL-GROUT MASONRY. 20 24 3.2**BRICK MASONRY** COMMON TERMS USED IN BRICK MASONRY, REQUIREMENTS OF GOOD BRICKWORK, BONDS IN BRICK MASONRY, ENGLISH, FLEMISH, STRETCHER AND HEADER BONDS ONLY. BRICK LAYING ,LINE LEVEL AND PLUMB OF BRICKWORK, STRIKING AND RAKING OF JOINTS, LEAD AND LIFT, PRECAUTIONS IN BRICK MASONRY, TOOLS AND PLANTS USED IN BRICK MASONRY . COMPARISON BETWEEN BRICK AND STONE MASONRY. HOLLOW CONCRETE BLOCK MASONRY, COMPOSITE MASONRY,  CAVITY WALL- PURPOSE AND CONSTRUCTION.  3.3 **DOORS AND WINDOWS** DOORS -COMPONENTS AND CONSTRUCTION OF PANELLED DOORS, BATTENED DOORS, FLUSH DOORS, COLLAPSIBLE DOORS, ROLLING SHUTTERS, REVOLVING DOORS, And GLAZED DOORS. SIZES OF DOOR.  3.4 **STAIRS:**  TERMSUSED,CLASSIFICATION OFSTAIRS, STAIRSOF DIFFERENT MATERIALS, SPECIFICATIONSANDSUITABILITY |  |  |
| **UNIT-4: BUILDING FINISHES** | 08 | 20 |
| 4.1 **FLOORS AND ROOF**S FLOOR FINISHES- SHAHABAD , KOTA, MARBLE, GRANITE ,KADAPPA, CERAMIC TILES ,VITRIFIED , MOSAIC TILES ,CHEQUERRED TILES, GLAZED TILES ,PAVEMENT BLOCKS , CONCRETE FLOORS, TREMIX FLOOR, SKIRTING AND DADO. PROCESS OF LAYING- PROCESS OF LAYING AND CONSTRUCTION, FINISHING AND POLISHING OF FLOORS. ROOFING MATERIALS – AC SHEETS ,G.I. SHEETS, PLASTIC SHEETS, FIBRE SHEETS, MANGALORE TILES ETC. STEEL TRUSSES. R.C.C. SLAB 16 24 4.2 **WALL FINISHES** PLASTERING – NECESSITY OF PLASTERING, SINGLE COAT PLASTER DOUBLE COAT PLASTER , NEERU FINISHING AND POP, SPECIAL PLASTERS STUCCO PLASTER , PLASTER BOARD AND WALL CLADDINGS. PRECAUTION TO BE TAKEN WHILE PLASTERING. DEFECTS IN PLASTER. POINTING – NECESSITY AND PROCEDURE OF POINTING. PAINTING – NECESSITY, SURFACE PREPARATION, METHOD OF APPLICATION, SELECTING SUITABLE PAINTING MATERIAL, WHITE WASH AND COLOUR WASH. |  |  |
| **UNIT 5: BUILDING MAINTENANCE** | 06 | 20 |
| 5.1 **CRACKS**  CAUSES AND TYPES OF CRACKS, IDENTIFICATION AND REPAIR OF CRACKS. GUNITING AND GROUTING, USE OF EPOXY AND CRACK FILLS. 5.2 **SETTLEMENT** SETTLEMENT --CAUSES AND REMEDIAL MEASURES PLINTH PROTECTION – NECESSITY AND MATERIALS USED. 5.3 **DEMOLITION** NECESSITY, METHOD OF DEMOLITION-HAND DEMOLITION, MACHINE DEMOLITION, CONTROLLED BLASTING DEMOLITION, PRECAUTIONS DURING DEMOLITION.  5.4 **REBARING TECHNIQUES** NECESSITY AND EQUIPMENT FOR REBARING TECHNIQUES |  |  |
| **TOTAL** | **36** | **100** |

**Reference:**

**TextBooks:**

1.BuildingConstructionbySushilKumarStandard Publication,Edition19th

1997

1. BuildingConstructionbyB.C.PunmiaLaxmiPublication,Edition10th2009

**Reference Books:**

1.BuildingConstructionbyS.C.Rangawala, CharotarPublication, Edition25th

2007

1. BuildingConstructionbyS.P. AroraandBindraDhanpatRaiPublication

Edition4th1988

3.CivilEngineeringMaterialsbyTechnicalTeachersTraining Institute, ChandigarhTataMcGraw-Hill PublishingCompanyLtd.NewDelhiEdition1st1992

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about materials used in construction,
2. About different types of materials used in building,
3. Different types of door and windows.
4. About different types of method for masonry.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**CONCRETE TECHNOLOGY** | Course Code : **DCE232** |
| Semester : **IV** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Student should take survey of different types of materials used in building construction.

**Course Objectives:**

1. Supervise various concreting operations.
2. Carry out field and laboratory tests on concrete in plastic and hardened stage.
3. Describe different types of concrete.
4. Infer the test results as per relevant I.S. provisions.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** |
| **UNIT-1: INTRODUCTION** | 06 | 20 |
| Definition of Concrete, Advantages of concrete, Cement, composition of cement, types of cement, tests on cement, setting time, fineness, strength of cement.  **WATER**   * Indian Standards for quality of water for use in cement concrete. * Effect of impurities in water on concrete |  |  |
| **UNITS-2: AGGREGASTES** | 08 | 20 |
| Aggregates ,classification, strength of aggregate ,bulking of  sand, sieve analysis, Quarry selection ,Water Quality  Requirements as per IS .S456-2000, Workability: Factors affecting Workability, Measurement of  workability, slump test, compacting factor, Recommended slumpsforplacementsinvariousconditionsasperIS.456-  2000.BleedingofConcrete,WaterCementratio,Shrinkage,Creep,  Durability of Concrete |  |  |
| **UNITS-3: CONCRETE OPERATIONAND TRANSPORTION** | 08 | 20 |
| * Batching   Volume batching ,Weight batching   * Mixing   Hand mixing , Machine mixing   * Transporting of concrete   Mortar pan ,Wheel barrow ,Bucket and rope way  Truck mixer and dumpers ,Belt conveyors ,Chute  Skip and hoist, Pumps and pipeline   * Placing concrete * Compaction of concrete   Hand compaction , Compaction by vibrators   * Curing of concrete   Water curing ,Membrane curing, Steam curing |  |  |
| **UNIT-4:** | 08 | 20 |
| Special types of concrete:  Ready mix concrete, precast concrete, vacuum concrete, lightweight concrete, high performance concrete.  Admixtures as per IS 456-2000:  Chemical Admixtures such as Plasticizers, Retarders, Accelerators, Water Reducing admixtures. |  |  |
| **UNIT 5:** | 06 | 20 |
| Mixing and Compaction of concrete:  Hand Mixing and Machine Mixing, Hand Compaction and  Machine Compaction.  Curing of Concrete:  Objectives and methods of Curing; Duration of curing and removal of formwork.  Defects in Concrete:  Identification and methods ofrepairs. |  |  |
| **TOTAL** | **36** | **100** |

**Reference:**

**Text Books**

Properties of Concrete by A.M. Neville Publisher John Wiley &Sons 4th edition 1996

**Reference Books**

1. Cement Concrete Mix Design Principles and practice by M. Y. Sabnis,GMS Publications edition2005

2. Concrete Technology by M.S.Shetty, S.ChandPublication edition200

**Course outcomes:**

***On successful completion of the course, the student will be able to:***

1. Determine the properties of concrete ingredients i.e. cement. sand. coarse aggregate by conducting different tests.
2. Use different types of cement as per their properties for different fields applications.
3. Design economic mix proportion for different exposure conditions and intended purposes.
4. Use different types of admixtures to improve the properties of concrete for different field applications.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |
|  |  | |  |  |  |  |  |

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| --- | --- |
| Course Title: C**ONSUMER AFFAIRS** | Course Code : |
| Semester : **III** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **2 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **24** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

#### Duration: 3 hrs. Max Marks: 100 Total Lectures: 24

**Objective**: This paper seeks to familiarize the students with their rights and responsibilities as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights. It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards. The student should be able to comprehend the business firms’ interface with consumers and the consumer related regulatory and business environment.

#### Unit 1: Conceptual Framework 5 Lectures

**Consumer and Markets**: Concept of Consumer, Nature of markets: Liberalization and Globalization of markets with special reference to Indian Consumer Markets, E-Commerce with reference to Indian Market, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP), Fair Price, GST, labeling and packaging along with relevant laws, Legal Metrology.

**Experiencing and Voicing Dissatisfaction**: Consumer buying process, Consumer Satisfaction/dissatisfaction-Grievances-complaint, Consumer Complaining Behaviour: Alternatives available to Dissatisfied Consumers; Complaint Handling Process: ISO 10000 suite

**Unit 2: The Consumer Protection Law in India 5 Lectures**

**Objectives and Basic Concepts**: Consumer rights and UN Guidelines on consumer protection, Consumer goods, defect in goods, spurious goods and services, service, deficiency in service, unfair trade practice, restrictive trade practice.

**Organizational set-up under the Consumer Protection Act**: Advisory Bodies: Consumer Protection Councils at the Central, State and District Levels; Adjudicatory Bodies: District Forums, State Commissions, National Commission: Their Composition, Powers, and Jurisdiction (Pecuniary and Territorial), Role of Supreme Court under the CPA with important case law.

**Unit 3: Grievance Redressal Mechanism under the Indian Consumer Protection Law 5 Lectures**

Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy available; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.

**Leading Cases decided under Consumer Protection law by Supreme Court/National Commission**: Medical Negligence; Banking; Insurance; Housing & Real Estate; Electricity and Telecom Services; Education; Defective Products; Unfair Trade Practices.

#### Unit 4: Role of Industry Regulators in Consumer Protection 5 lectures

1. Banking: RBI and Banking Ombudsman
2. Insurance: IRDA and Insurance Ombudsman
3. Telecommunication: TRAI
4. Food Products: FSSAI
5. Electricity Supply: Electricity Regulatory Commission
6. Real Estate Regulatory Authority

#### Unit 5: Contemporary Issues in Consumer Affairs 4 Lectures

**Consumer Movement in India:** Evolution of Consumer Movement in India, Formation of

consumer organizations and their role in consumer protection, Misleading Advertisements and

sustainable consumption, National Consumer Helpline, Comparative Product testing,

Sustainable consumption and energy ratings.

**Quality and Standardization**: Voluntary and Mandatory standards; Role of BIS, Indian

Standards Mark (ISI), Ag-mark, Hallmarking, Licensing and Surveillance; Role of International

Standards: ISO an Overview

**Suggested Readings**:

1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. (2007) *Consumer*

*Affairs,* Universities Press.

2. Choudhary, Ram Naresh Prasad (2005). *Consumer Protection Law Provisions and*

*Procedure,* Deep and Deep Publications Pvt Ltd.

3. G. Ganesan and M. Sumathy. (2012). *Globalisation and Consumerism: Issues*

*and Challenges*, Regal Publications

4. Suresh Misra and Sapna Chadah (2012). Consumer Protection in India: Issues

and Concerns, IIPA, New Delhi

5. Rajyalaxmi Rao (2012), *Consumer is King,* Universal Law Publishing Company

6. Girimaji, Pushpa (2002). *Consumer Right for Everyone* Penguin Books.

7. E-books :- www.consumereducation.in

8. Empowering Consumers e-book,

9. ebook, www.consumeraffairs.nic.in

10. *The Consumer Protection Act, 1986 and its later versions.* [www.bis.org](http://www.bis.org)

**Articles**

1. Misra Suresh, (Aug 2017) “Is the Indian Consumer Protected? One India One

People.

2. Raman Mittal, Sonkar Sumit and Parineet Kaur (2016) Regulating Unfair Trade

Practices: An Analysis of the Past and Present Indian Legislative Models, Journal of

Consumer Policy.

3. Chakravarthy, S. (2014). MRTP Act metamorphoses into Competition Act. CUTS

Institute for Regulation and Competition position paper. Available online at

www.cuts-international.org/doc01.doc.

4. Kapoor Sheetal (2013) “Banking and the Consumer” Akademos (ISSN 2231-0584)

5. Bhatt K. N., Misra Suresh and Chadah Sapna (2010). Consumer, Consumerism and

Consumer Protection, Abhijeet Publications.

6. Kapoor Sheetal (2010) “Advertising-An Essential Part of Consumer’s Life-Its Legal

and Ethical Aspects”, Consumer Protection and Trade Practices Journal*,* October

2010.

7. Verma, D.P.S. (2002). Regulating Misleading Advertisements, Legal Provisions and

Institutional Framework. Vikalpa. Vol. 26. No. 2. pp. 51-57.

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| --- | --- |
| Course Title:**SURVEYING-I** | Course Code : **DCE233** |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

1. Student should have skill in reading, drawing and sketching.
2. Students should know the basic principles, requirements and purpose of surveying.

**Course Objectives:**

1. Use survey instruments like the theodolite and plane table.
2. Record the data in field book and plot the collected data.
3. Find out horizontal and vertical distances with a tachometer.
4. Set out simple curve using Theodolite.
5. Apply principles of surveying and levelling for Civil Engineering works.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** |
| **UNIT-1: TYPES OF SURVEY** | 6 | 20 |
| Definition, objects of surveying, principle of surveying. Uses of survey, classification of surveying.  Primary – plain , geodetic,  Secondary – Based on instruments, method, object, nature of field. |  |  |
| **UNITS-2: CHAIN & CROSS STAFF SURVEY** | 08 | 20 |
| **2.1** Principle of chain survey .study and use of instruments for linear measurement – chain, tape, ranging rod , arrows , pegs  , cross staff, optical square, line ranger-  **2.2** Ranging – Direct and Indirect Ranging Chaining – plain & sloping grounds Chain Triangulation – Survey Station and their Selections,  Survey lines, check lines, tie lines, base line. Taking offsets. Short and long offset degree of offset.  Obstacles in chaining.  **2.3**chain & cross staff survey for finding area of a field ( numerical problems)  Errors in chain surveying & applying corrections for chain & tape. Conventional signs related to survey. | 02  03  03 |  |
| **UNITS-3: COMPASS SURVEY** | 08 | 20 |
| **3.1** Principle of compass survey.ng  Bearing of lines – meridian – true, magnetic, and arbitrary.  Bearing – for bearing , back bearing, whole bearing, quadrantal bearing system and reduced bearing , conversion of bearings,  **3.2** Prismatic compass- component, construction and uses.  **3.3** Local attraction , causes, precaution to be taken to avoid and correction of bearings affected due to local attraction, calculation of included angles,  **3.4** Traversing- open traverse, closed traverse, check on open and closed traverse. Graphical adjustment for closing error.  **3.5** Numerical problems on calculation of bearings, angles and local attraction. | 03  03  02 |  |
| **UNIT-4: LEVELLING** | 08 | 20 |
| 4.1 Definitions – Level surface, Level line, Horizontal line, Vertical line, Datum surface, Reduced level , bench mark and its types. . 4.2 Dumpy level –components, construction, line of sight, line of collimation, bubble tube axis, levelling staff – telescopic and folding type .foresight, back sight, intermediate sight, change point, height of collimation . Fundamental axes and their relationship 4.3 Recording in level book. Temporary adjustments of dumpy level. 4.4 method of reduction of levels – height of instrument method and rise and fall method. Arithmetical checks, numerical problems, computation of missing readings. 4.5 classifications of levelling - simple, differential, profile, cross sectional, fly and check levelling. 4.6 study and use of tilting level & auto level. 4.7 sources and errors in levelling, precautions and difficulties faced in levelling. | 02  03  03 |  |
| **UNIT 5: PLANE TABLE SURVEYING** | 06 | 20 |
| **Plane Table Surveying :** 5.1 Description And Uses Of Plane Table And Accessories, Advantages Of Plane Table Surveying,  5.2 Temporary Adjustment Of Plane Table Surveying- Centering, Levelling And Orientation Of Plane Table. 5.3 Methods Of Palne Tabling- Radiation, Intersections, Traversing, Resection, Two Point Problems And Three Point Problem  5.4 Errors In Plane Tabling. | 02  04 |  |
| **TOTAL** | **36** | **100** |

**Reference:**

1. Surveying-I B. C. Punmia  
2. Surveying G. C. Singh  
3. Surveying- IS.B. Kanetkar  
4. Surveying K. R. Arora

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about surveying
2. About different types of instruments used in surveying
3. Use of chain, tape, compass, cross staff, theodolite,
4. About different types of method by using compass, thedolite, plane table etc.

**Mapping Course Outcomes with Program Outcomes:**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 25 |
| 3 | Analysis and Evaluation | 40 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examinatio

|  |  |
| --- | --- |
| Course Title:**Hydraulic And Hydraulic Machine** | Course Code : **DCE234** |
| Semester : **IV** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

1. Student should know the basic properties of fluid.

**Course Objectives:**

1. Evaluate the Physical properties of fluid.
2. Determine Difference in behaviour of fluid with respect to solids.
3. Enumerate Concept of pressure head and its unit.
4. Concept of flow.
5. Flow Of Liquid Through Pipes and Hydraulics machine

**Course Content:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Topic and Contents** | | **Hours** | **Marks** | |
| **UNIT-1: Properties of fluids** | | 06 | 20 | |
| 1.1 Definition of fluid, Difference in behaviour of fluid with respect to solids. Introduction to fluid mechanics and hydraulics, Branches of hydraulics- Hydrostatics and hydrodynamics, Importance of Hydraulics with respect to Irrigation and Environmental engineering. 1.2 Physical properties of fluid Mass density, Weight density, Specific volume, Specific gravity, Surface tension and capillarity, Compressibility, Viscosity, Newton’s law of viscosity – Dynamic and kinematics viscosity. Ideal and Real liquids. | |  |  | |
| **UNITS-2: HYDROSTATIC PRESSURE** | | 08 | 20 | |
| 2.1 Free liquid surface, Definition of pressure and its SI unit Hydrostatic pressure at point, Pascal’s law Variation of pressure in horizontal and vertical direction in static liquid Pressure diagram. 2.2 Total hydrostatic pressure and center of pressure, Determination of total pressure &center of pressure on vertical & inclined faces of dams, sluice gates, sides and bottom of water tanks, Determination of total hydrostatics pressure &center of pressure on sides and bottom of tank containing two liquids. Determination of net hydrostatic pressure andcenter of pressure on vertical surface in contact with liquid on either side. Numerical Problems. | |  |  | |
| **UNITS-3: Measurement Of Liquid Pressure In Pipes** | | 08 | 20 | |
| Concept of pressure head and its unit, Conversion of pressure head of one liquid in to other devices for pressure measurements in pipes – Piezometer, U-tube manometer, Bourdon’s pressure gauge. Principle of working and limitations. Measurement of pressure difference using differential manometer – U-tube differential manometer and inverted U-tube differential manometer. Numerical Problems. | |  |  | |
| **UNIT-4: Fundamentals Of Fluid Flow** | 06 | | | 20 |
| 4.1 Concept of flow, Gravity flow and pressure flow. Types of flow – steady and Unsteady, uniform and non-uniform , Laminar and turbulent. Various combinations of flow with practical examples, Reynolds number and its application, Stream line and equipotential line. Flow net and its uses 4.2 Discharge and its units Continuity equation for fluid flow. Datum head, pressure head, velocity head and total head, Bernoulli’s theorem, Loss of head and modified Bernoulli’s theorem, Impulse momentum theorem Numerical Problems. |  | | |  |
| **UNIT 5: Flow Of Liquid Through Pipes and Hydraulics machine** | 08 | | | 20 |
| 5.1 Loss of head due to friction, Darcy-Weisbach Equation Friction factor, relative roughness. Moody’s diagram and its use. Common range of friction factor for different types of pipe material. 5.2 Minor loss of head in pipe flow- loss of head due to sudden Contraction, sudden expansion, gradual contraction & expansion, at entrance and exit of pipe in various pipe fittings. Pipes in series and parallel Equivalent pipe – Dupuit’s equation 5.3 Hydraulic gradient line and Energy gradient line, Siphon pipe. Water hammer in pipes – cause effects and remedial measures Use of Nomograms for design of water distribution system. Numerical.  5.4 Pumps - Definition and types. Suction head, delivery head, static head and manometric head. Centrifugal pump - component parts and their functions, principle of working, priming. Reciprocating pump - component parts and working. Submersible pump and Jet pump. Selection and choice of pump. Computation of power required for pumps. Turbines - Definition and types. |  | | |  |
| **TOTAL** | **36** | | | **100** |

**Reference:**

1. Fluid Mechanics-F. M. White, McGraw-Hill

2. Fluid Mechanics and Hydraulic Machines-R. K. Bansal

**3** Fluid Mechanics and Hydraulic Machines-Modi &Sethi.

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Compute the total hydro static pressure &center of pressure.
2. Describe the principle of pressure measuring devices.
3. Identify the concept of fluid flow.
4. Compute the loss of water flowing through pipes.
5. Design most economical channel section
6. Describe working of the velocity measuring devices.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**SURVEYING-II** | Course Code : **DCE236** |
| Semester : **IV** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

1. Student should have skill in readin, drawing and sketching.
2. Students should know the basic principles, requirements and purpose of surveying.

**Course Objectives:**

1. Analyse the Components of Transit Theodolite and Their functions.
2. Enumerate Traverse Computation.
3. Analyse the Principle of E.D.M

**Course Content:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Topic and Contents** | | **Hours** | **Marks** | |
| **UNIT-1: Theodolite Survey** | | 08 | 20 | |
| 1.1 Components of Transit Theodolite and Their functions. Technical terms used. Temporary adjustments of Transit Theodolite. Swinging the telescope, Transiting, Changing the face. 1.2 Measurement of Horizontal angle, method of Repetition, errors eliminated by method of repetition. 1.3 Measurement of Deflection angle. 1.4 Measurement of Vertical angle. 1.5 Measurement of magnetic bearing of a line by Theodolite. 1.6 Prolonging a Straight line. 1.7 Sources of errors in Theodolite Surveying. 1.8 Permanent adjustment of transit Theodolite (only relationship of different axes of Theodolite.). 1.9 Traversing with Theodolite – Method of included angles, locating details, checks in closed traverse, Calculation of bearings from angles. 1.10 Traverse Computation - Latitude, Departure Consecutive Co-ordinates error of Closure, Distribution of a angular error, balancing the traverse by Bowditch rule and Transit Rule, Gale’s traverse table .simple problems on above topic. | |  |  | |
| **UNITS-2: Tachometric Survey** | | 06 | 20 | |
| 2.1 Principle of Tachometry. 2.2 Essential requirements of Tacheorneter. 2.3 Use of Theodolite as a Tacheometer with staff held in vertical and fixed hair method (No derivation). 2.4 Determination of tachometric constants, simple numerical problems on above topics. | |  |  | |
| **UNITS-3: Curves** | | 06 | 20 | |
| 3.1 Types of curves used in road and railway alignments. Notations of simple circular curve. Designation of curve by radius and degree of curves.  3.2 Method of Setting out curve by offset from Long chord method and Rankine’s method of deflection angles. Simple Numerical problems on above topics.  Transition Curves- Ideal transition curve, Types of transition curve | |  |  | |
| **UNIT-4: Advanced Survey Equipments** | 08 | | | 20 |
| 4.1 Construction and use of one second Micro Optic Theodolite, Electronic Digital Theodolite. Features of Electronic Theodolite  4.2 Principle of E.D.M, Components of E.D.M and their functions, use of E.D.M.  4.3 Total station  4.4 Electronic distance measuring instruments  4.5 Global Positioning system |  | | |  |
| **UNIT 5: Aerial Survey and Remote sensing** | 08 | | | 20 |
| 5.1 Aerial Survey Introductions, definition, Aerial photograph.  5.2 Remote Sensing – Introduction, Electro-Magnetic Energy , Remote sensing system- Passive system , Active system. Applications – mineral, land use / Land cover, Natural Hazards and Environmental engineering system. |  | | |  |
| **TOTAL** | **36** | | | **100** |

**Reference:**

1. Surveying and Levelling Vol. II  
   **Dr. B. C. PunmiyaLaxmi Publication**
2. Surveying and  
   Levelling **N NBasak Tata Mc Graw-Hill**
3. Surveying and Levelling Part I and II  
   **T .P. Kanetkar& S. V,**  
   **Kulkarni** PUNE VIDHYARTHI GRIHA  
   **Prakashan**
4. Surveying and Levelling Vol. I and II  
   **S. K. Duggal** TATA MC GRAW-HILL

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Use survey instruments like the theodolite and plane table.
2. Record the data in field book and plot the collected data.
3. Find out horizontal and vertical distances with a tachometer
4. Set out simple curve using Theodolite.
5. Use of Modern Survey equipments - Micro Optic Theodolite and EDM.
6. Apply principles of surveying and levelling for Civil Engineering works.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title: SWATCH BHARAT | Course Code : |
| Semester : **IV** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **2 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **24** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

UNIT-1 Introduction to Health, Hygiene, and Sanitation ; The Need for Health, Hygiene, and Sanitation Education ; Related International projects on Health and Hygiene; Overview of the Swachh Bharat ; Qualities of Healthy Living.

UNIT-2 Hygiene - Understanding of Hygiene; Desired Definition of Hygiene; The Hygiene Practices of the different categories of family in India; Role of Family, Institutions and Corporations and government in Developing Hygiene consciousness.

UNIT -3 Sanitation ; Understanding the importance of sanitation; The facilities developed for sanitation; Means adopted to promote the use of Sanitation Facilities; Sanitation Facilities provided by government under Swachh Bharat Abhiyaan.

UNIT -4 Water Storage Methods; Water Contamination ; Prevention of Water Contamination ; The Health Risks, especially due to Water Borne Diseases; Water Purification ; Importance of Safe water use; Government’s role and actions taken for awareness generation for consumption of pure water and preventing contamination of Water.

UNIT -5 Waste Management – Introduction, importance and need; Action Plans for Healthy Living introduced under Swachh Bharat Abhiyaan; Means adopted for Waste Management under Swachh Bharat Abhiyaan.

|  |  |
| --- | --- |
| Course Title:**ENVIEROMENTAL ENGINEERING** | Course Code : **DCE238** |
| Semester : **IV** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Knowledge of Basic of environment science and chemistry at Sec. and Sr. Sec. Level.

**Course Objectives:**

1. Identify various components of water supply engineering.
2. Enumerate Treatment process of waste water.
3. Brief knowledge of Collection systems of waste water.
4. Define Supply of water as per demand.

**Course Content:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** | |
| **UNIT-1: Estimate of Supply:** | 08 | 20 | |
| Demand for various purposes, factors affecting demand, variation in rate of demand, Basic concepts of environmental Chemistry. Quality of water: Drinking water standards, characterization of water, physical, chemical and bacteriological. Numericals on *p*H, alkalinity, acidity, hardness, solids. Sample collection method. Forecasting of population by various methods. Source of Water Supply: Surface and Sub-sources. Intake works. |  |  | |
| **UNITS-2: GLOBAL ENVIRONMENTAL ISSUSE** | 08 | 20 | |
| Deforestation, Land sliding, Recharging and drying of water resources, Green house effects ,Ozone depletion , Acid rain ,Global warming  **Environment Laws :**  Water Pollution Prevention and Control Act , Air Pollution Prevention and Control Act |  |  | |
| **UNITS-3: WASTE WATER ENGINEERING** | 06 | 20 | |
| Classification of wastewater, Waste-water Characteristics (Physical, Chemical) Microbiology of sewage, BOD Kinetics, BOD determination in laboratory, wastewater effluent standards.  **Waste Water Treatment**  Primary Treatment: Screening, Grit removal, Grease trap, sedimentation. Secondary Treatment: Activated sludge process, trickling filter, stabilization pond. Anaerobic wastewater treatment. Septic tank-working principal design. Method of sewage disposal. Sludge sources-digestion and disposal. |  |  | |
| **UNIT-4: Collection Systems**: | 06 | | 20 |
| Separate, partially separate and combined. Types of sewers and drains. Sewer appurtenances Manholes, street inlets, catch basins, sand, grease and oil traps. Maintenance of sewers, problems, in Sewer Maintenances, Sewer Clearing Equipment and Devices. |  | |  |
| **UNIT 5: POLLUTION** | 08 | | 20 |
| **Water Pollution**:  **Fresh water**  Causes of water pollution in surface and ground water, Water quality standards, Remedial measures to control fresh water pollution  **Waste water**  Adverse effects of domestic and industrial effluents, Standards for industrial effluents, Remedial measures to control industrial pollution  **Air Pollution** :  Definition, Sources, Harmful effects on living and non-living beings , Permissible limits as per Indian standard, Remedial measures  **Noise Pollution:** Introduction, Sources of noise, Decibel scale, Adverse effect on human beings and environment. Control measures  **Land Pollution:**Introduction, Sources of land pollution, Effects of land pollution, Control measures, Soil conservation |  | |  |
| **TOTAL** | **36** | | **100** |

**Reference:**

1. Peavy, H.S., 1985, Environmental Engineering, mcgraw-Hill Book  
Company.  
2. K.N.Duggal, 2012, Elements of Environmental Engineering, S. Chand,  
New Delhi.  
3. D. Srinivasan, 2009, Environmental Engineering, PHI, New Delhi.  
4. Wark& Warner, Air Pollution- origin and control, Harper and Collins.  
5. Tchobanoglous, G., H. Theisen and S. Vigil, 1993, Integrated Solid  
Waste Management, mcgraw-Hill Inc. Singapore.

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about waste water.
2. About different types of supply of water.
3. Different types of collection of waste water.
4. About different types of treatment process for waste water.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 50 |
| 2 | Applying the knowledge acquired from the course | 25 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**HYDRAULICS AND HYDRAULICS MACHINE LAB** | Course Code :**DCE272** |
| Semester : **IV** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic Of hydraulics and hydraulic machine and their properties.

**Course Objectives:**

1. This course supposed to give the knowledge of flow of fluid.
2. Analyzing different experiments for hydraulics.
3. Enumerate rate of discharge of venturimeter.
4. Analyzing the model of centrifugal pump,

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Measurements of pressure and pressure head by Piezometer, U-tube manometer |
| 02. | Verification of Bernoulli’s theorem |
| 03. | Reynolds experiment to study types of flow. |
| 04. | Determination of Darcy’s friction factor for a given pipe |
| 05. | Determination of Minor losses in pipes |
| 06. | Demonstration of Hydraulic jump |
| 07. | Determination of coefficient of discharge for a given Venturimeter. |
| 08. | Demonstration and use of Pitot tube and current meter |
| 09. | Study & use of water meter. |
| 10. | Study of a model of centrifugal and reciprocating pump. |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. The student will be able to measure pressure and pressure head from different monometers.
2. The student will be able to verify Bernoulli’s equation with experiments.
3. The student will be able to determine minor and major looses from pipes.
4. The student will be able to know different hydraulic machine with their working process.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 40 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**MATERIAL TESTING LAB** | Course Code :**DCE273** |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basics of different building materials and their properties,

**Course Objectives:**

1. Basic knowledge of various types of building materials.
2. Analyze different tests on bricks.
3. Analyze different test over cement as a fine aggregate.
4. Properties of sand.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Identification of various types of stones and their applications |
| 02. | Identification of various types of bricks and clay products |
| 03. | Field tests on bricks |
| 04. | Water absorption test on bricks |
| 05. | Field tests of cement |
| 06. | Fineness of cement |
| 07. | Initial and final setting times of cement |
| 08. | Bulking of Sand |
| 09. | Fineness Modulus of coarse aggregate by sieve analysis |
| 10. | Fineness Modulus of fine aggregate by sieve analysis |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Know about different building materials.
2. Prepare different test on bricks.
3. Able to check consistency of cement.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 25 |
| 3 | Analysis and Evaluation | 45 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**SURVEY LAB – II** | Course Code :**DCE274** |
| Semester : **IV** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic Of civil engineering surveying and different equipments.

**Course Objectives:**

1. This course supposed to give the knowledge of total station..
2. Study of E.D.M. for knowing its components.
3. Analyse the Concept of theodolite.
4. Evaluate the Basic concept of plane tablening.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Using accessories carry out temporary adjustments of plane table. Locating details by method of radiation |
| 02. | Locating details with plane table by method of intersection. |
| 03. | Understanding the components of Theodolite and their functions, reading the vernier and temporary adjustments of theodolite. |
| 04. | Measurement of Horizontal angle by transit theodolite |
| 05. | To find Reduced levels and horizontal distances using theodolite as a Tacheomete |
| 06. | Measurement of deflection angle by taking open traverse of 4 –5 sides |
| 07. | To find Reduced levels and horizontal distances using theodolite as a Tacheometer |
| 08. | Study of E.D.M. for knowing its components. |
| 09. | Use of EDM for finding horizontal and vertical distances and reduced levels. |
| 10. | Determine the geographical parameters by total station. |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. The course content gives full knowledge to learn how to used equipments of surveying.
2. Find the area of any field or building by using theodolite.
3. To find elevation from different points using thedolite.
4. How to used total station.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 40 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**BUILDING DRAWING LAB –I** | Course Code :**DCE275** |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic Drawing at Sec. and Sr. Sec. Level

**Course Objectives:**

1. Basic knowledge of civil engineering drawing,
2. About different type of plan of any building.
3. Know how to draw a plan for different portion of the building.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Conventional sign and symbols used in civil engineering drawing |
| 02. | Introduction of building plan |
| 03. | Drawing of walls ,brick and Stone masonry, partition wall, cavity wall and cross section of external wall |
| 04. | Pointing, Arches, Lintels and Floors |
| 05. | Doors and Windows |
| 06. | Stairs, cross section of Dog legged stairs |
| 07. | Roofs: Flat and Inclined (Steel) |
| 08. | Foundations for Masonry Structures and Framed Structures, Provision of Damp ProofCourse |
| 09. | Development of Front Elevation and Sectional Elevation from a given plan |
| 10. | Development of Plan, Front Elevation and Sectional Elevation from line diagram |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to draw plan for any type of building
2. Student will be able to draw plan of different building components.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**BUILDING DRAWING –II & CAD LAB** | Course Code :**DCE276** |
| Semester : **IV** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic Drawing at Sec. and Sr. Sec. Level

**Course Objectives:**

1. Basic knowledge of civil engineering drawing,
2. About different type of plan of any building.
3. Know how to draw a plan for different portion of the building.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Working Drawing of residential/ Public building according to local building bye laws (at least Two storied) |
| 02. | Working Drawing of residential/ Public building according to local building bye laws (at least three storied) |
| 03. | Structural drawing & detailing of the columns |
| 04. | Structural drawing & detailing of the columns footings, |
| 05. | Structural drawing & detailing of the stair cases a complete set of segmental drawing for a residential building. |
| 06. | Detail drawing of RCC deck Types Bridge. |
| 07. | Introduction to CAD |
| 08. | Introduction to command of CAD |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to draw plan for any type of building
2. Student will be able to draw plan of different building components.
3. Student will be able to draw plan using CAD.
4. Student will able to draw plan of component of structures.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**SURVEY LAB – I** | Course Code :**DCE277** |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic Of civil engineering surveying and different equipments.

**Course Objectives:**

1. This course supposed to give the knowledge of basic civil engineering equipments.
2. Analyse the Applications surveying equipments.
3. Analyse the Concept of chain, tape, and plumb bob.
4. Evaluate the Basic concept of plane tablening.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | To study various survey equipments. |
| 02. | To study various minor instruments. |
| 03. | Ranging and fixing the survey system. |
| 04. | Plotting of land survey - chain and cross staff surveying calculation of areas. |
| 05. | Plotting building block by the use of cross staff. |
| 06. | Plotting of perpendicular and oblique offsets |
| 07. | Study of prismatic compass and to determine fore and back bearing of survey line. |
| 08. | To determine the elevation of given points with reference to the bench mark. |
| 09. | To find the difference in elevation between two points |
| 10. | To study planimeter and to fix constant of the palnimeter. |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. The course content gives full knowledge to learn how to used equipments of surveying.
2. Find the area of any field or building by using chain and cross staff.
3. To find elevation from different points
4. To find vertical and horizontal distance using chain , tape etc.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 40 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**ENVIRONMENTAL ENGINEERING LAB** | Course Code :**DCE278** |
| Semester : **IV** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic of environment science at Sec. and Sr. Sec. Level and chemical reaction.

**Course Objectives:**

1. Basic knowledge of c.
2. About different type of plan of any building.
3. Know how to draw a plan for different portion of the building.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Determination of pH using a digital pH Meter. |
| 02. | To determine total acidity in water and wastewater samples. |
| 03. | To determine total phenolphthalein and methyl orange alkalinity in water and waste water samples. |
| 04. | To determine total and calcium hardness in water samples. |
| 05. | To determine chloride content in water and waste water samples. |
| 06. | To evaluate percentage available chlorine in bleaching powder. |
| 07. | To determine dissolved oxygen in water and wastewater samples. |
| 08. | To determine Biochemical oxygen demand (BOD) of wastewater samples. |
| 09. | To determine Chemical oxygen demand (COD) of wastewater samples. |
| 10. | To determine total solids, total dissolved solids (TDS), total suspended solids (TSS) and total volatile solids in water and wastewater samples. |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to evaluate percentage available chlorine in bleaching powder.
2. Student will be able to evaluate total and calcium hardness in water samples.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 40 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 30 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**BUILDING CONSTRUCTION LAB** | Course Code :**DCE279** |
| Semester : **III** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

1. Student should be able to read the building plans.
2. Student should be able to think over the construction problems and their remedies.
3. Student should know the basic properties of material being used in the construction of the building.

**Course Objectives:**

1. Identify various components of buildings and their functions.
2. Check line, level and plumb of various construction activities.
3. Prepare checklist of operations for supervision of various construction activities.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Preparing foundation plan and marking on ground layout of load bearing structure by face line method from the given plan of the building. |
| 02. | Preparing foundations plan and marking on ground layout of framed structure by face line method from the given plan of the building. |
| 03. | Checking and transferring line and level of plinth, sill, lintel, flooring, slab level of a building and writing report of the process. |
| 04. | Checking verticality (plumb line) of formwork for column, beam and wall at construction site and writing report of the process. |
| 05. | Laying and constructing the process of construction of brickwork and report writing of the process. |
| 06. | Observing the process of painting in residential / public building and writing a report with reference to process and type of paint selected |
| 07. | Observing and writing report of the process of plastering. |
| 08. | Observing and writing report of the process of pointing. |
| 09 | Observing and writing report of the process of water proofing of terrace or basement. |
| 10 | Observing the models, specimen of building materials kept in the model room for few building items and writing a report for any five models/materials. |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Mark layout of building on ground.
2. Know the procedure for execution of various constructions activities.
3. Identify & suggest rectification the various defects in civil engineering works.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**CAD LAB** | Course Code :**DCE280** |
| Semester : **IV** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of basis knowledge of computer at sec. and sr. sec. level.

**Course Objectives:**

1. Building plan drawn with the help of computer.
2. Analyze command of CAD.
3. Discussed 3D functions.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Starting with ACAD |
| 02. | Layout and sketching |
| 03. | Drawing environment |
| 04. | Elements of drawing |
| 05. | Draw commands |
| 06. | 3D functions |
| 07. | Starting the drawing |
| 08 | Drawing sheet layout -1 |
| 09 | Drawing sheet layout -2 |
| 10 | Figures using acad |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able draw a plan with the help of CAD.
2. Brief knowledge of CAD commands.
3. Brief knowledge of 3D functions.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |

S: Strong relationship M: Moderate relationship

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| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**CONCRETE TECHNOLOGY LAB** | Course Code :**DCE282** |
| Semester : **IV** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of cement, aggregates, basic of concrete

**Course Objectives:**

1. Basic knowledge of civil engineering material.
2. About different type of test on cement.
3. About different test on aggregates.
4. Enumerate concrete mixing.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Determination of specific gravity of cement. |
| 02. | Determination of consistency of cement |
| 03. | Determination of soundness of cement |
| 04. | Determination of specific gravity and water absorption of aggregates |
| 05. | Determination of flakiness index and elongation index of aggregates |
| 06. | Determination of fineness modules and grain size distribution |
| 07. | Test for workability using slump test |
| 08. | Test for workability using compaction factor test |
| 09. | Determination of strength of cement concrete. |
| 10. | Mix Design of M-20 by IS code method (IS10262- 1982) |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to find different properties of cement by test.
2. Student will be able to know different properties of aggregates by test.
3. How to prepare concrete.
4. What to do for mix design.
5. Find out workability of coarse aggregate and fine aggregate.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 40 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 30 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**TRANSPORTION ENGINEERING** | Course Code : **DCE331** |
| Semester : **V** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Knowledge of Basic of different way of transportation and traffic problem at Sec. and Sr. Sec. Level.

**Course Objectives:**

1. Identify various components of buildings and their functions.

**Course Content:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** | |
| **UNIT-1: INTRODUCTION** | 08 | 20 | |
| **HISTORY AND GEOMETRIC DESIGN OF HIGHWAYS:** A brief historical review of how highway construction methodology evolved. Highway development in India, Road Development Plans, IRC classification of urban and rural roads, Expressways, Cross section elements: Right of way, Carriage way, Camber, Kerbs, Shoulders and Footpaths, Highway cross-sections **HIGHWAY GEOMETRIC DESIGN:** Sight distance, Superelevation, Horizontal alignment design, Types of horizontal curves, Vertical Alignment Design, Types of vertical curves. |  |  | |
| **UNITS-2: TRAFFIC ENGINEERING** | 08 | 20 | |
| Traffic characteristics, Traffic studies, Traffic volume studies, Speed studies, Origin and destination study, Traffic flow characteristics, Traffic capacity, Traffic Density, Space and time Headways, Accident studies, Planning and design of intersections, Traffic control devices.Scope of traffic engineering, Causes and precaution of road accidents |  |  | |
| **UNITS-3: HIGHWAY MATERIALS AND CONSTRUCTION** | 06 | 20 | |
| Desirable Properties of subgrade soil, Stone aggregates and Bituminous Materials, Tests on stone aggregates (Crushing, Abrasion and Impact Test for aggregates), Tests on bituminous materials (Penetration, Ductility, Viscosity, Binder content and Softening point Tests), **HIGHWAY CONSTRUCTION:** Water bound Macadam, Bituminous and Concrete roads Construction of Joints. Types of project financing agreements (BOT and BLT Methods)  **Highway Maintenance :**  Common types of road failures, Routine maintenance |  |  | |
| **UNIT-4: RAILWAY ENGINEERING:** | 06 | | 20 |
| Types of railways (Monorail, hanging rail, etc.), Rail gauges, Creep of rail, Wear of rail, Rail fixtures, Rail fastenings, Railway sleepers, Points and crossings, Laying of rail tracks, Stations and Yards.  Function of rails, Requirement of rails, Failures of rails |  | |  |
| **UNIT 5: POINT AND CROSSING** | 08 | | 20 |
| Necessity and details of arrangement, Sketch of a turnout, Functions of different parts and components, Different types of point and crossing Turnout, crossover, scissors, diamond crossingwith slips, double junctions, gathering lines, Turn tables and triangle, Yards |  | |  |
| **TOTAL** | **36** | | **100** |

**Reference:**

**Text Books**  
1. Khanna, S. K. and Justo, C.E.G. “**Highway Engineering**”, Nem Chand and  
Bros, Roorkee, 8th edition, 2011  
2. Khanna, S. K and Arora, M.G & Jain, S. S, “**Airport Planning and Design**”,  
Nem Chand and Bros, Roorkee, 2001  
**Reference Books**  
1. Kadiyali, L. R., “**Principles and Practice of Highway Engineering**”, Khanna  
Publishers Ltd. New Delhi, 2000  
2. Sehgal, S.B and Bhanot, B. L, “**Highway and Airport Engineering**”, S.  
Chand and Company Ltd. New Delhi,1978  
3. VenkatappaRao, G., “**Principles of Transportation and Highway**  
**Engineering**”, Tata McGraw Hill Publishing Co. Ltd. New Delhi, 2000

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about transportation engineering ,
2. About different types of design used in transportation ,
3. Different types of highway materials and their construction.
4. About different points related to railway engineering.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title: **ENVIRONMENTAL STUDIES** | Course Code : **ES101/102** |
| Semester : **V** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **2 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

1 **Man & Environment**:

Definition of environment & its various components, Ecosystem concepts. Dependence of Man on nature, human population growth & its impacts on environment, Environment & human health. Environmental concerns including climate change, Global warming, Acid Rain, Ozone layer Depletion Ozone depleting substances, environmental ethics, traditional ways of utilizing various components of environment.

**2Natural Resources**:

Forest resources, Dams & their effects on forests & tribal people. Water resources- floods, droughts and conflicts over water resources. Mineral Resources Petroleum, Coal use of various minerals for Human welfare, environmental effects of mining. Food resources, world food problem. Impacts of changing Agriculture practices on Environment. Energy Resources- Forms of Energy Nuclear power, Energy Resources & exploration of alternative energy sources. Land Resources- Desert, land degradation, soil erosion, desertification & soil contamination.

3 **Ecosystems:**

Structure & function, energy flow, food chains, food webs, Ecological pyramids. Basics of forest, grasslands, desert and aquatic ecosystem (Ponds, Streams, Lakes, Rivers, Oceans & Estuaries) Social issues with environment. Values of a tree for a life of 50 Years, Consumption impacts and ecosystem. Urban growth and ecosystem

4 Biodiversity **and Conservations**

Classification, Biological Diversity: Genetic, species & ecosystem diversity, Values of Biodiversity, Global, National & Local Biodiversity. Hot-spots of Biodiversity, threat to biodiversity, endangered & endemic species of India. Conservation of biodiversity: in situ & ex-situ.

5 **Environment Pollution and Sustainability**.

Causes, effects & control of: Air pollution, Water pollution, Soil pollution, Noise Pollution, Thermal pollution & Nuclear Hazards. Concept of pollution Solid wastes Management. Disaster Management Flood, Drought, Earthquake, Landslides etc. Development and reorienting Science and Technology. Sustainable developments

**Suggested Readings**

1. A Text Book of Environmental Studies GR Chatwal Harish Sharma Himalaya Publishing House Mumbai 2005

2. Environmental Modeling Introduction JO Smith Pete Smith Oxford University Press 2009

3. Environmental Biology, KC Agarwal Nidhi Publishers Ltd. Bikaner. 2001

4. Textbook of Environmental Studies for Undergraduate Courses 1 Edition Erach Bharucha

5. Environmental Studies Benny Joseph) 2nd Edition, 2008 Publisher: McGraw Hill Education

6. Fundamentals of Environmental Studies B R Bamniya L N Verma and Arvind Verma Yash Publishing Bikaner

7. Fundamnetal of Ecology V Edition Eugene P odum & Gary W Barrett Cenage Learning Singapore

8. The Biodiversity of India, Bharucha Erach, Mapin Publishing Pvt. Ltd, Ahmadabad 2003.

9. Hazardous Waste Incineration, RC, Brunner McGraw Hill Inc 1989,

10. Environmental Encyclopedia, Cunningham WP, Cooper TH, Gorhani E & Hepworth MT, Jaico Publishing House, Mumbai 2001.

11. Environmental Chemistry a Global Perspectives Gary W Vanloon Stephen J Duffy 2005 Oxford university Press

12. Environmental Studies from Crisis to Cure R Rajgopalan Oxford University Press, New Delhi 2005.

13. Environmental Education, C M Gupta and Renu Sharma, Aastha Prakashan Jaipur 2007.

14. Understanding Environment Kiran B Chhokar, Mamta Pandey and Meena Raghunathan Sage Publication Inc. California.

15.Environmental Studies,   D L Manjunath Publisher: Pearson, 2006.

16. Environmental Chemistry, Anil K De New Age International Publishers. 2005.

|  |  |
| --- | --- |
| Course Title:**DESIGN OF REINFORCED CEMENT CONCRETE** | Course Code : **DCE332** |
| Semester : **VI** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Knowledge of Basic of cement, reinforcement and concrete.

**Course Objectives:**

1. Identify various components of buildings and their functions.
2. Discuss strain- stress curve.
3. Different properties of R.C.C.
4. Design of beams, slabs etc.

**Course Content:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** | |
| **UNIT-1: INTRODUCTION** | 08 | 20 | |
| Reinforced Cement Concrete- its meaning, constituents, functions and specifications as per I.S.,Working stress method of design,Limit state method of design, Ultimate method of design, Past practice and present practice for the design of structures., Grades of concrete and steel, Stress - strain curve for concrete and steel, Load factors, Steel concrete bond, development length, anchorage value, Effective span, specification of reinforcement as per BIS |  |  | |
| **UNITS-2: FLEXURAL MEMBERS** | 08 | 20 | |
| Limit state of collapse, Limit state of flexure, Neutral axis, moment of resistance, balanced and unbalanced sections, Limit state of shear, nominal shear stress, shear strength of beam. , Design of shear reinforcement, Limit state of serviceability deflection and cracking criteria. , Curtailment of bars |  |  | |
| **UNITS-3: ANALYSIS AND DESIGN OF BEAMS** | 06 | 20 | |
| Single reinforced beam, Doubly reinforced beam, T-beam, Lintel, Cantilever beam **Slabs :** Design criteria as per BIS Design of one-way slab Design of two-way slab with corners free to lift |  |  | |
| **UNIT-4:** (**AXIALLY LOADED COLUMNS** | 06 | | 20 |
| Limit state of compression, Load carrying capacity, Design of short column (rectangular, square and circular cross section) . **Design of Footing** : Critical section for shear and bending moment , Design of an isolated footing of uniform depth for a square column ,Layout of reinforcement |  | |  |
| **UNIT 5: RETAINING WALL** | 08 | | 20 |
| Types of retaining walls, Design of cantilever type retaining wall, Reinforcement details **Prestressed Concrete** : Definition, advantages and methods of prestressing ,Losses in prestressing, Stress calculations for point loads and uniformly distributed load for different tendon position |  | |  |
| **TOTAL** | **36** | | **100** |

**Reference:**

1. Design of R.C.C. Structures B.C. Punmia
2. Design of R.C.C. Structures H.J. Shah
3. Design of R.C.C. Structures A.K. Jain
4. Design of R.C.C. Structures N. Krishna Raj
5. Design of R.C.C . Structures V.L. Shah & S.R. Karve

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about R.C.C.
2. About different types of slabs and beams.
3. Different types of retaining wall.
4. Brief knowledge of pre-stressed concrete.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**THEORY OF STRUCTURE** | Course Code : **DCE333** |
| Semester : **V** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Knowledge of Basic of mechanics and strength of material.

**Course Objectives:**

1. Enumerate stress and strain.
2. Find the slope deflection.
3. Analyzing share force diagram and bending moment diagram.
4. Discussed on different types of arch.

**Course Content:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** | |
| **UNIT-1: STRESSES AND STRAINS** | 08 | 20 | |
| Introduction - Principle stresses and strains Graphical methods: Mohr’s circle Distribution of shear stress in rectangular, circular, I and T section. **SLOPE AND DEFLECTION:** Computation of slope and deflection for simple cases of cantilever and simply supported beams for concentrated and uniformly distributed load by, 1. Area moment method 2. Double integration method and 3. Macaulay’s method |  |  | |
| **UNITS-2: BEAM** | 08 | 20 | |
| **PROPPED BEAMS:** Prop reactions. Bending moment and shear force diagram for simple loading **FIXED BEAM:** Analysis of fixed beams. SFD and BMD for symmetrical, concentrated and uniformly Distributed load. |  |  | |
| **UNITS-3:** | 06 | 20 | |
| **TORSION:** Torsion of circular shaft, torsional equation. Horse Power transmitted. **CONTINUOUS BEAM:** Analysis by Three-moment Theorem Method. SFD and BMD for symmetrical concentrated and uniformly distributed loads over full span.  **Indeterminate Structures** :  Types of indeterminacy, External and internal, Degree of indeterminacy in beams and pin jointed frames |  |  | |
| **UNIT-4:** | 06 | | 20 |
| **COMBINED DIRECT AND BENDING STRESS:** 1. Stress due to eccentric loads 2. Law of middle third 3. Application of Law of middle third for dams. **PORTAL FRAMES:** BM and SF and thrust for portals with static symmetrical loading. |  | |  |
| **UNIT 5:** | 08 | | 20 |
| **THREE-HINGED ARCH:** Linear Arch, Eddy’s theorem, BM, and Normal Thrust for parabolic, circular arch for Static loading. **INFLUENCE LINES:** Introduction **-** ILD for BM and SF for beams. Application of influence line diagram for determination of SF and BM due to concentrated and uniformly distributed load. |  | |  |
| **TOTAL** | **36** | | **100** |

**Reference:**

1. Strength of Material & Theory of Structures. Vol – I & II B.C. Punmia  
2. Mechanics of Structure S.B. Junarkar.  
3. Strength of Material S. Ramamurtham  
4. Strength of Material & Theory of Structures. Vol – I & II R.S. Khurmi

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about structure.
2. About different types of arches.
3. Know how to find BM & SF.
4. Well known how to compute SFD & BMD..

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**IRREGATION ENGINEERING** | Course Code : **DCE334** |
| Semester : **VI** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Knowledge of Basic of environment science and chemistry at Sec. and Sr. Sec. Level.

**Course Objectives:**

1. Identify various components of buildings and their functions.

**Course Content:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** | |
| **UNIT-1: INTRODUCTION**: | 08 | 20 | |
| 1**. Introduction:** 1.1 History of irrigation development in India. 1.2 Classification and different methods of irrigation. 2. **Water Requirements of Crops** : 2.1 Classes and availability of soil water 2.2 Depth and frequency of irrigation 2.3 Relationship between duty, delta and base period. 2.4 Gross command area (G.C.A.) culturable commanded area (C.C.A.), culturable cultivated and uncultivated area. Intensity of irrigation 2.5 Factors affecting duty of water, methods of improving duty 2.6 Principal crops of Rajasthan and India. Sowing and harvesting time 2.7 Water requirements and rotation of different crops 2.8 Calculation of water requirement for a given irrigated area. |  |  | |
| **UNITS-2: HYDROLOGY:** | 08 | 20 | |
| **Hydrology:** 3.1 Hydrologic cycle 3.2 Rainfall its characteristics and methods of measurement. 3.3 Run off, factors affecting run off, determination of average annual run off. 3.4 Importance and different methods of gauging stream flow. Hydrograph, unit hydrograph and flood hydrograph 4. **Dams :** 4.1 Types of Dams 4.2 Selection of site for a dam 4.3 Forces acting on a gravity dam 4.4 Failure of gravity dams |  |  | |
| **UNITS-3: CANALS** | 06 | 20 | |
| 8.1 Explanation of terms-canal 8.2 Classification of canals, channel, major distributory, minor distributory, water course, navigation canal, hydro-canal, irrigation canal, perennial canal, inundation canal 8.3 Water shed 8.4 Drainage 8.5 Alignment of irrigation canal 8.6 Explanation of terms-critical velocity, rugosity coefficient, velocity ratio, silt factor 8.7 Regime, regime slope, regime dimensions 8.8 Relation between Kennedy's critical velocity ratio and Lacey’s silt factor. 8.9 Problems of sediment transport in channels. 8.10 Salient features of Kennedy’s and Lacey's silt theories 8.11 Computing the losses in irrigation channels |  |  | |
| **UNIT-4: WATER LOGGING** | 06 | | 20 |
| **Water Logging**:  9.1 Definition 9.2 Causes, effects and preventive measures 9.3 Types of canal lining brief description and advantages 10. Diversion Head Works : 10.1 Typical layout of head works 10.2 Brief description, sketches and function of component parts of weir or barrage 10.3 Scouring sluices, silt excluder 10.4 Divide-wall 10.5 Fish ladder 10.6 Guide bank 10.7 Marginal bunds 10.8 Head regulator 10.9 Classes of weirs 10.9.1 Rockfill weir 10.9.2 Bligh type weir 10.9.3 Khosla type weir 10.9.4 Pickup weir 10.10 Causes of failure of weirs. |  | |  |
| **UNIT 5: CROSS DRAINAGE WORKS** : | 08 | | 20 |
| **Cross Drainage Works** : 11.1 Brief description of different methods of disposal of drainage intercepted by canals 11.2 Inlet and outlet 11.3 Aqueduct and syphon aqueduct 11.4 Super passage and syphon 11.5 Level crossing **Well Irrigation** : Explanation of terms - well, open well tube well, shallow and deep well, ground water reservoir, mota layer, depression head, cone of depression, radius of influence critical velocity, Classification of tube well: (1) Slotted wells (2) Strainer wells (3) Cavity wells |  | |  |
| **TOTAL** | **36** | | **100** |

**Reference:**

1. Irrigation & Water Power Engg. Dr. B.C. Punmia  
   2. Irrigation & Water Power Engg. Dr. P.N. Modi  
   3. Irrigation & Water Power Engg. S.K. Garg  
   4. Elem. Irrigation Engg. (Hindi) Gurcharan Singh  
   5. Elem. Irrigation Engg. (Hindi) B.L. Gupta  
   6. Fundamental Principles of Irrigation Engg. V.B. Priyani

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about irrigation engineering,
2. About different properties of hydrology.,
3. Brief knowledge of canal.
4. Brief knowledge cross drainage work..

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

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| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title: **DISASTER MANAGEMENT** | Course Code : **DCE334** |
| Semester : **VI** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **2 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Unit I**. Introduction to Disasters: Concepts and definitions (Disaster, Hazard, Vulnerability, Resilience, Risks)

**Unit II**. Disasters: Classification Causes, Impacts (including social, economic, political, environmental, health, psychosocial, etc.), Differential impacts- in terms of caste, class, gender, age, location, disability, Global trends in disasters! Urban disasters, pandemics, complex emergencies, Climate change

**Unit III.** Approaches to Disaster Risk reduction: Disaster cycle - its analysis, Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural non-structural ensures roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), states, Centre, and other stake-holders.

**Unit IV**. Inter-relationship between Disasters and Development: Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc. Climate Change Adaptation.Relevance of indigenousknowledge, appropriate technology and local resources.

**Unit V**. Disaster Risk Management in India Hazard and Vulnerability profile of India Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management Institutional arrangements (Mitigation, Response and Preparedness, DM Act and Policy, Other related policies, plans, programs and legislation)

**Unit VI**. Project Work: (Field Work, Case Studies)

The project /fieldwork is meant for students to understand vulnerabilities and to work on reducing disaster risks and to build a culture of safety. Projects must be conceived creatively based on the geographic location and hazard profile of the region where the college is located.

**Suggested Reading list**

1. Alexander David, Introduction in 'Confronting Catastrophe', Oxford University Press, 2000
2. Andharia J. Vulnerability in Disaster Discourse, JTCDM, Tata Institute of Social Sciences Working Paper no. 8, 2008
3. Blaikie, P, Cannon T, Davis I, Wisner B 1997. At Risk Natural Hazards, Peoples' Vulnerability and Disasters, Routledge.
4. Coppola P Damon, 2007. Introduction to International Disaster Management,
5. Carter, Nick 1991. Disaster Management: A Disaster Manager's Handbook. Asian Development Bank, Manila Philippines.
6. Cuny, F. 1983. Development and Disasters, Oxford University Press.
7. Govt. of India: Disaster Management Act 2005, Government of India, New Delhi.
8. Government of India, 2009. National Disaster Management Policy,
9. Gupta Anil K, Sreeja S. Nair. 2011 Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi , Indian Journal of Social Work 2002.Special Issue on Psychosocial Aspects of Disasters, Volume 63, Issue 2, April.
10. Kapur, Anu& others, 2005: Disasters in India Studies of grim reality, Rawat Publishers, Jaipur

|  |  |
| --- | --- |
| Course Title:**CONSTRUCTION MANAGEMENT** | Course Code : **DCE335** |
| Semester : **V** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Knowledge of Basic management and construction work.

**Course Objectives:**

1. Identify various works of construction.
2. Discussed about planning and scheduling.
3. Enumerate safety in construction work.
4. Analysis of management in construction work.

**Course Content:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** | |
| **UNIT-1: INTRODUCTION** | 08 | 20 | |
| INTRODUCTION**:** Signification, main objectives & functions of construction management, Classification & stages in construction. The construction team: Owner, Engineer & Contractor. Recourses for construction: Men, Machine, Materials, Money &Management. CONSTRUCTION PLANNING**:** Objective, principles advantages, analysis, limitation and stages of planning for construction projects. CONSTRUCTION SCHEDULING**:** Preparation of construction schedule for labour, material, machine & finance |  |  | |
| **UNITS-2:** | 08 | 20 | |
| **Construction Planning :**   * 1. Construction project planning, Stages in planning, Bar charts, Introduction to Network, Planning and scheduling by bar charts, Limitations of bar chart, PERT and CPM, Network construction, Determination of project schedule and critical path of a network for different cases, Resource allocation and cost time balancing   2. **Construction Contracts :**   Introduction, Proposal and agreements, Types of construction contracts,lumpsum contract, rate contract, cost plus contracts, turnkey contracts General conditions of contracts ,Contract labour act. |  |  | |
| **UNITS-3:** | 06 | 20 | |
| PROJECT MANAGEMENT - II**:** Float: Different types of floats calculation of float in a network. CONTROL OF PROCESS**:** Project supervision. Method of recording progress. Analysis of progress. Taking corrective action during control of progress. ENTREPRENEURSHIP**:** Entrepreneur, function & quality of entrepreneur. PURCHASE DEPARTMENT:Objectives, activities, duties & functions of purchase department. |  |  | |
| **UNIT-4:** | 06 | | 20 |
| TIME COST OPTIMIZATION**:** Direct, indirect, and total project cost. Normal &crash cost & time. Cost – time optimization through CPM techniques for simple jobs. ACCIDENT & SAFETY IN CONSTRUCTION**:** definition of accident terms: Partial & total disablement, Injury frequency rate, injury severity rate. Causes of accidents:remedies to avoid accidents. Accident prevention. Importance of safety. Safety measures for storage & handling of building material, construction elements of a building: excavation, drilling & blasting, hot bituminous work, scaffolding ladders, form work, demolition. CONSTRUCTION LABOUR**:** Important provision of the following (as amended). Trade Union act 1926, labor welfare fund Act 1936, Payment of wages act 1936, minimum wages Act 1948. Workers compensation Act 1923, Contract labor (Regulation & Abolition) Act 1970 |  | |  |
| **UNIT 5:** | 08 | | 20 |
| MANAGEMENT OF CONSTRUCTION**:** introduction, factors affecting selection of construction equipment. Planning of infra structure for mechanization. MATERIAL MANAGEMENT:Importance, objectives, functions and uses of materials management. CONSTRUCTION DISPUTES & THEIR SETTLEMENT**:** Introduction, categories of disputes, modes of settlement of disputes |  | |  |
| **TOTAL** | **36** | | **100** |

**Reference:**

**Text Books**:-

1. Sadimala C.M.*, Materials and Financial Management*, New Age International Publishers, Delhi.

**Reference Books:-**

1. Gahlot P.S.*, Construction Planning and Management*, International Publishers, Delhi
2. Project planning and construction management , s.s.shiphani

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about project planning.
2. Able to know how to schedule any projects.
3. Able to material management on construction sight.
4. About tender, contract, and disputes.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**QUANTITY SURVEY AND VALUATION** | Course Code : **DCE336** |
| Semester : **V** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Knowledge of Basic knoweladge of contract, estimation and tender.

**Course Objectives:**

1. Discussed different methods of estimating.
2. Discussed about tender, contract etc.
3. Analyze rate analysis of estimating data or materials.

**Course Content:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** | |
| **UNIT-1: INTRODUCTION** | 08 | 20 | |
| Definition, Importance. Duties of quantity surveyor. Types of estimates: Preliminary estimates, Plinth area estimate, Cubic rate estimate, Estimate per unit base. Detailed estimates: Definition, Stages of preparation. Measurement: Units of measurement for various items of work as per BIS: 1200, Rules For measurements |  |  | |
| **UNITS-2: METHODS OF ESTIMATING:** | 08 | 20 | |
| (i) Long wall and short wall method. (ii) Centre Line method. Calculation of the quantities of the following items of work: (i) Earthwork in excavation in foundation. (ii) Earthwork in filling in foundation and plinth. Sand filling in plinth. (iii) Concreting in foundations, floors, roofs etc. (iv) I-class B/w in foundation, plinth and super-structure. (v) R.B. and RCC works. (vi) Wood work and steel work in doors and windows. (vii) Surface finishing i.e. plastering, pointing, white washing, color washing, distempering and painting. (viii) RCC/Brickwork in arches. (ix) Mosaic/stone/Tile flooring. |  |  | |
| **UNITS-3: DETAILED ESTIMATES** | 06 | 20 | |
| Preparation of detailed estimates (i.e. abstract/bill of quantities of items of work and abstract of cost) for the following work: (i) Buildings with continuous wall footings. (ii) R.C.C. framed buildings/structures. (iii) Septic tank and soak pit. (iv) Steel roof truss. (v) Slab culvert  (vi) Bituminous and C.C. roads. |  |  | |
| **UNIT-4: ANALYSIS OF RATES** | 06 | | 20 |
| Definition, market survey, analysis of rates for various items of work involved in the Above solved problems. Schedule of rates, DSR and CPWD schedule of rates. Abstract of cost.  Material statements for various items of works ( as mentioned in UNIT-II & III). |  | |  |
| **UNIT 5:** | 08 | | 20 |
| **Muster Role**: Maintenance of muster role, daily labour report. Preparation of pay bill. Measurements of work for payment of contractors and supplier. Maintenance of Measurements Book. Different types of payments. First and final running advance and final payments. **Valuation**: Purpose of valuation. Principles of valuations.Definition of terms such as depreciations, sinking fund, salvage and scrap value. Valuation of building property by replacement cost method and rental return Method of calculation of standard rent, concept of capitalized value and years purchase. **Tender:** Tender form, tender documents, tender notice, time limit for tender notice, necessary to include in the tender notice, global tender, sale of tender paper, submission of tender, and deposit of earnest money, opening of tenders, comparative statement of tenders, informal tender, unbalanced tender, example on unbalanced tender. Acceptance of tender, specimen form of letter accepting the tender. Work order contract documents. **Contract**: Types of contracts. |  | |  |
| **TOTAL** | **36** | | **100** |

**Reference:**

1. Pasrija, H. D., Arora, C. L. and S. Inderjit Singh, “Estimating, Costing  
and Valuation (Civil)”.New Asian Publishers, Delhi.  
2. Rangwala, B. S.; “Estimating and Costing”. Anand, Charotar Book Stall.  
3. Kohli, D; and Kohli, R. C.; “A Text Book on Estimating and Costing  
(Civil) with Drawings”. Ramesh Publications, Ambala.  
4. Chakraborti, M; “Estimating, Costing and Specification in Civil  
Engineering”.Calcutta.  
5. Dutta, B. N.; “Estimating and Costing”.  
6. Amarjit Agarwal & A. K. Upadhyaya;“Civil Engg Estimating Costing &  
Valuation”.  
7. Birdie, G. S., “Text Book on Estimating and Costing”.Dhanpat Rai &  
Sons, New Delhi.  
8. BIS: 1200  
9. Jagjit Singh, “Estimating & Costing in Civil Engineering”

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about tendering.
2. Make and check any contract.
3. Complete valuation of any section from respective methods.
4. Make a estimate for any construction work.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |
| 3 | S | S |  |  | S |  |  | M |  |  | S |  |
| 4 | M | S |  | S |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title**: DESIGN OF STEEL STRUCTURE** | Course Code : **DCE338** |
| Semester : **VI** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Knowledge of Basic of properties of steel and steel structure.

**Course Objectives:**

1. Discussed properties of steel used in structure.
2. Discussed about joints in construction.
3. Properties of steel tension and compression are discussed.

**Course Content:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** | |
| **UNIT-1: INTRODUCTION** | 08 | 20 | |
| Structural Steel 1.2 Structural Steel Sections 1.3 Steel as a structural material 1.3.1 Advantages 1.3.2 Disadvantages 1.4 Limit State Method 1.4.1 Introduction 1.4.2 Limit state design 1.4.3 Limit state of strength 1.4.4 Limit state of serviceability 1.5 Partial safety factor for material strength 1.6 Partial safety factor for loads |  |  | |
| **UNITS-2: Bolted Connections** | 08 | 20 | |
| 2.1 Types of Bolts 2.2 Definition and detailing of Bolts 2.3 Types of bolted joints 2.4 Failure of bolted joints in 2.5 Design strength of bolt 2.5.1 Bolts in shear 2.5.2 Bolts in Tension 2.5.3 Bolts in Bearing 2.5.4 Tension capacity of plate 2.5.5 Combined shear and tension 2.6 Efficiency of Bolted Joint Civil Engineering |  |  | |
| **UNITS-3: Welded Connections** | 06 | 20 | |
| 3.1 Advantages and Disadvantage of welded joint 3.2 Permissible stresses in welds 3.3 Types of welded connections 3.4 Design of butt and fillet welded connections subjected to axial loads |  |  | |
| **UNIT-4: Design of Tension Members & Compression Members** | 06 | | 20 |
| 4.1 Net sectional area 4.2 Design strength due to yielding of gross section 4.3 Design strength due to rupture at net section 4.4 Design strength due to block shear 4.5 Design of tension members (flats, angles and tee sections only.) 5. Compression Members: 5.1 End conditions: Effective length, slenderness ratio, radius of gyration 5.2 Permissible stresses in compression as per IS : 800-2007 5.3 Strength of columns-single and built up sections. 5.4 Design of angle struts. 5.5 Design of axially loaded 5.5.1 Single rolled steel section 5.5.2 Built up section 5.6 Design of lacing 5.7 Design of battens |  | |  |
| **UNIT 5: Design of Beams:** | 08 | | 20 |
| Column Bases: 6.1 Design of slab base 6.2 Design of gusseted base 7. Design of Beams: 7.1 Plastic methods of design 7.1.1 Plastic section modulus 7.1.2 Shape factor 7.1.3 Plastic hinge 7.2 Methods of Plastic Analysis 7.3 Plastic analysis of structures 7.4 Shear behaviour of steel beam 7.5 Factors affecting plastic moment capacity. 7.6 Design of laterally restrained beams 7.7 Web buckling and crippling |  | |  |
| **TOTAL** | **36** | | **100** |

**Reference:**

1. Limit state Design of Steel Structure Dr.V.L. Shah & Prof. Veena Gore  
   2. Limit state Design of Steel Structure Subramanian  
   3. IS 800-2007  
   4 Steel Table

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Brief knowledge about properties of steel.
2. Reaction of steel in civil structure..

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  | M |  |  | S |  |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | S |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title: **TRANSPORTION ENGINEERING LAB** | Course Code :**DCE371** |
| Semester : **V** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of different highway materials and construction.

**Course Objectives:**

1. Basic knowledge of highway materials
2. About different type of test on aggregates.
3. Perform test for material by different methods.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | To determine the crushing strength of stone aggregates. |
| 02. | To determine the hardness of stone aggregates using Los Angeles abrasion test. |
| 03. | To determine the toughness of stone aggregates using Aggregate Impact Test. |
| 04. | To determine the Specific Gravity and water absorption of stone aggregates. |
| 05. | To determine the stripping value of stone aggregates. |
| 06. | To Determine the Consistency of Bituminous Materials. |
| 07. | To determine the ductility of Bitumen Binder. |
| 08. | To determine the softening point of Bitumen using Ring and Ball Test. |
| 09. | Benkelman Beam Test |
| 10. | California Bearing Ratio Test |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to find the toughness of aggregates.
2. Student will be able to determine specific gravity & water absorption of aggregates.
3. Able to know different properties of material & perform also in lab.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**CIVIL ENGINEERING ESTIMATING AND COSTING LAB** | Course Code :**DCE372** |
| Semester : **VI** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic estimation & management.

**Course Objectives:**

1. Basic knowledge about estimation.
2. About different type of estimation and valuation.
3. Know how to estimated cost of any projects.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Writing units for various items of work involved in construction |
| 02. | Finding out the quantities of work for a residential building. |
| 03. | Preparation of detailed estimate for a residential building. Single storey |
| 04. | Preparation of detailed estimate for a residential building. Double storey |
| 05. | Writing detailed specifications and rate analysis schedules for Earth work in excavation |
| 06. | Writing detailed specifications and rate analysis schedules for Plastering |
| 07. | Writing detailed specifications and rate analysis schedules for White washing, colour washing and distempering |
| 08. | Writing detailed specifications and rate analysis schedules for Concrete in foundation. |
| 09. | Valuation by different methods |
| 10. | Typical valuation reports |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to analyse rate of any activity.
2. Student will be able to prepare estimate data for multi-storied residential building.
3. Valuation process for any civil engineering work.
4. To know name of work which are used in construction.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 40 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 30 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**STRUCTURAL LAB** | Course Code :**DCE373** |
| Semester : **V** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic of structural analysis , applied mechanics & physics.

**Course Objectives:**

1. Discussed different test on different parts of structure.
2. Enumerate deflection over application of structure .

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Tensile Test |
| 02. | Compression Test |
| 03. | Hardness Test |
| 04. | Impact Value Test |
| 05. | Bending Moment |
| 06. | Deflection of Beam of Simply Supported Beam |
| 07. | Deflection of Beam of fixed Beam |
| 08. | Three Hinge Arches |
| 09. | Portal Frame |
| 10. | Influence Line Diagrams |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able know different properties of structure after test results.
2. Learn different test over structure. And their application over different T & C.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |

S: Strong relationship M: Moderate relationship

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**SOIL MACHANICS LAB** | Course Code :**DCE374** |
| Semester : **VI** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic properties of soil Sec. and Sr. Sec. Level

**Course Objectives:**

1. Basic knowledge of soil mechanics.
2. About different test for soil.
3. Know how to find specific gravity of the soil particle.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | To classify the given sample of course grained soil |
| 02. | To determine the in-situ density of soil by core cutter method. |
| 03. | To determine the specific gravity of the given soil particles, using pycnometer /Density bottle. |
| 04. | To determine the optimum Moisture content (OMC)and maximum dry density of a given soil sample. |
| 05. | To determine the liquid limit of a given soil by Casagrande’s liquid limit apparatus. |
| 06. | To determine the plastic limit of a given soil sample. |
| 07. | To determine the shrinkage limit of a given soil sample. |
| 08. | Coefficient of Permeability using Constant head Permeability Test |
| 09. | Coefficient of Permeability using Falling head permeability Test |
| 10. | Coefficient of Permeability using Standard Penetration Test (STP) |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to find soil properties from test results.
2. Student will be able to find out different properties of soil by using different method.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |

S: Strong relationship M: Moderate relationship

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| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**SURVEYING LAB –III & CAMP** | Course Code :**DCE375** |
| Semester : **V** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of surveying I & II.

**Course Objectives:**

1. Analysis of curve by different methods.
2. Uses of closed traverse.
3. Applications of Rankin’s method.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | To determine the length and bearing of one side in a closed traverse. |
| 02. | To determine the length of one side and bearing of another adjacent side in a closed traverse |
| 03. | To set out the Simple circular curve by the method of offset from the chords Produced. |
| 04. | To set out the Simple Circular Curve by Rankin’s method of tangential angles. |
| 05. | To set out Simple circular Curve by Rankin’s Two theodolite method |
| 06. | To set out a compound Curve by Rankin’s method. |
| 07. | Survey Camp Work. |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to measurement of curves from different methods.
2. Student will be able to used closed traverse.
3. Due to survey camp , students able to measure all the horizontal distance, vertical distance and angles on different position, place and environment.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 45 |
| 2 | Applying the knowledge acquired from the course | 30 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**REINFORCED CEMENT CONCRETE LAB** | Course Code :**DCE376** |
| Semester : **VI** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge Of Reinforced cement concrete in brifly.

**Course Objectives:**

1. Preparation of R.C.C. slab
2. Preparation of R.C.C. structure.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Types of bar used in R.C.C. |
| 02. | Preparation of bar bending schedule and to bend the bars accordingly for Singly reinforced concrete beam – part I |
| 03. | Preparation of bar bending schedule and to bend the bars accordingly for Singly reinforced concrete beam- Part II |
| 04. | Preparation of bar bending schedule and to bend the bars accordingly for Doubly reinforced concrete beam– part I |
| 05. | Preparation of bar bending schedule and to bend the bars accordingly for Doubly reinforced concrete beam- Part II |
| 06. | Preparation of bar bending schedule and to bend the bars accordingly for Reinforced concrete column– part I |
| 07. | Preparation of bar bending schedule and to bend the bars accordingly for Reinforced concrete column- Part II |
| 08. | Preparation of bar bending schedule and to bend the bars accordingly for Reinforced concrete slab– part I |
| 09. | Preparation of bar bending schedule and to bend the bars accordingly for Reinforced concrete slab- Part II |
| 10. | Prepare a model R.C.C. beam. |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Know prepare R.C.C slab
2. Know prepare R.C.C beam
3. Know prepare R.C.C. column
4. Know prepare R.C.C singly beam.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |
| 4 | S | S |  |  |  | S |  |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**APPLIED MECHANICS LAB** | Course Code :**DCE377** |
| Semester : **V** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic applied mechanics Sec. Level, Sr. Sec. Level, and

**Course Objectives:**

1. Basic knowledge of applied mechanics application.
2. About different type of mechanical properties
3. Law of forces applied in mechanics

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Verification of the laws of parallelogram of forces. |
| 02. | Verification of the laws of polygon of forces. |
| 03. | To verify the reaction in the supports of a simple supported beam. |
| 04. | To find the mechanical advantage, velocity ratio and efficiency in the case of inclined Planes. |
| 05. | To find the mechanical advantage, velocity ratio and efficiency in the case of Screw Jack. |
| 06. | To find the mechanical advantage, velocity ratio and efficiency in the case of Worm and Worm Wheel. |
| 07. | To find the mechanical advantage, velocity ratio and efficiency in the case of Winch Crab ­Single Graphical Representation. |
| 08. | To verify low of moment using Bell crank lever. |
| 09. | To find the efficiency of differential wheel and axle. |
| 10. | To Determine the coefficient of static friction. |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to find efficiency of screw jack.
2. Student will be able to determine M.A. & V.R. of different equipments.
3. Know reaction of static friction on inclined plane.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**CONSTRUCTION TECHNOLOGY LAB** | Course Code :**DCE379** |
| Semester :  **V** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60Marks** | SEE : **40Marks** |
| Programmes: **Diploma in Civil Engineering** | |

**Pre-requisites:**

Knowledge of Basic of construction technology.

**Course Objectives:**

1. Analyze different types of joints.
2. Enumerate different factors affected in construction.

**Course Content:**

|  |  |
| --- | --- |
| **LIST OF EXPERIMENTS** | |
| **S. NO.** | **NAME OF EXPERIMENT** |
| 01. | Identification & Demonstration of building materials and tools used in the construction work. |
| 02. | Construction of L-Junction with stretcher and header bonds. |
| 03. | Construction of L-Junction with one brick thick wall in English and Flemish bonds. |
| 04. | Construction of L-Junction with ½ brick thick wall in English and Flemish bonds. |
| 05. | Construction of L-Junction with 2 bricks thick wall in English and Flemish bonds. |
| 06. | Idea of earth quake resistant load bearing bricks masonry construction and R.C.C structures |
| 07. | Demonstration of various mortars and cement concrete mixes, mixing, transportation, placement, compaction and curing and their methods. |
| 08. | Form work, centring& shuttering and their removal. |
| 09. | Demonstration of water supply fixtures and sanitary fittings. |
| 10. | Site Visits |

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Student will be able to mix concrete.
2. Able to construct masonry by different types.
3. Able to construct different section of masonry.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S |  |  | S |  | S |  |  |
| 2 | S | M |  |  |  | S |  |  | S |  |  | M |
| 3 | S | S |  | S |  |  | S |  |  | M |  |  |

S: Strong relationship M: Moderate relationship

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| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title: **OFFICE AUTOMATION LAB** | Course Code : **DCS221** |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **0:0:3** | Credits : **2 Credits** |
| Type of course : **Practical** | Total Contact Hours : **30** |
| Continuous Internal Evaluation : **60 Marks** | SEE : **40 Marks** |
| Programmes: **Diploma in Computer Science** | |

**Pre-requisites:**

Basic computer Knowledge

**Course Objectives:**

1. Learn operating system Installation
2. Can Install Hard disk, RAM, CD, ROM, CPU and other computer components.
3. Can work with MS-word, and use MS word features
4. Learn MS word Mail options.
5. Can work with MS-Excel, and use MS Excel features.

**Course Content:**

|  |
| --- |
| Installation of Operating Systems. |
| Introduction to control panel, Add remove hardware and software, |
| Installation of Hard disk, RAM,CD, ROM,CPU, Mother Board, Keyboard, Mouse, |
| Ms-Word Basics: Working with MS Word; Menus Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates; Creating a New Document |
| Ms-Word Lab 2:Spell Check, Thesaurus, Find & Replace; Headers & Footers; inserting-Page Number, Pictures, File, Auto texts, Symbols etc. |
| Ms-Word lab 3 Working with Columns, Tabs & Indent; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; adding References and Graphics. |
| Ms-Word lab 4: Mail Merge, Envelops& Mailing Labels. Importing and exporting to and from various formats. |
| MS Excel Lab 1: Working with Ms Excel; concepts of Workbook & Worksheets; using Wizards; Various Data Types; Using Different features with Data, Cell and Texts; Inserting |
| Removing & Resizing of Columns & Rows; Working with Data & Ranges; different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc. |
| Ms Power Point: Working with MS Power Point; Creating a New Presentation; Working with Presentation & Presentation of Slide Show, Printing Presentation. |

**Reference:**

Lab manual

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Install operating system.
2. Install Hard disk, RAM, CD, ROM, CPU and other computer components.
3. Work with MS-word, and use MS word features
4. Use MS word Mail options.
5. Work with MS-Excel, and use MS Excel features.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S | S | S |  | M |  |  |  |  |  | S |
| 2 | S |  | S | S | M |  | M | M |  |  |  | M |
| 3 | S | S | S | S |  |  |  |  |  |  |  | S |
| 4 | S | S | S |  | M |  |  |  |  |  |  | M |
| 5 | S | S |  | S |  | M | M | M |  |  | M |  |

S: Strong relationship M: Moderate relationship

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| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 20 |
| 3 | Analysis and Evaluation | 45 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Attendance | Student | Every lab | 10 | Attendance Register |  |
| Performance+ Record+ viva | Every lab | 30 | Lab Record |  |
| Project | Every lab | 20 | Project Report |  |
| **Total** | **60** |  |  |
| ESE | End Sem Evaluation | End of the course | 40 | Answer scripts at SGVU |  |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms |  |
| End of Course survey | | End of course | Questionnaire |  |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**BASIC ECONOMICS AND SOCIAL SCIENCES** | Course Code :**DPHS203** |
| Semester : **III** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **2:0:0** | Credits : **3Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **25** |
| Continuous Internal Evaluation : **40Marks** | SEE : **60Marks** |
| Programmes: **Diploma in Electrical Engineering** | |

**Pre-requisites:**

Knowledge of Basic Physics at Sec. and Sr. Sec. Level.

**Course Objectives:**

1. This course supposed to give the knowledge of basic concept of economics.
2. Analyse the Applications and scope of Micro Economics.
3. Analyse the Concept of Demand and supply.
4. Evaluate the Basic concept of economics in social reforms in India.
5. Analyse the problems faced by Political Economy.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** |
| **UNIT-1:Introduction** | 05 | 20 |
| Definition meaning, nature and scope of economics. |  |  |
| **UNITS-2: Micro Economics** | 05 | 20 |
| Definition, meaning and scope of Micro Economics. Importance and limitations. |  |  |
| **UNITS-3: Concept of Demand and supply** | 05 | 20 |
| Utility Analysis, Law of Demand, Law of Supply |  |  |
| **UNIT-4:Introduction to social Sciences** | 05 | 20 |
| Social Change: Causes and impacts, reforms in India. |  |  |
| **UNIT 5: Political Economy** | 05 | 20 |
| New Economic reform, Entrepreneurship and Small scale business management. |  |  |
| **TOTAL** | **25** | **100** |

**Reference:**

1. Micro Economics by M. L. Sethi
2. Micro Economics by T.R Jain

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. The course content gives full knowledge to learn nature and scope of economics.
2. Find the solution of problem dependent on Micro Economics.
3. Solve the problems related to Law of Demand, Law of Supply.
4. Enable students to solve difficulties face in social reforms and political economics.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  |  | S |  |  | M |  |  |  |
| 2 | M | S |  | S |  |  |  | S |  |  | S |  |
| 3 | S | M |  |  | S |  |  |  | M |  |  |  |
| 4 | S | S |  | S |  |  | S |  |  |  |  | S |

S: Strong relationship M: Moderate relationship

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| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 40 |
| 3 | Analysis and Evaluation | 30 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title:**ENTREPRENEURSHIP** | Course Code :**DHS232** |
| Semester : **IV** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **2:0:0** | Credits : **2Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **35** |
| Continuous Internal Evaluation : **40Marks** | SEE : **60Marks** |
| Programmes: **Diploma in Electrical Engineering** | |

**Pre-requisites:**

Knowledge of Basic Business Market and Industry.

**Course Objectives:**

1. This course supposed to give the knowledge of how an entrepreneur can make his business successful.
2. Analyse the Location of Industrial Units.
3. Analyse how the size and pricing of a firm can affect the business.
4. Evaluate the Financing of Small Industries.
5. Analyse the problems faced by small enterprises.
6. Create the basic concept of Entrepreneurship.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** |
| **UNIT-1:PROMOTION OF ENTREPRENEURSHIP** | 08 | 20 |
| Meaning, definition and functions of an entrepreneur, qualities of a good entrepreneur; Role of Entrepreneur in economic development.  Government measures for the promotion of small scale industries with special reference to Haryana.  Cultural factors in developing entrepreneurship. |  |  |
| **UNITS-2: OWNERSHIP AND LOCATION OF INDUSTRIAL UNITS** | 06 | 20 |
| Different forms of Industrial Organization.  Theories of Industrial location.  Process of preparing project reports. |  |  |
| **UNITS-3: SIZE OF FIRM AND PRICING** | 07 | 20 |
| Concept of optimum firm, factors determining optimum size, Technical, Managerial, Marketing Uncertainties and risk.  Pricing Methods, Policies and procedures. |  |  |
| **UNIT-4:FINANCING OF SMALL INDUSTRIES** | 08 | 20 |
| Importance and need: Commercial Banks and term lending in India; Banks and under-writing of capital issues; Brief description about the role of other financial agencies as:   * Industrial Finance Corporation of India * State Financial Corporation * Industrial Development Bank of India * Unit Trust of India. |  |  |
| **UNIT 5: PROBLEMS FACED BY SMALL ENTERPRISES** | 06 | 20 |
| Problems connected with Marketing:   * Management of New Products * Power, Finance, Raw Material * Under-utilization of capacity   Causes of under utilization; Rehabilitation of Sick Mills. |  |  |
| **TOTAL** | **35** | **100** |

**Reference:**

1. Entrepreneurship of Small Industries- Deshpande Manohar D. (Asian Publisher, New Delhi)
2. Environment& Entrepreneur- Tandon B.C. (Asian Publishers, New delhi)
3. The Industrial Economy of India- Kuchhal S.C. (Chaitanya, Allahabad)
4. Emerging Trends in Entrepreneurship Development Theories & Practices- Singh P. Narendra (International Founder, New Delhi)

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. The course content gives full knowledge to learn hoe an entrepreneur can succeed.
2. Find the solution of problem dependent on industrial units.
3. Solve the problems related to Location and pricing of industrial units.
4. Enable students to solve difficulties face by small units.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  | S | S |  |  | M |  |  |  |
| 2 | S | M |  |  |  | S |  |  |  | S |  |  |
| 3 |  | M |  | S | S |  |  | S |  |  |  | S |
| 4 | S | M |  |  |  |  | S |  |  |  | S |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 40 |
| 3 | Analysis and Evaluation | 30 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title: **INDUSTRIAL MANAGEMENT** | Course Code :**DHS302** |
| Semester : **V** | Core / Elective : **Elective** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40Marks** | SEE : **60Marks** |
| Programmes: **Diploma in Electrical Engineering** | |

**Pre-requisites:**

Knowledge of Industries and their working.

**Course Objectives:**

1. To achieve the target and goals in an organisation it is essential to co-ordinate the entire system. For this purpose a diploma holder should have the knowledge of principles of industrial management, auditing and environmental aspects.
2. Apply the Purpose of organization and administration.
3. Analyse the Inters relation between skills and levels of management.
4. Evaluate the Scientific management.
5. Analyse the Study of different forms of layout.
6. Create the basic concept of conflict management.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** |
| **UNIT-1:INTRODUCTION TO INDUSTRIAL MANAGEMENT** | 06 | 12 |
| * Brief history of industries in India, Brief definition of management, organization and administration. * Characteristics of management, Principle of management, Function of management like, planning, organization, direction, co-ordination etc. |  |  |
| **UNITS-2: MANAGEMENT** | 08 | 12 |
| * Level of management, skills of management, inters relation between skills and levels of management. * Scientific management, Introduction to Schools of Management thoughts |  |  |
| UNITS-3:INTRODUCTION TO ORGANIZATION | 08 | 12 |
| Study of basic type of organization for ex. Line and staff organization, project organization, metrics organization, Informal organization. |  |  |
| UNIT-4:INTRODUCTION TO INDUSTRIAL PSYCHOLOGY | 06 | 12 |
| * Motivation theory and study of Maxlow, Need, Hierarchy Theory, Planned Location, Planned Layout. * Study of different forms oflayout like line layout, process layout, product layout, combinational layout, sixth position layout etc. |  |  |
| UNIT 5:INTRODUCTION TO MATERIAL MANAGEMENT | 08 | 12 |
| Objective of planned layout, introduction to material management, scope of material management, study of inventory control method, introduction to different types of inventory control techniques, introduction to work study, motion study etc, introduction to conflict management. |  |  |
| **TOTAL** | **36** | **60** |

**Reference:**

1. Khanna O.P.: Industrial Engineering.

2. T.R. Banga: Industrial Engineering & Management.

3. Mahajan: Industrial & Process Management.

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Enable students for Essential Imperatives and Steps in Industrial & Process Management.
2. Find the solution of problem dependent on planning &organization.
3. Determine the Need of Schools of Management thoughts.
4. Solve the problems related to Hierarchy Theory &Planned Location.
5. Enable students to use application of material management and scope of material management.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S |  |  |  | S |  |  |  |  |  |  | S |
| 2 | S |  |  |  |  |  | S |  |  | M |  |  |
| 3 | S |  |  | S |  |  |  |  |  |  |  |  |
| 4 |  | S |  |  |  |  |  |  |  |  |  |  |
| 5 | S |  |  | M |  |  |  |  | S |  |  |  |

S: Strong relationship M: Moderate relationship

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| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 40 |
| 3 | Analysis and Evaluation | 25 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |  |
| --- | --- |
| Course Title: STRENGTH OF MATERIAL | Course Code : DME231 |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : 4**:0:0** | Credits : **3 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40 Marks** | SEE : **60 Marks** |
| Programmes: **DIPLOMA IN CIVIL ENGINEERING** | |

**Pre-requisites:**

Students should have knowledge on basic material properties based on senior secondary school syllabus

**Course Objectives:**

The subjects are kept in diploma course so that the students of mechanical engineering discipline should know the proper use of material for common engineering problems.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** |
| UNIT-1: SIMPLE STRESS AND STRAINS | 6 | 20 |
| **Simple Stress and Strains :**Introduction types of loads and deformation, types of stresses and strain. Hooke's law, stress strain diagram for ferrous and non ferrous materials modulus of elasticity. rigidity and bulk modules of materials Stress in bars of varying cross sections, composite sections and compound sections Thermal stresses and strains, thermal stresses in composite sections. Poisson's ratio, volumetric strain, relation between different modulus, strain energy. |  |  |
| UNITS-2: S.F. AND B.M. DIAGRAMS | 8 | 20 |
| **S.F. and B.M. Diagrams :**Definition, types of loading types of beams, shear force and bending moment sign conventions S.F. and B.M. diagrams for cantilever simply supported and overhanging beams with point or concentrated loads uniformly distributed loads and combination of point and U.D.L. Point of contra flexure, numerical problems. |  |  |
| UNITS-3: Spring | 8 | 20 |
| **Spring:** Definition types and use of springs, leaf spring, helical and spiral springs, Stiffness of a spring and maximum shear stress, defection of spring . Spring Classification based on size shape and load. |  |  |
| UNIT-4: PRINCIPLE STRESSES AND STRAIN | 8 | 20 |
| **Principle stresses and strain:-**  Transformation of plane stresses, Principle stresses, Maximum shear stresses, Mohr’s circle for plane stresses, Plain strain and its Mohr’s circle representation, Principle strains, Maximum shear strain. Combined Loading: Components subjected to bending, torsion & axial loads. |  |  |
| UNIT 5: DEFLECTION OF BEAM | 6 | 20 |
| **Deflection of beam:-**  Relation between slope deflection and radius of curvature, solution of beam deflection, problem by Macaulay’s method, Direct integration method, Method of super position, Moment Area Method. |  |  |
| **TOTAL** | **36** | **100** |

**Reference:**

* S. C. Crandall, N. C. Dahl, and T. J. Lardner, An Introduction to the Mechanics of Solids, 2nd Ed, McGraw Hill, 1978.
* E. P. Popov, Engineering Mechanics of Solids, Prentice Hall, 1990.
* I. H. Shames, Introduction to Solid Mechanics, 2nd Ed, Prentice Hall, 1989.
* S. P. Timoshenko, Strength of Materials, Vols. 1 & 2, CBS publ., 1986.

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Apply concepts of strength of materials to obtain solutions to real time Engineering problems.

2. Able to analyze the different types of loading and the consequent deflection.

3.Able to analyze different types of stress and strain in the beam or load applied.

4. Interpret hardness curve measured after heat treatment.

5. Find correlation between material structure and its creep.

**Mapping Course Outcomes with Program outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  |  |  |  |  |  |  |  |  |
| 2 | S | S |  |  |  |  |  |  |  |  |  |  |
| 3 | S | S |  |  |  |  |  |  |  |  |  |  |
| 4 | S | S |  |  |  |  |  |  |  |  |  |  |
| 5 | S | S |  |  |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weightage (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 25 |
| 3 | Analysis and Evaluation | 40 |

|  |  |
| --- | --- |
| Course Title:STRENGTH OF MATERIAL LAB | Course Code : DME271 |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : 0**:0:2** | Credits : **2 Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **-** |
| Continuous Internal Evaluation : **60 Marks** | SEE : **40 Marks** |
| Programmes: **DIPLOMA IN MECHANICAL ENGINEERING** | |

**Pre-requisites:**

Students should have knowledge on strength of material subject.

**Course Objectives:**

1. To help the students gain experience in the determination of creep for various materials and understand how this property varies with time.

2. To provide students an opportunity to learn how to measure hardness of materials and analyze how heat treatment affects hardening.

3. To impart knowledge on phase development of two isomorphous metals.

4. To teach students determine phases present in a material using XRD graph.

**Course Content:**

|  |
| --- |
| **Topic and Contents** |
| 1. Study of extensometers 2. Study and operation of UTM 3. Tensile test on mild steel specimen and plotting stress strain curve 4. Bending test on timber beams. 5. Compression test on common structural materials viz. timber, cast iron etc. 6. Determination of toughness of cast iron and mild steel specimen by Charpy and Izod test. 7. Hardness test by Brinell and Rockwell test. 8. Determination of deflection for various types of loading 9. Torsion test on brass and mild steel 10. Determination of stiffness of close coiled spring |

**Reference:**

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. Interpret hardness curve measured after heat treatment.

2. Find correlation between material structure and its creep.

3. Index XRD plot and determine phases of a material.

4. Perform non destructive failureanalysis.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S | S |  |  |  |  |  |  |  |  |  |  |
| 2 | S | S |  |  |  |  |  |  |  |  |  |  |
| 3 | S | S |  |  |  |  |  |  |  |  |  |  |
| 4 | S | S |  |  |  |  |  |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weightage (%)** |
| 1 | Remembering and Understanding | 35 |
| 2 | Applying the knowledge acquired from the course | 25 |
| 3 | Analysis and Evaluation | 40 |

**EMPLOYABILITY SKILLS – II**

**EM 102 C (L, T, P) = 1 (1, 0, 0)**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO.** | **TOPIC** | **DETAILS** | **CONTACT HOURS** |
| 1 | Communication | Role Play, Reading, Formal writing skills Listening, Interaction Process, Interpersonal Relationship | 15 |
| 2 | Attitude& Manners | Motivation, Team Building, Winning Strategy, CAN DO, | 5 |
| 3 | Preparation, presentation | Presentation skills, Preparation Skills, | 4 |
| 4 | Industry | Concept & Importance of SIP, Industrial Mentoring & Networking | 1 |

**EMPLOYABILITY SKILLS – III**

**EM 201 C (L, T, P) = 1 (1, 0, 0)**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO.** | **TOPIC** | **DETAILS** | **CONTACT HOURS** |
| 1 | Communication | Negotiation & Reasoning, Interaction Process, Interpersonal Relationship | 5 |
| 2 | Quantitative | Number System, Ratio & Proportion, Partnership, Percentage, Profit &Loss | 5 |
| 3 | Reasoning, | Analytical Reasoning, Coding & Decoding, Series | 5 |
| 4 | Motivation | Leadership & Styles, Self Esteem, Winning strategies, | 5 |
| 5 | Preparation, presentation | Self Esteem, Preparation of CV, Writing Application, Placement Mantra | 5 |

**EMPLOYABILITY SKILLS – IV**

**EM 202 C (L, T, P) = 1 (1, 0, 0)**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.NO.** | **TOPIC** | **DETAILS** | **CONTACT HOURS** |
| 1 | Aptitude Test Preparation | Numerical, Reasoning, Logical, Verbal | 10 |
| 2 | Employability Enhancement | Impactful Summer Internships, Statement of Purpose, Application / Cover Letter Writing, Email Application, Online Search & Registration | 5 |
| 3 | Interview Skills | Telephonic Interviews, Video Interviews, Group Discussion Techniques, Mocks – Recording & Playback | 6 |
| 4 | Miscellaneous | Industry Related Preparation, Company Specific Preparation, Current Affairs, Business News, General Knowledge | 5 |

|  |  |
| --- | --- |
| Course Title:**ADVANCE MATHEMATICS** | Course Code :**MA231** |
| Semester : **III** | Core / Elective : **Core** |
| Teaching Scheme in Hrs (L:T:P) : **3:0:0** | Credits : **3Credits** |
| Type of course : **Lecture + Assignments** | Total Contact Hours : **36** |
| Continuous Internal Evaluation : **40Marks** | SEE : **60Marks** |
| Programmes: **Diploma in Electrical Engineering** | |

**Pre-requisites:**

Knowledge of Basic Mathematics at Sec. and Sr. Sec. Level.

**Course Objectives:**

1. This course supposed to give the knowledge of basic concept of Linear Programming.
2. Analyse the Applications of PERT and CPM Network.
3. Analyse the Concept of Transportation problem.
4. Evaluate the Basic concept of Laplace transform.
5. Analyse the problems faced in Numerical differentiation and Integration.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Topic and Contents** | **Hours** | **Marks** |
| **UNIT-1:LINEAR PROGRAMMING** | 08 | 20 |
| Mathematical Formulation of Linear Programming problem.   * Graphical method of solving Linear Programming problem. * Simple method for solving Linear Programming problem. * Duality in Linear Programming problem. |  |  |
| **UNITS-2: PROJECT SCHEDULING** | 06 | 20 |
| Project Scheduling by PERT and CPM Network Analysis.  Sequencing Theory:   * General Sequencing problem * N-jobs through 2 machines & 3 machines * 2-jobs through m machine. |  |  |
| **UNITS-3: TRANSPORTATION PROBLEM** | 08 | 20 |
| Find the initial solution using:   * North West Corner rule, Least Cost Method.   Assignment problem:   * Solving Assignment problem |  |  |
| **UNIT-4:TRANSFORM CALCULUS** | 06 | 20 |
| Laplace transform with its simple properties. |  |  |
| **UNIT 5: NUMERICAL METHODS** | 08 | 20 |
| Finite differences and Interpolation, Numerical differentiation and Integration. Numerical solution of ordinary differential equations |  |  |
| **TOTAL** | **36** | **100** |

**Reference:**

1. Advanced Mathematics for Engineers by Chandrika Prasad
2. Higher Engineering Mathematics by B.S. Grewal
3. Higher Engineering Mathematics by Y.N. Gaur and C.L. Koul

4. Higher Engineering Mathematics by K.C. Jain and M.L. Rawat

**Course outcomes:**

*On successful completion of the course, the student will be able to:*

1. The course content gives full knowledge to learn Linear Programming.
2. Find the solution of problem dependent on Project Scheduling.
3. Solve the problems related to Transportation.
4. Enable students to solve difficulties face in Numerical method and transform Calculus.

**Mapping Course Outcomes with Program Outcomes:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course outcomes** | **Programme Outcomes** | | | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1 | S |  |  | M |  |  | S | M |  |  |  |  |
| 2 | S |  | S |  |  | M |  |  |  | S |  |  |
| 3 |  | M |  |  | S |  |  |  | M |  |  |  |
| 4 | S | S |  |  |  |  | M |  |  |  |  |  |

S: Strong relationship M: Moderate relationship

|  |
| --- |
| **Composition of Educational Components:** |

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom’s taxonomy) such as:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Educational Component** | **Weight age (%)** |
| 1 | Remembering and Understanding | 30 |
| 2 | Applying the knowledge acquired from the course | 35 |
| 3 | Analysis and Evaluation | 35 |

**Course Assessment and Evaluation:**

The Course will be delivered through lectures, class room interaction, exercises and self-study cases.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Method** | **What** | | **To whom** | **When/where**  **(Frequency in the course)** | **Max Marks** | **Evidence collected** | **Contributing to course outcomes** |
| **DIRECT ASSMENT** | CIE | Mid Term Test | Student | Two tests | 20 | Midterm Answer books | 1 to 8 |
| Weekly Test | Two Weekly Test | 10 | Weekly Test Copies | 7 to 9 |
| Graded  Assignments | Two Assignments | 10 | Log of record | 1 to 6 |
| **Total** | **25** |  |  |
| ESE | End Sem Evaluation | End of the course | 60 | Answer scripts at BTE | 1 to 9 |
| **INDIRECT ASSESSMENT** | Student feedback | | Students | Middle of the course | -NA- | Feedback forms | 1 to 4, delivery  of the course |
| End of Course survey | | End of course | Questionnaire | 1 to 9,  Effectiveness  of delivery of  instructions  and  assessment  methods |

**CIE** – Continuous Internal Evaluation **ESE** –End Semester Examination