

|                       |                                                |
|-----------------------|------------------------------------------------|
| <b>INSTITUTE</b>      | <b>DIPLOMA STUDIES</b>                         |
| <b>PROGRAM</b>        | <b>DIPLOMA ENGINEERING (CIVIL ENGINEERING)</b> |
| <b>SEMESTER</b>       | <b>3</b>                                       |
| <b>COURSE TITLE</b>   | <b>BUILDING PLANNING AND DIGITAL DRAFTING</b>  |
| <b>COURSE CODE</b>    | <b>09CI0308</b>                                |
| <b>COURSE CREDITS</b> | <b>2</b>                                       |

**Objective:**

- 1 To understand principles of building planning for residential and public buildings
- 2 To apply building bye-laws and National Building Code (NBC) in design
- 3 To develop manual and digital drafting skills
- 4 To learn AutoCAD for preparation of building drawings
- 5 To integrate planning concepts with digital execution

**Course Outcomes:** After completion of this course, student will be able to:

- 1 Apply planning principles and building regulations in design
- 2 Prepare building drawings manually and digitally
- 3 Use AutoCAD for drafting plans, elevations, and sections
- 4 Interpret and develop working drawings with services
- 5 Integrate building planning with modern digital drafting tools

**Pre-requisite of course:**ENGINEERING DRAWING

**Teaching and Examination Scheme**

| <b>Theory Hours</b> | <b>Tutorial Hours</b> | <b>Practical Hours</b> | <b>ESE</b> | <b>IA</b> | <b>CSE</b> | <b>Viva</b> | <b>Term Work</b> |
|---------------------|-----------------------|------------------------|------------|-----------|------------|-------------|------------------|
| 0                   | 0                     | 4                      | 0          | 0         | 0          | 50          | 50               |

| <b>Contents : Unit</b> | <b>Topics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Contact Hours</b> |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 1                      | <b>Principles of Building Planning</b><br>Principles of Building Planning, Types of buildings: Residential, Educational, Health, Industrial, Recreational, Principles of planning: Aspect, Prospect, Privacy, Grouping, Circulation, Functional requirements of buildings (lighting, ventilation, sanitation, safety), Spatial planning and land-use considerations, Orientation of buildings with respect to climate, Introduction to building components: Foundation, plinth, walls, floors, roof, doors, windows | 0                    |

| Contents :<br>Unit | Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Contact<br>Hours |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 2                  | <b>Building Bye-Laws and Regulations</b><br>Importance and necessity of building bye-laws, Overview of National Building Code 2016, Floor Space Index (FSI) and its calculation, Setbacks and open space requirements, Height regulations for buildings, Rules for natural light and ventilation, Sanitation and drainage requirements Fire safety provisions as per NBC Parking requirements and standards, Introduction to GDCR (General Development Control Regulations) Building plan approval process by local authorities | 0                |
| 3                  | <b>Building Drawing Fundamentals</b><br>Introduction to building drawing and its importance, Types of drawing scales and their uses, Standard lines and lettering conventions, Principles of dimensioning, Preparation of building plan, Drawing of elevation and section of buildings, Perspective drawing: Single-point and Two-point perspective, Use of conventional symbols and signs in drawings                                                                                                                          | 0                |
| 4                  | <b>Digital Drafting using AutoCAD</b><br>Introduction to Autodesk AutoCAD and its interface, Basic drawing commands: Line, Circle, Rectangle, Editing commands: Erase, Undo, Redo, File management: Open, Save, Units setting, Use of Grid, Snap, and Zoom tools, Editing tools: Offset, Trim, Extend Text creation and editing, Working with layers, Hatch and dimensioning tools, Polar tracking, Array command and object modification techniques                                                                            | 0                |
| 5                  | <b>Integrated Building Design &amp; Working Drawings</b><br>Preparation of complete residential building drawings, Key plan and site plan preparation, Layout planning of buildings, Foundation plan and basic structural details, Services drawings: Electrical layout, plumbing system, drainage system, Furniture layout and interior space planning, Coordination of architectural and service drawings, Presentation techniques for building drawings                                                                      | 0                |
| <b>Total Hours</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>0</b>         |

#### Suggested List of Experiments:

| Contents :<br>Unit | Topics                                                                                                                                                                                                                                                                                                        | Contact<br>Hours |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1                  | <b>Principles of Building Planning</b><br>Types of buildings: Residential, Educational, Health, Industrial, Recreational, Principles of planning (aspect, prospect, privacy, grouping, circulation), Functional requirements of buildings, Spatial and land-use planning, Introduction to building components | 10               |
| 2                  | <b>Building Bye-Laws and Regulations</b><br>Importance of building bye-laws, National Building Code (NBC 2016) provisions, FSI, setbacks, height regulations, Rules for light, ventilation, sanitation, fire safety, parking, Introduction to GDCR and approval process                                       | 8                |

### Suggested List of Experiments:

| Contents :<br>Unit | Topics                                                                                                                                                                                                                                                                                                                                          | Contact<br>Hours |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 3                  | <b>Building Drawing Fundamentals</b><br>Introduction to building drawing, Scales, lines, lettering, dimensioning, Plan, elevation, and section of buildings, Perspective drawing (single-point and two-point), Conventional symbols and signs, Preparation of line diagrams and detailed drawings                                               | 10               |
| 4                  | <b>Digital Drafting using AutoCAD</b><br>Introduction to AutoCAD and interface, Basic commands: Line, Circle, Rectangle, Erase, Undo/Redo, File management: Open, Save, Units, Grid, Snap, Zoom, Editing commands: Offset, Trim, Extend, Text, layers, hatch, and dimensioning tools, Use of polar tracking, array, and object modification     | 14               |
| 5                  | <b>Integrated Building Design &amp; Working Drawings</b><br>Preparation of complete residential building drawings, Key plan, site plan, and layout planning, Foundation plan and structural details, Services drawings: electrical, plumbing, drainage, Furniture layout and interior planning, Digital submission of drawings and presentation | 14               |
| <b>Total Hours</b> |                                                                                                                                                                                                                                                                                                                                                 | <b>56</b>        |

### Textbook :

- 1 Building Planning and Drawing, Dr. N. Kumara Swamy, harotar Publishing House Pvt. Ltd., 2019
- 2 A Textbook of Building Planning and Design, Dr. Amol D. Pawar, Mrs. Vaishali S. Limaye, Prakash A. Vedpathak, Nirali Prakashan, 2019

### References:

- 1 Introduction to AutoCAD 2026 for Civil Engineering Applications, Introduction to AutoCAD 2026 for Civil Engineering Applications, Bernd S. Palm, SDC Publications, 2025
- 2 Practical Autodesk AutoCAD 2023 and AutoCAD LT 2023, Practical Autodesk AutoCAD 2023 and AutoCAD LT 2023, CAD practical series authors, Packt, 2023

### Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

| Distribution of Theory for course delivery and evaluation |            |       |         |          |                                        |
|-----------------------------------------------------------|------------|-------|---------|----------|----------------------------------------|
| Remember /<br>Knowledge                                   | Understand | Apply | Analyze | Evaluate | Higher order<br>Thinking /<br>Creative |
| 20.00                                                     | 30.00      | 50.00 | 0.00    | 0.00     | 0.00                                   |

**Instructional Method:**

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory
- 4 Students will use supplementary resources such as online videos, videos, e- courses, Virtual Laboratory

**Supplementary Resources:**

- 1 <https://nptel.ac.in/courses/112103019>
- 2 [https://onlinecourses.swayam2.ac.in/e-learning/preview/ntr25\\_ed52](https://onlinecourses.swayam2.ac.in/e-learning/preview/ntr25_ed52)
- 3 <https://swayamlearn.com/online-autocad-learning-course-for-civil-engineering-and-architecture>