25CVMJ205: Building and Town Planning

w. e. f. Academic Year:	**2026-27**
Semester:	**3rd (Civil Engineering)**
Category of the Course:	**PCC**
Prerequisite:	Basic knowledge of Engineering drawing, building material and fundamental computer operations.
Rationale:	This subject provides fundamental knowledge of building planning, drawing, and town planning principles essential for civil engineers. It develops the ability to interpret building bye-laws, analyze site and zoning requirements, and design functional, safe, and sustainable building layouts. The inclusion of AutoCAD and NBC provisions equips students with practical drafting skills and regulatory awareness needed for professional practice. Overall, the course bridges theoretical planning concepts with real-world design applications.

Course Outcomes:

After Completion of the Course, Student will able to:

CO No.	Course Outcome (CO)	RBT Level (Cognitive Domain)
CO1	Explain principles of building planning, functional requirements, and building components.	Remember, Understanding
CO2	Interpret building bye-laws, FAR, zoning regulations, and legal provisions (NBC & RERA)	Understanding ,Analyze
CO3	Analyze and prepare planning layouts for residential and public buildings.	Analyze ,Apply
CO4	Apply town planning concepts including land use, zoning, and urban development.	Apply
CO5	Develop building drawings using AutoCAD and demonstrate awareness of BIM and sustainable practices.	Remember, Apply,Create

Teaching and Evaluation Scheme:

Teaching Scheme					Examination Scheme				
L	**T**	**P**	**C**	**Hrs/Week**	**IE**	**EE**	**CIA**	**Practical**	**Total Marks**
2	0	4	4	6	40	60	30	20	150

IE: Internal Exam
EE: External Exam (End Semester)
CIA: Continuous Internal Assessment
Practical: Practical Exam (End Semester)

Detailed Syllabus:

Unit No	Topic	Hrs.	% of Weightage (Approx.)
UNIT: 1	**Principles of Building Planning:** Functional requirements of residential and public buildings, Principles of planning: aspect, prospect, privacy, grouping, circulation, sanitation, Building components and space standards. Orientation and climatic considerations	**6**	**20**
UNIT: 2	**Building Bye-laws & Regulations:** **1. Building bye-laws** Introduction to building bye-laws, Space standards and building regulations, Floor Area Ratio (FAR) and area calculations,Zoning regulations and land use control. **2. Introduction to RERA** Introduction to RERA (Real Estate Regulatory Authority),Objectives and importance of RERA, Rights and duties of stakeholders. **3.Overview of NBC provisions** Importance of NBC.	**6**	**20**
UNIT: 3	**Building Design:** Planning of residential buildings, Planning of public buildings (schools, hospitals, offices): Line plan, detailed plan, elevation, and section.	**6**	**20**
UNIT: 4	**Fundamentals of Town Planning:** Origin and growth of towns, Satellite towns and ribbon development,. Elements of city planning,Zoning and land use, Master plan, CBD, Civic centers, Shopping centers, Town planning schemes and Surveys.	**6**	**20**
UNIT: 5	**Modern Planning Tools, NBC, Sustainability & BIM:** **1. Introduction to AutoCAD** Introduction to AutoCAD:basic commands, layers, dimensions. Preparation of simple building drawings, NBC bye-laws (setbacks, ventilation, fire safety, accessibility), Sustainable planning and green building concepts,Case studies of planned towns. **2. Introduction to BIM (Building Information Modeling):** Concept and importance of BIM, Difference between CAD and BIM, Applications of BIM in construction planning.	**6**	**20**
		30	**100**

List of Manual Drawings:

Sr.No	Topic	Hrs
1	Building Component	2
2	Sketch of various types of foundation: Shallow foundation (a) Spread footing – i. Single footing for a column ii. strapped footing for a column iii. Slopped footing iv. Wall footing without step v. stepped footing for wall vi. Grillage foundation (b) Combined footing : Rectangular and trapezoidal (c) Strap Footing: Rectangular and trapezoidal (d) Raft foundation	2
3	Sketch of various types of doors and windows	2
4	Sketch of staircase used in residential building	2
5	Sketch of various types of doors and windows	2
6	Sketch of various roof	2
7	Sketch of formwork	2
8	Planning and drawing of residential building	8
9	Furniture and drainage layout of residential building	4
10	Planning and drawing of public building	4
		30

List of Auto-CAD Drawings:

Sr.No	Topic	Hrs
1	AutoCAD Basic Commands Practice: Line, circle, trim, extend, offset, mirror, copy, rotate.	4
2	Editing & Layer Management: Layers, dimension styles, text styles.	2
3	Convert manual drawing of Building Component to digital drawing	4
4	Convert manual drawing of various types of foundation: Shallow foundation (a) Spread footing – i. Single footing for a column ii. strapped footing for a column iii. Slopped footing iv. Wall footing without step v. stepped footing for wall vi. Grillage foundation to digital drawing	4
5	Convert manual drawing of Sketch of staircase used in residential building to digital drawing	2
6	Convert manual drawing of Planning and drawing of residential building to digital drawing	10
7	Convert manual drawing of Furniture and drainage layout of residential building to digital drawing	4
		30

Learning Resources:

Reference Books and Text books

1. Building Planning and Design – Dr. N. Kumaraswamy
2. Town Planning – Rangwala
3. Building Construction – B.C. Punmia
4. Building Drawing by Shah, M.G., Kale, C.M. and Patki

Teaching Learning Method

1. Lecture-based teaching-learning
2. Individual learning/self-study
3. Inquiry-based learning
4. Game-based learning
5. Expeditionary learning (Real-world problems)
6. Technology-based Learning
7. Learning through problem-solving

Course Outcomes Mapping:

CO No.	Course Outcome (CO)	POs/PSOs Mapped	Cognitive Level (RBT)	Knowledge Category	Class Sessions (Lecture)
CO1	Explain principles of building planning, functional requirements, and basic building components.	PO1,PO2,PO6, PO11,PSO1, PSO2	Understanding	Conceptual	7
CO2	Interpret building bye-laws, space standards, and planning regulations including FAR and zoning.	PO1,PO2,PO6, PO7,PO11, PSO1, PSO2	Understanding ,Analyze	Conceptual	2
CO3	Analyze and prepare planning layouts for residential and public buildings	PO1,PO2, PO3, PO5,PO6,PO8,PO9, PO10, PSO1, PSO2	Analyze ,Apply	Conceptual and Procedural	6
CO4	Apply town planning concepts including zoning, land use, and urban development elements.	PO1,PO2,PO3, PO6, PO7,PO10, PSO1, PSO2	Apply	Procedural	8
CO5	Develop building drawings using AutoCAD and apply NBC provisions and sustainable planning concepts	PO1, PO2, PO3, PO4,PO5, PO6, PO7, PO8,PO9,PO10, PO11, PSO1, PSO2	Apply,Create	Conceptual and Procedural	7

Mapping of COs with POs & PSOs:

CO	PO											PSO	
	1	2	3	4	5	6	7	8	9	10	11	1	2
CO1	3	2	0	0	0	1	0	0	0	0	1	2	1
CO2	3	3	0	0	0	2	1	0	0	0	1	2	1
CO3	2	3	3	0	2	1	0	1	1	1	0	3	1
CO4	2	3	1	0	0	3	2	0	0	1	0	2	1
CO5	1	2	3	2	3	1	1	1	1	2	2	3	1

3: High, 2: Medium, 1: Low

Sustainable Development Goals (SDG) Integration

This course integrates sustainability by promoting efficient building planning, regulated urban development, safe construction practices, and modern digital tools such as CAD and BIM. It emphasizes resource-efficient buildings, inclusive infrastructure, planned urban growth, and environmentally responsible development. The course aligns with SDG 4, SDG 9, SDG 11, and SDG 12.

CO	Course Outcome	Relevant SDGs	Justification
CO1	Explain the principles of building planning, functional requirements, and climatic considerations for residential and public buildings.	SDG 4, SDG 11	Develops knowledge for sustainable,safe and comfortable building design.
CO2	Describe building bye-laws, regulations, RERA provisions, and NBC requirements for construction practices.	SDG 9, SDG 11, SDG 16	Promotes safe infrastructure, legal compliance, and transparent governance in construction.
CO3	Prepare plans, elevations, and sections for residential and public buildings.	SDG 9, SDG 11	Supports development of planned and functional infrastructure systems.
CO4	Explain fundamentals of town planning, zoning, land use, surveys, and urban development concepts.	SDG 11, SDG 12	Encourages sustainable cities, efficient land use, and organized urban growth.
CO5	Apply modern planning tools such as AutoCAD, BIM, NBC provisions, and green building concepts in planning practice.	SDG 9, SDG 11, SDG 12	Encourages smart construction technologies, sustainable buildings, and efficient resource management.