

25UCET416	BUILDING PLANNING AND REGULATION	Category	L	T	P	R	Credit	Year of Introduction
		PEC	3	0	0	0	3/5	2025

Preamble: This course enables students to understand the principles of building planning and regulations. The course covers building components, preparation of plans, sections and elevations, and key provisions of NBC and Kerala Building Rules. It also helps in equipping students with essential knowledge for planning, drafting and regulatory compliance in civil engineering.

Prerequisite: Nil

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

CO	Course Outcomes	Knowledge Level
CO1	Explain principles and factors of residential building planning.	K2 Understand
CO2	Describe building components, services, barrier-free access, and sustainability aspects.	K2 Understand
CO3	Develop detailed drawing of buildings.	K3 Apply
CO4	Explain building codes, rules, sustainability provisions, and digital approval systems.	K2 Understand

Mapping of course outcomes with program outcomes and program specific outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	-	2	-	-	2	-	-	-	-	-	3	-	-
CO2	2	-	2	-	-	3	-	-	-	-	-	2	-	3
CO3	2	2	3	-	2	2	-	-	-	-	-	2	2	-
CO4	2	-	2	-	2	3	-	-	-	-	-	2	-	2
Avg	2.25	2	2.25	-	2	2.67	-	-	-	-	-	3	2	2.5

Mapping of course outcomes with Knowledge and Attitude Profile (WK)

	WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9
CO1	*	*	*	*	*		*		
CO2	*	*	*	*	*		*		
CO3	*	*	*	*	*	*	*		
CO4	*	*	*	*	*	*	*		

Wks Mapped with the course

WK1	WK2	WK3	WK4	WK5	WK6	WK7	WK8	WK9
*	*	*	*	*	*	*		

Mark Distribution:

Total Marks	CIE Marks	ESE Marks	ESE Duration
100	40	60	2.5 hrs

Each Level-5 Course carries 5 credits, comprising 3 Programme Elective (PE) credits and 2 additional credits awarded based on student performance. The instructional pattern includes 3 hours of classroom teaching and 3 hours of mandatory self-study per week.

Assessment is structured as follows:

Lower cognitive levels (Remember, Understand, Apply): CIE + ESE

Higher levels (Analyze, Evaluate): CIE only, which includes a viva voce conducted by an external subject expert.

The additional 2 credits are awarded only if the student secures 80% or above in CIE (or 70% in the viva component alone) and obtains at least a Grade B in the combined CIE + ESE. Otherwise, the student is awarded only the 3 PE credits.

Continuous Internal Evaluation Pattern:

Attendance	: 5 marks
Continuous Assessment Test	: 15 marks
Continuous Assessment (Evaluate & Analyse):	10 marks
Viva	:10 marks

Criteria for Evaluation(Evaluate and Analyse): 10 marks

Students should Identify a real word requirement for a residential building. Develop detailed drawing of it incorporating details, selecting a suitable site, using the concepts learned in the course.

Criteria for evaluation:**1. Problem Definition (K4 - 2 points)**

Clearly defines the requirements and constrains.

2. Problem Analysis (K4 - 2 points)

Compare and justify the proposed schemes with evidence and logical reasoning.

3. Evaluate (K5 - 2 points)

- Thoroughly evaluate the proposed solutions.
- Compares trade-offs, advantages, and disadvantages.
- Considers feasibility, scalability, and practical implications.

4. Design and drawing (K6 - 4 points)

Demonstrates proficiency in creating drawings for technical requirements including approval.

SYLLABUS

Module 1 (12 hrs)

Introduction to building planning – need and objectives. Principles of planning: aspect, prospect, orientation, privacy, grouping, circulation, roominess, sanitation, flexibility, economy, elegance, and aesthetics. Factors affecting building planning – climate, topography, soil conditions, availability of materials, by-laws, and social requirements. Site selection and site planning. Classification of buildings based on occupancy. Functional planning of residential buildings and public buildings.

Module 2 (14 hrs)

Functional requirements of building components – strength, stability, durability, weather resistance, fire resistance, thermal and acoustic comfort, safety, and aesthetics. Introduction to building services – water supply systems, sanitary fittings, drainage and sewerage systems, rainwater harvesting, ventilation and daylighting, electrical installations, and fire protection services. Barrier-free access – concepts of universal design; provisions for differently abled persons - Sustainability considerations in building components – energy-efficient materials, green building materials, thermal insulation, and waste reduction practices.

Module 3 (15 hrs)

Introduction to building drawings – purpose and types. Conventional symbols, scales, and notation used in building drawings. Preparation and interpretation of line plans. Preparation of detailed building drawings – plan, elevation, and sections of buildings. Concepts of plot area, built-up area, carpet area, floor area ratio (FAR), coverage, setbacks, and building height. Introduction to submission drawings, approval procedures, and documentation required for building permits.

Module 4 (15 hrs)

Overview of National Building Code of India – objectives and scope; general building requirements; fire and life safety provisions; lighting and ventilation requirements. Overview of Kerala Building Rules – plot size, setbacks, coverage, FAR, height restrictions, parking requirements, access roads, and occupancy regulations. Importance of building by-laws. Compliance and legal aspects in building planning. Introduction to sustainable building concepts and green building provisions in codes. Introduction to digital approval systems – overview of online building permit and approval platforms; role of digital systems in streamlining building approvals, compliance checking, and transparency in building regulation processes.

Text Books:

1. Arora, S. P., & Bindra, S. P. (2010). Building construction. Dhanpat Rai & Sons.
2. Rangwala, S. C. (2011). Building construction. Charotar Publishing House.

3. Shah, M. G., Kale, C. M., & Patki, S. Y. (2014). Building planning and drawing. Charotar Publishing House.
4. Saini, B. S. (2010). Building planning and design. Standard Publishers.

Reference Books:

1. Manuals and guidelines related to digital building permit systems – SANKETHAM, K-SMART, IBPMS, AutoDCR, and PreDCR (Government notifications and user manuals).
2. V.K. Jain, (1986) Design and Installation of Services in Building Complexes & High Rise Buildings, Khanna Tech Publishers.
3. National building code of India(2016).Bureau of Indian Standards
4. Kerala Municipality Building Rules, 2019 (as amended up to 2025), Government of Kerala.
5. Kerala Panchayat Building Rules, 2019 (as amended up to 2025), Government of Kerala.

END SEMESTER EXAMINATION – MODEL QUESTION PAPER

Course Code	25UCET416
Course Name	BUILDING PLANNING & REGULATION
Max. Marks: 60	Duration: 2.5 Hours

Part A				
<i>(Answer all questions. Each question carries 3 marks)</i>				
Qn No.	Question	Marks	CO	BL
1	Explain the need and objectives of building planning.	3	1	L2
2	Describe the process of site selection for a building project	3	1	L2
3	Describe the importance of strength and stability in buildings.	3	2	L2
4	Describe the purpose of drainage and sewerage systems.	3	2	L2
5	Differentiate between carpet area and built-up area.	3	3	L2
6	Describe the significance of setbacks in building planning.	3	3	L2
7	Describe the importance of building by-laws.	3	4	L2
8	Explain the importance of lighting and ventilation requirements in buildings.	3	4	L2
Part B				
<i>(Answer any one full question from each Module. Each carry 9 marks)</i>				
Module I				
Qn No.	Question	Marks	CO	BL
9.a	Classify buildings based on occupancy and explain their characteristics.	3	1	L2
9.b	Summarize the functional planning requirements of residential buildings.	6	1	L2
OR				
10.a	Describe the principles of building planning with suitable examples.	3	1	L2
10.b	Explain the planning considerations for public buildings.	6	1	L2
Module II				
Qn No.	Question	Marks	CO	BL
11.a	Explain the importance of energy-efficient and green building materials.	3	2	L2
11.b	Describe the role of ventilation and daylighting in buildings.	6	2	L2
OR				
12.a	Explain the functional requirements of building components.	3	2	L2

12.b	Describe the concepts of barrier-free access and universal design.	6	2	L2
Module III				
Qn No.	Question	Marks	CO	BL
13	A residential plot has an area of 300 m ² . The built-up area of the proposed building is 180 m ² . Calculate the building coverage percentage and comment on its significance.	9	3	L3
OR				
14	A plot of area 400 m ² is permitted an FAR of 2.0. Compute the maximum permissible floor area that can be constructed on the plot.	9	3	L3
Module IV				
Qn No.	Question	Marks	CO	BL
15	Explain the major provisions of the Kerala Building Rules related to setbacks, FAR, and coverage.	9	4	L2
OR				
16	Explain the role of digital approval systems in streamlining building permit processes.	9	4	L2
