

Techno India NJR Institute of Technology



Course File

Building Planning (4CE4-07)

Session 2022-23

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RAJASTHAN TECHNICAL UNIVERSITY, KOTA

SYLLABUS

II Year-IV Semester: B.Tech. (Civil Engineering)

4CE4-07: BUILDING PLANNING

Credits: 2

Max. Marks: 100 (IA:20, ETE:80)

2L+0T+0P

End Term Exam: 2 Hours

SN	CONTENTS	Hrs.
1	Introduction: to scope, objective and outcome of subject	1
2	Introduction: Types of buildings, criteria for location and site selection, site plan and its detail.	2
3	Sun Consideration : Different methods of drawing sun chart, sun shading devices, design of louvers.	3
4	Climatic and comfort Consideration: Elements of climate, global climate, climatic zones of India, thermal comfort, biclimatic chart,	3
5	Orientation: Meaning, factors affecting orientation, orientation criteria for tropical climate.	1
6	Building Bye Laws and NBC Regulations: Objective of by-laws, regulation regarding; means of access, lines of building frontages, covered area, floor area ratio, open spaces around buildings, height & sizes of rooms, plinth regulation.	3
7	Principles of Planning: Different factors affecting planning viz-aspect, prospect, furniture requirement, roominess, grouping, circulation, elegance, privacy etc.	3
8	Vastu Shastra In Modern Building planning: Factors considered in Vastu, site selection, orientation, planning and design of residential buildings, school/hospital	3
9	Functional Design And Accommodation Requirements Of Non Residential Buildings: viz-school buildings, rest house, primary health centers, post office etc.	3
10	Services in Buildings (A) Lighting and ventilation, doors and windows, lifts. (B) Acoustics, sound insulation and noise control. (C) Fire fighting provisions	6
TOTAL		28

Course Overview:

Student will learn basics of Building Planning from this 28-hour course. They will be able to perform The course aims at providing a fundamental understanding of the physics related to buildings and to propose an overview of the various issues that have to be adequately combined to offer the occupants a physical, functional and psychological well-being. Students will be guided through the different components, constraints and systems of a work of architecture. These will be examined both independently and in the manner in which they interact and affect one another.

Building Planning is the basic requirement for the job role of Construction developer in the companies like, Architect Hafeez Contractor,Capsomere&Kalapa Consultantsetc.

Course Outcomes:

CO.NO.	Cognitive Level	Course Outcome
1	Comprehension	Identify the factors to be considered in planning and construction of building.
2	Application	Impart the ability to work with an architect and contractor.
3	Synthesis	Plan a building following the bye-laws.
4	Comprehension	Plan the buildings according the modern requirements such as sustainability, environment friendly etc.
5	Synthesis	Prepare drawings, foundation plans and others executable drawings with proper details for different building

Prerequisites:

- 1: Build an Articulated Plan. The obvious place to start during the planning process is building a plan.
- 2: Focus on Strategic Differentiation. Build a plan that's focused on your strategic differentiation.
- 3: Align Your Organization.
- 4: To learn Building Bye laws for residential and public building
- 5: To gain knowledge about various building components, size, abbreviations, symbols used in drawing.

Course Outcome Mapping with Program Outcome:

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CO246.1	3	2	2	2	2	2	2	1	2	1	1	1	2	2	2
CO246.2	2	2	2	2	1	2	2	1	2	1	2	1	2	2	2
CO246.3	3	2	2	2	2	2	2	1	2	1	1	1	2	2	2
CO246.4	2	2	1	2	2	2	3	1	2	1	1	2	3	2	2
CO246.5	2	1	1	1	2	2	1	1	2	1	1	2	3	2	2
CO246 (AVG)	2.4	1.8	1.6	1.8	1.8	2	2	1	2	1	1.2	1.4	2.4	2	2

Course Coverage Module Wise:

Lecture No	Unit	Topic
1	1	INTRODUCTION TO SCOPE, OBJECTIVE AND OUTCOME OF SUBJECT
2	2	INTRODUCTION: Types of buildings, criteria for location and site selection
3	2	Site plan and its detail
4	3	Sun consideration: different methods of drawing sun-chart
5	3	Sun shading devices
6	3	Design of louvers
7	4	CLIMATIC AND COMFORT CONSIDERATION: Elements of climate
8	4	Global climate, climatic zones of India, thermal comfort
9	4	Bioclimatic chart
10	5	ORIENTATION: Meaning, factors affecting orientation, orientation criteria

		For tropical climate
11	6	BUILDING BYE LAWS AND NBC REGULATIONS: Objective of by-laws, regulation regarding; means of access, lines of building frontages
12	6	Covered area, floor area ratio, open spaces around buildings
13		Height & sizes of rooms, plinth regulation
14	7	PRINCIPLES OF PLANNING: Different factors affecting planning viz-aspect
15		Prospect, furniture requirement, roominess, grouping
16		Circulation, elegance, privacy etc.
17	8	VASTU SHASTRA In Modern Building planning: Factors considered in Vaastu, site
18		Orientation, planning and design of residential, buildings, school/hospital
19		Orientation, planning
20	9	FUNCTIONAL DESIGN AND ACCOMMODATION REQUIREMENTS OF
21		Rest house, primary health centers, post office etc.
22		Rest house, primary health center's
23	10	SERVICES IN BUILDINGS (A) Lighting and ventilation
24		(A) doors and windows, lifts

25		(A)Lighting and ventilation, doors and windows, lifts
26		(B)Acoustics
27		(B) sound insulation & noise control
28		(C)Firefighting provisions

TEXT/REFERENCE BOOKS

- A. Building Drawing by M.G.Shah, C.M. Kala, S.Y.Patki , Tata Mc Graw Hills.
- B. Manual of Tropical Housing and Buildings by Koenigs Berger Orient and Longman.
- C. SP.41 (S&T)- Handbook on functional Requirements of Buildings Part-I
- D. National Building Code, BIS.

COURSE LEVEL PROBLEMS (TEST ITEMS):

CO.NO.	Problem description
1	A. Write about types of building. B. Write about site selection C. Write a note on sun consideration
2	A. Write a note on element of Climate comfort consideration B. Write about comfort consideration C. Write a note on orientation of building
3	A. Write about Building by laws B. Write about FAR and OTS C. Write about Plinth Regulation
4	A. Write about principal of planning B. Write about factor affecting of planning C. Explain about privacy of building
5	D. Write about Vastu shastra in modern building E. Explain functional design and accommodation req. F. Write about Services in building

Assessment Methodology:

1. Practical exam in lab where they have to Draw Plans (Once in a week)
2. Assignments one from each unit.
3. Midterm subjective paper where they have write about subject. (Twice during the semester)
4. Final paper at the end of the semester subjective.

Teaching and Learning resources unit-wise:

Unit-1

Types of building

Video Tutorials:

<https://www.youtube.com/watch?v=xsuhqi5QjnI>

Theory concepts:

<https://ocw.mit.edu/courses/architecture/4-401-introduction-to-building-technology-spring-2006/lecture-notes/>

Sample Quiz:

https://mytutorialworld.com/objective-questions/questions_view.php?table_name=dm_civil_set_1_planning_of_building&title=Planning%20of%20Building%20Objective%20Questions%20with%20Answers

Unit-2

Sun Consideration

Video Tutorials:

<https://www.youtube.com/watch?v=GtnWqU2DwFk>

Theory concepts:

https://www.bput.ac.in/lecture-notes-download.php?file=lecture_note_403105181219180.pdf

Sample Quiz:

https://mytutorialworld.com/objective-questions/questions_view.php?table_name=dm_civil_set_1_planning_of_building&title=Planning%20of%20Building%20Objective%20Questions%20with%20Answers

Unit 3

Orientation

Video Tutorials:

<https://www.youtube.com/watch?v=-ZPTRLPYXCE>

Theory concepts:

<https://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=3592&context=thesesdissertations>

Sample Quiz:

https://mytutorialworld.com/objective-questions/questions_view.php?table_name=dm_civil_set_1_planning_of_building&title=Planning%20of%20Building%20Objective%20Questions%20with%20Answers

Unit-4

Building by laws

Video Tutorials:

<https://www.youtube.com/watch?v=ZI-AH1N5wrM>

Theory concepts:

<http://www.faadooengineers.com/online-study/post/ce/principals-of-town-planning-and-architecture/1585/building-by-laws>

Sample Quiz:

https://mytutorialworld.com/objective-questions/questions_view.php?table_name=dm_civil_set_1_planning_of_building&title=Planning%20of%20Building%20Objective%20Questions%20with%20Answers

Unit 5

Principal of planning

Video Tutorials:

https://www.youtube.com/watch?v=FF_5w5hZav4

Theory concepts:

<https://www.vtpi.org/planning.pdf>

Sample Quiz:

https://mytutorialworld.com/objective-questions/questions_view.php?table_name=dm_civil_set_1_planning_of_building&title=Planning%20of%20Building%20Objective%20Questions%20with%20Answers

Unit-6

Vastu Shastra

Video Tutorials:

<https://www.youtube.com/watch?v=sHEjKhZMU8A>

Theory concepts:

<https://instapdf.in/vastu-shastra-book/>

Sample Quiz:

https://mytutorialworld.com/objective-questions/questions_view.php?table_name=dm_civil_set_1_planning_of_building&title=Planning%20of%20Building%20Objective%20Questions%20with%20Answers

TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY, UDAIPUR

B. TECH 2nd – YEAR (IV SEM.) CIVIL

ENGINEERING BUILDING

PLANNING (4CE4-07)

Assignment 1

1. Write down the information given by a site plan.
2. Write down the factors to be considered in selection of site
3. Discuss the different methods of drawing sun chart or sun path diagram, with any one diagram.
4. What are lovers? Explain with diagram
5. Discuss different climate conditions.
6. Explain any two types of climate zones
7. Discuss the different types of building in detail?
8. State and discuss the different types of sun shading devices.
9. What is the orientation of a building? Discuss the factors affecting them
10. Explain the designing of sun shade.

TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY, UDAIPUR
B. TECH 2nd – YEAR (IV SEM.) CIVIL ENGINEERING
BUILDING PLANNING (4CE4-07)

Assignment 2

1. List in detail, various factors considered in Vastu Shastra.
2. Name different kinds of plots described as per vastu.
3. Name & explain ten requirements of a residential building.
4. What is NBC provision for a office building?
5. Name & explain ten requirements of a non-residential building.
6. Design a residential building on a plot of 15mX25m as per vastu. (Assume suitable data, and mention)
7. Draw the dig of a window mentioning all (8) elements.
8. What is the objective of ventilation in a building? Discuss various methods of artificial ventilation.
9. Discuss in detail, sound insulation of a building.
10. Write a short note on fire-fighting provision of a building.

Quiz

1. In a building, to provide ultimate comfort to occupants _____ can be used.
 - a) AC
 - b) HVAC
 - c) Ventilators
 - d) HAC

2. The slope of a ramp should not be more than:
 - a) 1 in 35
 - b) 1 in 20
 - c) 1 in 15
 - d) 1 in 10

3. How many types of ventilation are there?
 - a) 3
 - b) 4
 - c) 2
 - d) 5

4. A fire detector cannot detect:
 - a) Radiation
 - b) Heat
 - c) Light
 - d) Smoke

5. A _____ is a set of rules that specify the standards for constructed objects such as buildings and non-building structures.
 - a) Building code
 - b) Building bye-laws
 - c) IS code
 - d) Procedure

6. Which is not included in building codes?
 - a) Mechanical integrity
 - b) Safety
 - c) Providing employment
 - d) Structural integrity

7. Which is not a objectives of Building Bye laws?

- a) Allows disciplined and systematic growth of buildings and towns and prevent haphazard development
- b) Protect safety of public against fire, noise, health hazards and structural failures
- c) They provide health, safety and comfort to the people who live in buildings
- d) Renovation of old buildings without any charge by the government

8. Combining two or more plots as a single plot is called _____

- a) Amalgamation
- b) Frontage
- c) Bifurcation
- d) Building setback

9. Which is not a Building Bye-Laws Characteristic?

- a) The rules must be specific, clear and the language of rules should be grammatically correct
- b) Terms used should be defined clearly so that there must be one and only one meaning of the term
- c) Due to some special conditions and requirements, some bye-laws differ from the bye-laws of other places
- d) No modification is allowed if required

10. Which of the following is not a zone?

- a) Residential
- b) Commercial
- c) Industrial
- d) Electrical

11. Which is not a type of building?

- a) Educational Building
- b) Mercantile Building
- c) Institutional Building
- d) Domestic building

12. Line up to which the plinth of a building adjoining a street may be law-fully extended is called?

- a) Building line
- b) Building boundary
- c) Building extend
- d) Building plan

13. Door opening is not counted in the lighting and ventilation of the building.

- a) True
- b) False

14. Carpet Area does not include the thickness of the inner walls.

- a) True
- b) False

15. Fire safety is the set of practices intended to reduce the destruction caused by fire.

- a) True
- b) False

16. For industrial unit having area more than 0.8 hectare, and 5% area can be used as a general parking.

- a) True
- b) False

Solution

1.b, 2.c, 3.a, 4.c, 5.a, 6.c, 7.d, 8.a, 9.d, 10.d, 11.d, 12.a, 13.a, 14.a, 15.a, 16.a

4E1210

Roll No. _____

Total No of Pages: **3****4E1210****B. Tech. IV - Sem. (Main) Exam., May - 2019****PCC Civil Engineering****4CE4 – 07 Building Planning****Time: 2 Hours****Maximum Marks: 80***Instructions to Candidates:**Attempt all five questions from Part A, four questions out of six questions from Part B and two questions out of three from Part C.**Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.**Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*1. half size sheet2. NIL**PART – A****(Answer should be given up to 25 words only)****[5×2=10]****All questions are compulsory**

Q.1 Define the term: -

[2]

- (a) Built of area
- (b) Carpet area
- (c) Super built up

Q.2 Write the different methods of drawing the sun chart. What is the utilization of sun chart?

[2]

Q.3 What are the acoustical defects in buildings? Explain in brief.

[2]

[4E1210]

Page 1 of 3

[4620]

<http://www.rtuonline.com>

- Q.4 Write short notes on:- [2]
- (a) Grouping
 - (b) Roominess
 - (c) Circulation
- Q.5 Write a short essay on Hot arid Zones. [2]

PART – B

(Analytical/Problem solving questions)

[4×10=40]

Attempt any four questions

- Q.1 Discuss the criteria for site selection for a building. How functions of a building affects site selection. <http://www.rtuonline.com> [10]
- Q.2 Write short notes on:- [2.5×4=10]
- (a) Bi climatic chart
 - (b) Elegance
 - (c) Plinth regulation
 - (d) Global climate
- Q.3 What are the objectives of building by laws? [10]
- Q.4 Describe briefly the general principles underlying the noise control and various constructional measures adopted for achieving sound insulation in buildings. [10]
- Q.5 Which factors should be considered while purchasing a residential building according to the Vastu Shastra? Why we move towards Vastu? [10]

<http://www.rtuonline.com>

- Q.6 Explain how do you classify doors and windows from their operational point of view. [10]

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions) [2×15=30]

Attempt any two questions

- Q.1 Design and draw the plan of a residential building on a plot of 15m × 25m. Road is on the north side of the plot. [15]
- Q.2 Classify the buildings based on occupancy and types of construction. [15]
- Q.3 Discuss acoustical design of a cinema hall. Support your answer with neat sketch. [15]
-

PART – B

(Analytical/Problem solving questions)

[4×10=40]

Attempt any four questions

- Q.1 What are the orientation criteria for the Indian tropical climate? [10]
- Q.2 Write down the bye-laws regulations regarding – [4×2½=10]
- (a) Set back
 - (b) Carpet area
 - (c) Size of habitable rooms
 - (d) F. A. R.
- Q.3 What is thermal comfort? How will you achieve thermal comfort for a residential building in Rajasthan? [10]
- Q.4 Explain the layout of different components of a residential building as per the cardinal directions in Vastu. [10]
- Q.5 What are the louvers? Explain their types with the help of a diagram. [10]

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions)

[1×15=15]

Attempt any one questions

- Q.1 Draw a detailed plan of a secondary school for an area with population 15,000. Estimate the size of plot, size of classrooms and other components. Show the detailed plan of a classroom with furniture plan and dimension detail. [15]
- Q.2 What is sun path diagram? What is its significance in building planning? Explain the method of drawing sun path diagram with a neat sketch. [15]
- Q.3 What are the remedial treatments for sound insulation of walls, floors and ceilings? [15]

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4E1317

Roll No. _____

Total No. of Pages: 2

4E1317

B. Tech. IV - Sem. (Main) Exam., - 2022

Civil Engineering

4CE4 – 07 Building Planning

Time: 3 Hours

Maximum Marks: 70

Instructions to Candidates:

Attempt all ten questions from Part A. Five questions out of seven questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

PART – A

(Answer should be given up to 25 words only)

[10×2=20]

All questions are compulsory

- Q.1 What are the climatic zones of India?
Q.2 Explain about plinth regulation.
Q.3 What are the objectives of building planning?
Q.4 Write down about noise control.
Q.5 What are the louvers?
Q.6 What do you understand by terms aspect & prospect?
Q.7 Write about sun shading devices.

[4E1317]

Page 1 of 2

[1920]

- Q.8) What is thermal comfort?
 Q.9) Explain the term global climate.
 Q.10) What do you understand by floor area ratio?

PART – B

(Analytical/Problem solving questions)

[5×4=20]

Attempt any five questions (Word limit 100)

- Q.1 Discuss factors to be considered in “Vastu”. Design a residential building on a plot of 15m×25m as per Vastu.
 Q.2 Discuss the requirements of good lighting system in a building.
 Q.3 Write a short note on firefighting provision.
 Q.4 Discuss the functional requirements of a good ventilating system.
 Q.5 Discuss the criteria for thermal comfort. Explain uses of Bioclimatic chart.
 Q.6 What do you understand by Building By-laws?
 Q.7 Discuss various factors affecting orientation of building.

PART – C

(Descriptive/Analytical/Problem Solving/Design Questions)

[3×10=30]

Attempt any three questions

- Q.1 Discuss the different types of buildings in detail. Explain the criteria of site selection for a building. *Res. Edu. Insti, Res. SSSC, Market, Bus, Storage, Indust*
 Q.2 Explain the term principles of planning. Discuss the various factors affecting the principles of planning.
 Q.3 Discuss in detail the acoustics and sound insulation of a building.
 Q.4 What is sun path diagram? Discuss any one method of drawing sun path diagram.
 Q.5 Discuss Roominess, Circulation, Flexibility and Privacy with respect to planning of a building.