

Civil Engineering, IV-Semester
CE-4004 Building Planning & Architecture

COURSE OBJECTIVE

To understand the concept of building planning and architecture. To understand the various building codes to be followed while planning a building. To have the knowledge of various building components.

COURSE CONTENT

Drawing of Building Elements- Drawing of various elements of buildings like various types of footing, open foundation, raft, grillage, pile and well foundation, Drawing of frames of doors, window, various types of door, window and ventilator, lintels and arches, stairs and staircase, trusses, flooring, roofs etc.

Building Planning- Classification of buildings, Provisions of National Building Codes and Rules, Building bye-laws, open area, Setbacks, FAR terminology, Design and drawing of Building, Design concepts and philosophies, Preparing sketch plans and working drawings of various types of buildings like residential building, institutional buildings and commercial buildings, site plans, presentation techniques, pictorial drawings, perspective and rendering, model making, introduction to computer aided design and drafting, Applying of principle of architectural composition (i.e. unity, contrast, etc.), Principles of planning, orientation in detailed drawings.

Building Services- Introduction of Building Services like water supply, sewerage and drainage systems, sanitary fittings and fixtures, plumbing systems, principles of internal & external drainage systems, principles of electrification of buildings, intelligent buildings, elevators & escalators their standards and uses, air-conditioning systems, fire fighting systems, building safety and security systems, ventilation and lightening and staircases, fire safety, thermal insulation, acoustics of buildings.

Principles of architectural design- Definition of architecture, factors influencing architectural development, characteristics features of style, historic examples, creative principles.

Principles of architectural composition- Unity, balance, proportion, scale, rhythm, harmony, accentuation and contrast.

Organising Principles in architectural- Symmetry, hierarchy, axis, linear, concentric, radial, and asymmetric grouping, primary and secondary masses, Role of colour, texture, shapes/forms in architecture.

Architectural space and mass, visual and emotional effects of geometric forms, space activity and tolerance space. Forms related to materials and structural systems.

Elements of architecture : Functions – Pragmatic utility , circulatory function, symbolic function, Physiological function. Structure – Physical structure, Perceptual structure. Space in architecture – Positive and negative space. Aesthetics: Visual perception. Protective: Protection from climate and other elements, architecture a part of the environment. Comfort factors.

Perspective Drawing and Town Planning- Elements of perspective drawing involving simple problems, one point and two point perspectives, energy efficient buildings.

Concepts of master plan, structure plan, detailed town planning scheme and action plan, estimating future needs - planning standards for different land use, allocation for commerce, industries, public amenities, open areas etc., planning standards for density distributions, density zones, planning standards for traffic network, standard of roads and paths, provision for urban growth, growth models, plan implementation, town planning legislation and municipal acts, panning of control development schemes, urban financing, land acquisition, slum clearance schemes, pollution control aspects

COURSE OUTCOME

Understanding of building planning, orientation, drawing and architectural aspects. Representation of a building on Paper.

REFERENCES

1. *Shah, Kale & Patki; Building Design and Drawing; TMH*
2. *Malik & Meo; Building Design and Drawing*
3. *W B McKay, Orient Blackswan Building Construction Vol 1 -4, Pearson*
4. *Gurucharan Singh and Jagdish Singh, Building Planning, Designing and Scheduling, Standard Publishers Distributors.*
5. *Loyal JS, Dongre A, Building Design and Drawing, Satya Prakashan*
6. *Ghose D.N., Civil Engineering Design and Drawing, CBS publisher*
7. *Das B M, Principles of Foundation Engineering, Cengage Learning.*
8. *Agrawal S. C., Architecture and Town Planning, Dhanpat Rai & Co.*
9. *S.C. Rangwala, Town Planning, Charotar Publishing House.*
10. *Lewis Keeble, Principles and Practice of Town and Country Planning.*
11. *Rame Gouda, Principles & Practices of Town Planning, University of Mysore, Manasa Gangotri.*

LIST OF EXPERIMENTS

1. Sketches of various building components.
2. Drawing of various building components containing doors, windows ventilators, lintels and arches stairs foundations etc.
3. Drawings for services and interiors of buildings.
4. Drawings containing detailed planning of one/two bed room residential building (common to all student)
5. Drawing of residential and institutional building (Each student performs a different drawing).
6. Use of Auto CAD for preparation of drawings.