COURSE CONTENT

COMPUTER AIDED BUILDING DRAFTING LABORATORY								
IV Semester: CE								
Course Code	**Category**	**Hours/Week**			**Credits**	**Maximum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
ACEE18	**Core**	0	0	2	1	40	60	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 36**				**Total Classes: 36**		
Prerequisite: Computer Aided Engineering Graphics								

I. COURSE OVERVIEW:

The Computer Aided Building Drafting Laboratory course focuses on the practical application of building planning and architectural drafting using CAD tools. Students engage in hands-on exercises to develop proficiency in preparing building layouts, sections, elevations, and detailed component drawings. The lab offers a structured environment for applying National Building Code (NBC) guidelines, building by-laws, and drafting standards to real-world architectural scenarios. Through systematic practice in building design and digital documentation, students enhance their technical accuracy, spatial visualization, and drafting efficiency. This course equips learners with essential CAD skills for producing professional construction drawings and fosters a solid foundation for advanced architectural and structural drafting tasks in future coursework and field practice.

II. COURSE OBJECTIVES:

The students will try to learn:

I. The planning principles and building by-law requirements necessary for drafting residential and public building layouts in accordance with National Building Code (NBC) standards.
II. The use of computer-aided design (CAD) tools to create accurate plans, sections, elevations, and component drawings of various building systems.
III. The techniques for developing professional working drawings with proper dimensioning, annotations, title blocks, and layout plotting for architectural communication.

III. COURSE OUTCOMES:

At the end of the course students should be able to:

CO 1 Interpret planning guidelines and building regulations as per the National Building Code (NBC) to prepare compliant building layouts.
CO 2 Draft brick bonding patterns and building components such as doors, windows, staircases, and footings using CAD tools.
CO 3 Develop architectural plans, sections, and elevations for residential and public buildings using standard drafting conventions.
CO 4 Apply building by-laws and functional planning principles to design single and multi-storeyed building layouts.
CO 5 Prepare center line diagrams and site plans with correct dimensioning, orientation, and setback provisions.
CO 6 Prepare complete working drawings with proper annotations, title blocks, and layout settings suitable for professional submission.

IV. COURSE CONTENT:

EXERCISE– 1: Planning Aspects of Building Systems as per NBC
Study the planning requirements and functional design aspects of buildings based on National Building Code (NBC) provisions.

EXERCISE – 2: Brick Bonds – English Bond & Flemish Bond – Odd and Even Courses
Draw the plan and elevation of English and Flemish bonds for both odd and even courses using standard brick sizes and conventions.

EXERCISE – 3: Developing Plan of Single-Storied Residential Building
Create a floor plan for a single-storied residential building with standard room sizes and spatial arrangements.

EXERCISE – 4: Developing Section and Elevation of Single-Storied Residential Building
Generate the sectional view and front elevation for the residential building developed in Week 3.

EXERCISE – 5: Developing Plan of Two-Storied Residential Building as per Building By-Laws
Development of plan, elevation, and section of a two-storied residential building in compliance with building by-laws.

EXERCISE – 6: Developing Plan of Public Building as per Building By-Laws
Draft the floor plan for a public building (e.g., school, library) with circulation, service areas, and by-law compliance.

EXERCISE – 7: Developing Center Line Diagram of a Residential Building
Draw the center line layout indicating internal and external wall positions with cumulative and overall dimensions.

EXERCISE – 8: Drafting Details of Door Components
Prepare detailed drawings of typical door components including frame, shutter, and joinery.

EXERCISE – 9: Drafting Details of Window Components
Draft detailed views of casement or sliding windows showing frame, shutter sections, and openings.

EXERCISE – 10: Drafting Roof Truss Details
Draw the plan and sectional details of a typical steel or wooden roof truss with support conditions.

EXERCISE – 11: Drafting Details of Foundation Footings
Prepare the plan and section of isolated or combined footings showing layout, depth, and dimensions.

EXERCISE – 12: Developing Plan and Section of Dog-Legged Staircase
Draft the plan and sectional elevation of a dog-legged staircase including tread, riser, landing, and headroom.

EXERCISE – 13: Developing Site Plan with Plot Boundary, Setbacks, and Orientation
Prepare the site layout showing plot boundary, building footprint, setbacks, north direction, and access road.

EXERCISE – 14: Developing Working Drawings with Dimensions, Annotations, and Title Block
Compile a final working drawing with proper dimensioning, notations, title block, north symbol, and layout ready for plotting.

V. TEXTBOOKS:

1. N.D. Bhatt, “Engineering Drawing”, Charotar Publishing House PVT Ltd, 15th Edition 2011.
2. Rangwala, S. C. *Civil Engineering Drawing*., Charotar Publishing House, 2nd Edition, 2019.

VI. REFERENCE BOOKS:

1. Emmons, Paul, “*Drawing Imagining Building: Embodiment in Architectural Design Practices”*. Routledge, 2019.
2. Edwards, Brian. *Understanding architecture through drawing*. Taylor & Francis, 2008.

VII. ELECTRONICS RESOURCES:

1. https://www.cphbooks.in/product/building-planning-and-drawing-by-dr-n-kumara-swamy-a-kameswara-rao/
2. https://nptel.ac.in/courses/112103019
3. https://nptel.ac.in/courses/112103019

VIII. MATERIAL ONLINE:

1. Course outline description
2. Laboratory manual