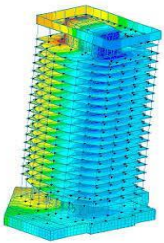


**Government of Karnataka**  
**Department of Technical Education**  
**Board of Technical Examinations, Bengaluru**

	<b>Course Title: COMPUTER AIDED BUILDING PLANNING AND DRAWING</b>		
	Credits (L:T:P) : <b>0:2:4</b>	Total Contact Hours: <b>78</b>	Course Code: <b>15CE46P</b>
	Type of Course: <b>Practical</b>	Credit : <b>03</b>	Core/ Elective: <b>Core</b>
CIE- 25 Marks		SEE- 50 Marks	

**Pre-requisites:** Knowledge of drafting software and Building Planning and Drawing.

**Course Objective:** Students are expected to prepare building plans, 3D drawings of buildings and to know the latest techniques in drafting software.

At the end of the course, the students will be able to

Course Outcome		Experiments linked	CL	Linked PO	Teaching Hrs
CO1	Develop any type of building drawing using CADD software.	1,2,3,4,5,6,7	R/Ap/C	1,2,3,4,5,8,9	40
CO2	Create layout plan, sanction drawings, working drawings using concept of layers.	8,9,10,11,12,13	R/Ap/C	1,2,3,4,5,6,8,9	20
CO3	Develop 3D model of building.	14,15	R/Ap/C	1,3,4,8,9,10	15
CO4	Explore modern drafting tools in teams and prepare a report and able to present it	16	R/Ap/Ay/C/E	1,2,3,4,6,8,9,10	03
<b>Total sessions</b>					<b>78</b>
<b>Legend- R; Remember U: Understand Ap: Application Ay: Analysis C:Creation E: Evaluation</b>					

Course	Programme Outcome									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
	Basic knowledge	Discipline knowledge	Experiments and	Engineering Tools	Engineer and society	Environment & Sustainability	Ethics	Individual and Team work	Communication	Life long learning
Computer Aided Building Planning And Drawing	3	3	3	3	3	2	-	3	3	1



**Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.**

Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.

If  $\geq 40\%$  of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3

If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2

If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1

If  $< 5\%$  of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.

**COURSE CONTENT:**

UNIT	EXERCISES	HOURS
1	<b>Preparation of Building Drawings</b>	40
	<b>Given the line diagram, draw the plan, Section and elevation of the following types of buildings.</b>	
	Experiment 1 Residential Building with Dog Legged Stairs	
	Experiment 2 Two storied residential building.	
	Experiment 3 Primary School	
	Experiment 4 Hostel Building.	
	Experiment 5 Primary Health Centre	
	Experiment 6 Small work shop building / Canteen Building / Bus station	
Experiment 7 Post office Building/Bank Building.		
2	<b>Preparation of working / Service Drawings</b>	20
	<b>Preparation of service drawing for a same given residential building as layers.</b>	
	Experiment 8 Introduction to layers Prepare Water supply layout & Sanitary Layout	
	Experiment 9 Shallow well rain water harvesting & Solar water heater for terrace	
	Experiment 10 Fire fighting layout for college building/commercial building	
	Experiment 11 Preparation of a foundation Plan for residential building & framed structures.	
	Experiment 12 Preparation of detailed plan and section of a Dog legged Stair case.	
Experiment 13 Preparation of Plan and Section of a Manhole and Septic tank with soak pit		
3	<b>Develop 3D Modelling of Buildings</b>	15
	Experiment 14 Develop 3D model of a stair case.	
	Experiment 15 Develop 3D model of a Residential Building / Public building from the given line diagram.	



UNIT	EXERCISES		HOURS
4	Experiment 16	<b>Suggested activities</b>	3
<b>Total</b>			<b>78</b>

**Course Delivery:** The course will be delivered through lectures and Demonstration and CAD practices.



### SUGGESTED ACTIVITIES

The topic should be related to the course in order to enhance his knowledge, practical skill, lifelong learning, communication and modern tool usage.

1. Visit any nearby public building and Draw a Layout Plan (Key plan) with building plan.
  - a. PWD office
  - b. Forest office
  - c. Bank
  - d. Post Office
  - e. Hospital
  - f. Police station
  - g. Bus Stand
2. Prepare a foundation plan (Excavation Plan) for a multistoried building.
3. Search for ongoing layout plan collect the information of area distribution, building plans, Service drawings (water supply, sanitary, electrical and landscaping).
4. Space design of a Primary health centre using Circulation Diagram (Bubble diagram).
5. Space design of an Educational Building using Circulation Diagram (Bubble diagram).
6. Create an awareness program on rain water harvesting among your locality.
7. Choose a multistoried building and prepare a fire fighting layout.
8. Create a 3D building model by using any two software mentioned below and compare the utilities and limitations.
  - a. Revit
  - b. Google sketch up
  - c. ArchiCAD
  - d. 3DSMAX
  - e. Blender
  - f. QCAD
  - g. Pythoncad
  - h. CADEMIA



- i. ZWCAD
- j. SKETCHBOARD
- k. Sweethome 3D
- l. ProgeCAD Smart!
- m. Sculptris

NOTE:

1. Students should select any one of the above or other topics relevant to the subject approved by the concerned faculty, individually or in a group of 3 to 5. Students should mandatorily submit a written report and make a presentation on the topic. The task should not be repeated among students. Report will be evaluated by the faculty as per rubrics. Weightage for 5 marks Internal Assessment shall be as follows: (Unsatisfactory **1**, Developing **2**, Satisfactory **3**, Good **4**, Exemplary **5**)
2. Reports should be made available along with bluebooks to IA verification officer

**Example of model of rubrics / criteria for assessing student activity**

Dimension	Students score (Group of five students)				
	STUDENT 1	STUDENT 2	STUDENT 3	STUDENT 4	STUDENT 5
Rubric Scale	Unsatisfactory <b>1</b> , Developing <b>2</b> , Satisfactory <b>3</b> , Good <b>4</b> , Exemplary <b>5</b>				
1.Organisation	1				
2.Fulfill team's roles	4				
3.Conclusion	3				
4.Conversions	5				
<b>Total</b>	13				
Average=(Total /4)	3.25=4				
<b>Note: Concerned faculty (Course coordinator) must devise appropriate rubrics/criteria for assessing Student activity for 5 marks One activity on any one CO (course outcome) may be given to a group of FIVE students</b>					

Note: Dimension should be chosen related to activity and evaluated by the course faculty



## Course Assessment and Evaluation Scheme:

Direct Assessment method	What		To whom	When/Where (Frequency in the course)		Max Marks	Evidence collected	Course outcomes
	CIE	IA		Twice test (average of two tests)	Test 1 Test 2			
Direct Assessment method	CIE	IA	Students	Twice test (average of two tests)		10	Blue books	CO1
				Record				10
	Suggested Activity			05	Reports/Drawings	CO1,CO2,CO3,CO4		
	SEE	End Exam		End of the course		50	Answer scripts at BTE	CO1,CO2,CO3,CO4
Indirect Assessment	Student Feedback on course		Students	Middle of the course		---	Feedback forms	CO1,CO2 Delivery of course
	End of Course Survey			End of the course		---	Questionnaires	CO1,CO2,CO3,CO4 Effectiveness of Delivery of instructions & Assessment Methods

\*CIE – Continuous Internal Evaluation      \*SEE – Semester End Examination

### Note:

- I.A. test shall be conducted as per SEE scheme of valuation. However obtained marks shall be reduced to 10 marks. Average marks of two tests shall be rounded off to the next higher digit.
- Rubrics to be devised appropriately by the concerned faculty to assess Student activities.

**Questions for CIE and SEE will be designed to evaluate the various educational components such as:**

Sl. No	Bloom's taxonomy	% in Weightage
1	Remembering and Understanding	15
2	Applying the knowledge acquired from the course	35
3	Analysis	5
4	Synthesis ( Creating new knowledge)	40
5	Evaluation	5

SI No	Scheme of End Examination	Marks
1	Record & report on suggested activities	10
2	Preparation of Building drawings/3D drawings/ Preparation of Service or Working Drawings	30
3	Print out	5
4	Viva-voce	5
Total		50





## TEXT BOOKS

1. CAD in Civil Engineering a Laboratory Referrel- Dr M.A.Jayaram, D.S.Rajendra Prasad, Sapna Book House
2. Building Drawing – Shah M G, Tata McGraw – Hill, 1992.
3. Building Planning & Drawing – Kumaraswamy N., Kameswara Rao A., Charotar Publishing
4. Shah, Kale and Patki, Building Drawing with integrated approach to environment, Tata McGraw – Hill, 1992
5. Civil Engg. Drawing and House Planning – Verma B. P., Khanna Publishers, Delhi
6. Building Drawing & Detailing – Balagopal & T.S. Prabhu, Spades Publishers, Calicut
7. Building Planning and Drawing – S.S .Bhavikatti & M.V Chitawadagi, I.K International Publishing House Pvt.Ltd
8. National Building Code, BIS, New Delhi.

## E-links

1. [www.sketchup.com](http://www.sketchup.com)
2. [www.autodesk.in/products/3ds-max/overview](http://www.autodesk.in/products/3ds-max/overview)

## Equipment List:

1. Computers with Latest Configuration. (One Computer per student in practical session.)
2. Any latest licensed Computer Aided Drafting Software.
3. Plotter of size A0
4. LCD Projector
5. UPS 5KVA
6. Furniture

