Program : **Diploma in Civil Engineering**	
Course Code : **5019**	Course Title: **Advanced CAD Lab**
Semester : **5**	Credits: **1.5**
Course Category: **Program Elective**	
Periods per week: **3** (**L:0, T:0, P:3**)	Periods per semester: **45**

Course Objectives:

- To impart the knowledge of CAD commands for 3D building modelling and 3D rendering of various building components required for different civil engineering applications.

Course Prerequisites:

Topic	Course code	Course name	Semester
Knowledge of Engineering Graphics		Engineering Graphics	1
CAD 2D drawing		CAD lab	3

Course Outcomes:

On completion of the course, the student will be able to:

COn	Description	Duration (Hours)	Cognitive level
CO1	Develop detailed 3D drawing of objects	10	Applying
CO2	Develop detailed 3D drawing of buildings	11	Applying
CO3	Apply 3D rendering and shading	10	Applying
CO4	Apply animation effects using 3D visualization software	10	Applying
	Lab Tests	4	

CO-PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1				3			
CO2				3			
CO3				3			
CO4				3			

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	**Develop detailed 3D drawing of objects**		
M1.01	Apply various commands and develop simple shapes	3	Applying
M1.02	Develop simple 3D objects and obtain different views	7	Applying
CO2	**Develop detailed 3D drawing of buildings**		
M2.01	Develop building wire frame modeling	3	Applying
M2.02	Develop 3D views of the building (Eg: Residential building, Library hall, Town hall, School building, hospital building etc.)	5	Applying
M2.03	Set a standard paper size with suitable title block using paper space and model space.	3	Applying
	Lab Test I	2	
CO3	**Apply 3D rendering and shading**		
M3.01	Develop simple 3D objects and apply rendering	3	Applying
M3.02	Develop building models and apply rendering	7	Applying
CO4	**Apply animation effects using 3D visualization softwares**		
M4.01	Apply basic commands and obtain a rendered model	3	Applying
M4.02	Apply modification of rendered images and animation effects to the model	7	Applying
	Lab Test II	2	

Text /Reference:

T/R	Book Title/Author
T1	AutoCAD Essentials, Autodesk official Press, John Wiley & Sons, USA
R2	Computer Aided Design Laboratory by M. N. SeshaPraksh& Dr. G. S. Servesh – Laxmi Publications.
R3	Engineering Graphics by P. J. Sha – S. Chand & Co.
R4	Introduction to AutoCAD 2018 for Civil Engineering Applications by Nighat Yasmin, SDC Publications

Online Resources:

Sl.No	Website Link
1	https://www.autodesk.in/campaigns/autocad-tutorials
2	https://thesourcecad.com/autocad-basic-3d-practice-drawing-tutorial/
3	https://tutorial45.com/first-3d-autocad-drawing/
4	https://allaboutcad.com/tutorial-create-3d-model/