GOVERNMENT OF TAMILNADU
DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI-25
STATE PROJECT COORDINATION UNIT
(Established under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	**5D BIM (NAVISWORKS)**
Course Code	AA/2020/006
Course Duration	40 Hours
Minimum Eligibility Criteria and Pre-requisites (if any)	10TH STD & Above
Course Objectives	Training module has been designed to provide the participants to • introduce Building Information Modelling (BIM) • fit Navisworks software into the 5D BIM process. • utilize 3D models for quantification purposes. • perform basic quantity takeoff using Navisworks. • Work with animator and rendering techniques.
Course Outcomes	At the end of training, the participants will be able to • understand the concepts of 5D BIM solution in better. • empowers individuals in model-based estimation. • work with owners and project stakeholders. • Work with animator • Apply rendering techniques
Expected Job Roles	Drafting & Design Assistant in various Architecture Firms/ Entrepreneur.

TEACHING AND SCHEME OF EXAMINATION						
Course Code	**Course Name**	**Hours**		**Assessment Marks**		**Duration of Examination**
				Min	**Max**	
AA/2020/006	**5D BIM (NAVISWORKS)**	Theory	16	10	20	3 Hours
		Practical	24	40	80	
		Total	40	50	100	

AA/2020/006- 5D BIM (NAVISWORKS)

DETAILED SYLLABUS

Unit No	Modules	No of Hours	
		Theory	**Practical**
I	**Introduction**	**7 Hours**	
1.1	About Autodesk Navisworks Manage	3	4
1.2	Terminology		
1.3	User Interface		
1.4	File types and Formats		
1.5	Tools menu		
1.6	Selection Tree		
	Lab Exercise: Append a building and make a selection list.		
II	**Effects and Lighting**	**7 Hours**	
2.1	Exploring model	3	4
2.2	Navigate a scene		
2.3	Reference view		
2.4	Select render modes		
2.5	Add lights		
2.6	Select background effects		
	Lab Exercise: Create background effects and add lights to the append model		
III	**Working with animator**	**17 Hours**	
3.1	Time liner.	5	12
3.2	Simulation		
3.3	Animation		
3.4	Animator		
3.5	Record tool		
3.6	Save viewpoints		
3.7	Scripts		
3.8	Quantification		
3.9	Resources and take off models		
	Lab Exercise: Animate a model using animator and record tool		
IV	**Rendering Techniques**	**9 Hours**	
4.1	Clash Detection	5	4
4.2	working with Clash tests		
4.3	Rendering		
4.4	Export image		
4.5	Test results		
	Lab Exercise: Create a clash detective test results and render the model.		
	Total Theory and Practical Hours	**16**	**24**
	Total hours	**40**	

HARDWARE REQUIREMENT

S.NO	LIST OF TOOLS /EQUIPMENTS
1	Computer/Laptop for each student
2	LCD Projector

SOFTWARE REQUIREMENT

AUTODESK 5D BIM (NAVISWORKS)

REFERENCES

S.NO	Particulars	Author	Publisher/Website
1	Autodesk Navisworks Manage 2009 User Manual	-	Autodesk
2	Autodesk Navisworks Manage 2012 User guide	-	Autodesk
3	Advanced Construction Visualization: 5D Simulation with Navisworks (You tube)	-	Microdesk
4	5D BIM (Cost estimation) in Revit! (You tube)	-	Aussie BIM Guru
5	Navisworks Tutorial for Beginners – 1 (You tube)	-	CAD Tutorials
6	5D BIM in 5 Easy Steps - Bexel Manager Tutorial (You tube)	-	Balkan Architect
7	Navisworks – Animated Building Walkthroughs (You tube)	-	Autodesk
8	Exploring Autodesk Navisworks 2017	Prof. Sham Tickoo	Cloudtail India
9	Autodesk Navisworks 2017 (R1): Essentials	Ascent - Center for Technical Knowledge	Autodesk

ASSESSMENT AND CERTIFICATION

S.No	Criteria for Assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical conducted internally in the Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 word/objective type questions)
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The passing criteria for successful completion of training is every trainee should score 50% ofmarks in theory and practical examination.
6.	On successful completion of training, certificate will be issued by Directorate of Technical Education through the project polytechnic.

END EXAMINATION

ALLOCATION OF MARKS

S.No	Description	Max. Marks
1.	Theory Examination	20
2.	Practical Examination	
	a)Aim and Procedure	20
	b)Demonstration / Execution	25
	c)Result & Viva Voce	15
	d) Record	20
	Total Marks	**100**

THEORY MODEL QUESTION PAPER

AA/2020/006 - 5D BIM (NAVISWORKS)

(Maximum Marks: 20)

(N.B: Answer any **Twenty** questions) **20x1= 20 Marks**

1.What is BIM?

2.What does 5d BIM?

3.Write some uses of BIM?

4.What are the benefits of BIM?

5.One of the biggest reasons that BIM has had more growth in the ____sector in competition

6. All views are stored in _____file.

7.One of the first steps in implementing BIM is to appoint a_____

8.A list of quantities of materials used in constructing a building is_____

9.For some _____films, the startup costs involved in implementing BIM can present significant challenges.

10.Bim software is considered to be a_____modeling software.

11.What are the diff file types &format?

12.Write any two commands in tools menu?

13.Write a command of selection tree?

14.How to explore a model?

15.How to navigate a scene?

16.Write any two render nodes.

17.How do you set background effect?

18.How do you fix the lights?

19.How do you create simulation?

20.Write any two commands in record tool.

21. What is animator?

22.Which tool in used to animate a model?

23.How do you export the image?

24.How to create a clash detection?

25.Write any two commands for rendering?