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

Course Name	**V- RAY**
Course Code	**AA/2020/005**
Course Duration	40 Hours
Minimum Eligibility Criteria and Pre-requisites (if any)	10^{TH} STD & Above
Course Objectives	Training module has been designed to provide the participants to • learn how to use V-Ray in SketchUp/3DS Max to create photo realistic and artistic scenes: Exterior, Interior Day Rendering, and Interior Night Rendering. • Learn key techniques such as: Linear and Physical Workflow.
Course Outcomes	At the end of training, the participants will be able to • know how to set up a scene for rendering using V-Ray • know how to adjust Camera controls, apply Materials and create Render Elements using V-Ray • know how to create different Lighting types and import geometry in V-Ray • Know how to link and add Textures, Plug-in and UVW Maps in V-Ray.
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/2020/005	**V-RAY**	Theory	16	10	20	3 Hours
		Practical	24	40	80	
		Total	40	50	100	

AA/2020/005- V-RAY

DETAILED SYLLABUS

Unit No	Modules	No of Hours	
		Theory	Practical
I	**Introduction**	**6 Hours**	
1.1	Introduction –Introduction to V-ray – Highlights of V-ray and understanding the Graphical user Interface – understanding the V-ray Frame Buffer	3	3
1.2	Understanding the Rendering–Understanding the Production Rendering mode and Real time Rendering Mode		
1.3	Understanding the concept of Image sampling		
1.4	Understanding the anti-analyzing quality and shading quality–Controlling the quality of Interior and Exterior renderings using Render Settings		
1.5	Introduction to Lighting concepts– Understanding the V-ray Area lights and its various types, options for interior renderings		
	Lab Exercise: Rendering an interior of living room		
II	**Lighting Effects**	**8 Hours**	
2.1	V-ray Lights and 3ds Max Lights, Understanding the V-ray Ambient Lights– V-ray Dome Light and its various settings–Creation of V-ray IES Light and its various settings	4	4
2.2	Understanding the Sun and Sky Light and its various settings for exterior renderings–Introduction to GI Concept		
2.3	Understanding the various rendering engines for primary and secondary engines		
2.4	Understanding the GI settings for Exterior Scenes using various rendering engines		
2.5	Understanding the GI settings for Interior scenes using various rendering engines		
	Lab Exercise: Change the materials of an object and render it.		
III	**Material Editor and Usage**	**14 Hours**	
3.1	Introduction to Camera–Understanding the various settings and options in V-ray Physical Camera–Controlling Exposure using Camera settings	4	10
3.2	Understanding the Depth of Field effect and settings in V-ray Physical Camera–Creation of Depth of Field Effect		
3.3	Understanding the Motion Blur effect– creation of Motion Blur using V-ray Physical Camera		
3.4	Introduction to V-ray Materials– Creation of V-ray Materials– understanding the Diffuse and Roughness parameters in V-ray Materials		

3.5	Understanding the Reflection property of a material its various settings & creation of reflective materials		
3.6	Understanding the refraction property of a material and creation of refractive materials–Understanding the Translucent Property and creating Translucent materials using its various options		
3.7	Understanding the Bump and normal mapping–Creation of Textured Metals and Brushed Metals using maps.		
	<u>Lab Exercise</u>: Set a camera in different views and render an interior of an object.		
IV	**Special effects & Rendering**	**12 Hours**	
4.1	Introduction to V-ray Aerial perspective–Understanding the various options available in V-ray Aerial Perspective Mode	5	7
4.2	Creating the Aerial Perspective View–Understanding the V-ray Environment Fog Effect and its various settings		
4.3	Creation of V-ray Environment Fog, Perspective effect –Introduction to Displacement Mode – Understanding V-ray Proxy – creation of V-ray Proxy–Concept of V-ray Instancer and creation of V-ray Instancer		
4.4	Understanding the V-ray Fur concept –Creation of V-ray Fur– Introduction to Render Elements		
4.5	Understanding the purpose of various render elements		
4.6	Final Rendering process–Understanding the compositing process using Photoshop–Understanding the Beauty pass concept and final rendering in Photoshop.		
	<u>Lab Exercise</u>: Render a full complete interior and exterior project.		
	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

V-RAY– Chaos group (3D Design Software)

REFERENCES

S.NO	Particulars	Author	Publisher/Website
1	V-Ray My Way: A Practical Designer's Guide to Creating Realistic Imagery Using V-Ray	Lee Wylde	CRC Press; 1 edition
2	Architectural Rendering with 3ds Max and V-Ray: Photorealistic Visualization	Markus Kuhlo	Focal Press; 1 edition
3	3D Photorealistic Rendering: Interiors & Exteriors with V-Ray and 3ds Max 1st Edition	Jamie Cardoso	A K Peters/CRC Press; 1 edition
4	Photographic Rendering with V-Ray for SketchUp	Brian Bradley	Packt Publishing
5	3D Photorealistic Rendering	A K Peters/CRC Press; 1 edition	Jamie Cardoso
6	Sketchup, V-ray Rendering Tutorial | Sketchup Building Design Tutorial |Sketchup Building Modern House	-	https://youtu.be/MePiCodzZVQ
7	Sketchup Stairs Interior Build + V-ray Render	-	https://youtu.be/-d9QB-fYL_k
8	Sketchup House Exterior Design 4 + V-ray 3.4 Render	-	https://youtu.be/272vYBFtVHA

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% of marks 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/2020/005 V-RAY

(Maximum Marks: 20)

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

1. What are the render notes?
2. What is MIS?
3. Define ray tracing.
4. What type of materials is v-ray?
5. Does v-ray fit for exterior lighting using only on light for the sun?
6. Can we use all kinds of light with v-ray or simply v-ray light?
7. Does v-ray work with standard material or all should be transformed into v-ray material?
8. How do you create transparent glass?
9. What all the various types of lights?
10. How to control the quality of interior rendering?
11. What are the various settings in dome light?
12. How do you create v-ray IES light?
13. What all the various settings for exterior rendering?
14. What is GI concept?
15. Which command to use apply material on an object?
16. How do you create motion blur effect?
17. How do you create v-ray material?
18. How to create depth of field effect?
19. How do you create textured metals?
20. Write any two options in v-ray aerial perspective model.
21. How to create perspective effect?
22. What is v-ray proxy?
23. What is v-ray fur concept?
24. What is the purpose of various render elements?
25. What is FRP?