

## **SYLLABUS: Architectural Visualization using Autodesk 3ds Max 2015 and V-Ray**

### **Course Description**

In the field of architectural visualization, realism is the first goal that we strive to accomplish. This course is designed for architects and interior designers who want to acquire 3D computer visualization skills using **3ds MAX**, a state of the art rapid modeling and visualization tool. In this course, trainees will gain a solid introduction to valuable modeling, lighting and texture mapping techniques that can be used to achieve realistic architectural renderings.

**Class and Lab Hours:** 120 (60 Theory, 60 Lab)

**Prerequisites:** Basic knowledge of Windows operating system and Adobe Photoshop

### **Course Objectives**

Upon completion of the course, trainees/students will be able to:

1. Understand the mechanics of 3ds Max
2. Create 3d models using a variety of techniques
3. Work with materials to texture your models
4. Understand how to light a scene
5. Create animations
6. Stage a scene and understand cinematography

**Evaluation:** There will be one exam that every trainee/student must pass with 75% marks or more to get a certificate of completion from BIMNCAD.

### **Suggested Learning Approach**

In this course, you will study individually or within a group of peers. As you work on the course deliverables, you are encouraged to share ideas with your peers and instructor, work collaboratively on projects and team assignments, raise critical questions, and provide constructive feedback.

### **Detailed Course Outline**

<b><i>Unit Heading</i></b>	<b><i>Unit Topics</i></b>
<b>1. Getting to Know 3ds Max</b>	<ul style="list-style-type: none"><li>• <i>Touring the Interface</i></li><li>• <i>The Viewports</i></li><li>• <i>Getting to Know the Command Panel</i></li><li>• <i>Working with Objects</i></li><li>• <i>Transforming Objects</i></li><li>• <i>Copying an Object</i></li><li>• <i>Understanding the Perspective Viewing Tools</i></li><li>• <i>Using Multiple Viewports</i></li></ul>

<b>2. Introducing 3ds Max Objects</b>	<ul style="list-style-type: none"> <li>• <i>Understanding Standard Primitives</i></li> <li>• <i>Adjusting Objects' Parameters</i></li> <li>• <i>Accessing Parameters</i></li> <li>• <i>Modeling Standard Primitives with Modifiers</i></li> <li>• <i>Using the Modifier Stack Tools</i></li> <li>• <i>Making Clones That Share Properties</i></li> <li>• <i>Using Various Modifiers</i></li> <li>• <i>Understanding Extended Primitives</i></li> <li>• <i>Working with Groups</i></li> </ul>
<b>3. Creating Shapes with Splines</b>	<ul style="list-style-type: none"> <li>• <i>Drawing using Splines</i></li> <li>• <i>Lathing a Spline</i></li> <li>• <i>Modifying a Shape Using Sub-object Levels</i></li> <li>• <i>Flipping Surface Normals</i></li> <li>• <i>Creating Thickness with a Spline</i></li> <li>• <i>Combining and Extruding Splines</i></li> <li>• <i>Introducing Other Spline Types</i></li> <li>• <i>Editing Splines</i></li> </ul>
<b>4. Editing Meshes and Creating Complex Objects</b>	<ul style="list-style-type: none"> <li>• <i>Polygon Modeling Techniques</i></li> <li>• <i>Using Graphite Modeling Tools</i></li> <li>• <i>Creating buildings using modifiers</i></li> </ul>
<b>5. Working with External Design Data</b>	<ul style="list-style-type: none"> <li>• <i>Importing AutoCAD Plans into 3ds Max</i></li> <li>• <i>Extruding the Walls</i></li> </ul>
<b>6. Creating AEC Objects</b>	<ul style="list-style-type: none"> <li>• <i>Creating a Parametric Wall</i></li> <li>• <i>Adjusting the Wall's Parameters</i></li> <li>• <i>Adding Doors and Windows to Walls</i></li> <li>• <i>Creating a Parametric Window</i></li> <li>• <i>Creating Stairs</i></li> <li>• <i>Creating Foliage</i></li> </ul>
<b>7. Organizing and Editing Objects</b>	<ul style="list-style-type: none"> <li>• <i>Naming Objects</i></li> <li>• <i>Organizing Objects by Layers</i></li> <li>• <i>Setting Up Layers</i></li> <li>• <i>Assigning Objects to Layers</i></li> <li>• <i>Assigning Color to Layers</i></li> <li>• <i>Lofting an Object</i></li> <li>• <i>Lofting a Shape Along a Path</i></li> <li>• <i>Using Different Shapes Along the Loft Path</i></li> <li>• <i>Extruding with the Sweep Modifier</i></li> <li>• <i>Aligning Objects</i></li> </ul>
<b>8. Light and Shadow</b>	<ul style="list-style-type: none"> <li>• <i>Understanding the Types of Lights</i></li> <li>• <i>Adding a Spotlight to Simulate the Sun</i></li> <li>• <i>Rendering a View</i></li> <li>• <i>Adding Shadow Effects</i></li> <li>• <i>Softening Shadow Edges</i></li> </ul>
<b>9. Shading and Texturing</b>	<ul style="list-style-type: none"> <li>• <i>Understanding Bitmap Texture Maps</i></li> <li>• <i>Diffuse Color Maps</i></li> </ul>

	<ul style="list-style-type: none"> <li>• <i>Understanding Surface Properties</i></li> <li>• <i>Adding Materials to Objects</i></li> <li>• <i>Understanding Material Libraries</i></li> <li>• <i>Editing Materials</i></li> <li>• <i>Using Bump Maps</i></li> <li>• <i>Understanding Mapping Coordinates</i></li> <li>• <i>Adjusting the UVW Mapping Gizmo</i></li> <li>• <i>Assigning Materials to Parts of an Object</i></li> <li>• <i>Creating a Multi/Sub-Object Material</i></li> </ul>
<b>10. Using the 3ds Max Camera</b>	<ul style="list-style-type: none"> <li>• <i>Understanding the 3ds Max Camera</i></li> <li>• <i>Adding a Camera</i></li> <li>• <i>Editing the Camera Location with the Viewport Tools</i></li> <li>• <i>Setting Up an Interior View</i></li> <li>• <i>Creating an Environment</i></li> <li>• <i>Working with Walkthrough-Assistant</i></li> </ul>
<b>11. Creating Animations</b>	<ul style="list-style-type: none"> <li>• <i>Using Animation controls</i></li> <li>• <i>Using Keyframe animation</i></li> <li>• <i>Bouncing a Ball</i></li> <li>• <i>Adding Camera Motion</i></li> <li>• <i>Adjusting the Camera Path</i></li> <li>• <i>Creating Preview Animation</i></li> <li>• <i>Compressing and Expanding Time</i></li> <li>• <i>Rendering the Animation</i></li> </ul>
<b>12. Mental Ray Concepts</b>	<ul style="list-style-type: none"> <li>• <i>Understanding Mental Ray</i></li> <li>• <i>Understanding Global Illumination</i></li> <li>• <i>Understanding Final Gather</i></li> <li>• <i>Assigning the Mental Ray Renderer</i></li> <li>• <i>Using the Rendered Frame Window Controls</i></li> </ul>
<b>13. Gamma Correction</b>	<ul style="list-style-type: none"> <li>• <i>Understanding Gamma and Linear Workflow</i></li> <li>• <i>Applying gamma correction</i></li> </ul>
<b>14. Materials</b>	<ul style="list-style-type: none"> <li>• <i>Understanding Autodesk materials</i></li> <li>• <i>Understanding Arch &amp; Design materials</i></li> <li>• <i>Creating various materials</i></li> </ul>
<b>15. Rendering</b>	<ul style="list-style-type: none"> <li>• <i>Improving Rendering Quality</i></li> <li>• <i>Rendering an Exterior Scene</i></li> <li>• <i>Rendering an Interior Scene</i></li> </ul>
<b>16. V-Ray Introduction</b>	<ul style="list-style-type: none"> <li>• <i>What is V-Ray and how to setup V-Ray</i></li> <li>• <i>V-Ray Image Saving Options</i></li> </ul>
<b>17. Global Illumination in V-Ray</b>	<ul style="list-style-type: none"> <li>• <i>Irradiance Map</i></li> <li>• <i>Light Cache</i></li> <li>• <i>Quasi Monte Carlo/ Brute Force</i></li> <li>• <i>Environmental Lighting</i></li> </ul>
<b>18. Image Sampling</b>	<ul style="list-style-type: none"> <li>• <i>Fixed</i></li> <li>• <i>Adaptive DMC</i></li> </ul>

	<ul style="list-style-type: none"> <li>• <i>Adaptive Subdivisions</i></li> </ul>
<b>19. V-Ray Lights</b>	<ul style="list-style-type: none"> <li>• <i>V-RayLight</i></li> <li>• <i>V-RayAmbientLight</i></li> <li>• <i>V-RayIES</i></li> <li>• <i>V-Ray Sun</i></li> </ul>
<b>20. V-Ray Camera</b>	<ul style="list-style-type: none"> <li>• <i>V-RayDomeCame</i></li> <li>• <i>V-RayPhysicaCam</i></li> <li>• <i>Shutter Speed</i></li> </ul>
<b>21. V-Ray Materials</b>	<ul style="list-style-type: none"> <li>• <i>V-Ray2SidedMtl</i></li> <li>• <i>V-RayMtl</i></li> <li>• <i>V-RayFastSSS2</i></li> <li>• <i>V-RayMtlWrapper</i></li> </ul>
<b>22. Rendering Scenes</b>	<ul style="list-style-type: none"> <li>• <i>Rendering an interior scene using V-Ray</i></li> <li>• <i>Rendering an exterior scene using V-Ray</i></li> </ul>