I. Introduction to 3ds Max and User Interface 🖥️

- **Overview of 3ds Max:** Understanding its applications in various industries (architecture, gaming, film, product design).
- **Interface and Workspace:** Navigating viewports, command panel, toolbars, and customising layouts.
- **Scene Management:** Working with layers, grouping objects, and managing file assets.
- **Unit Setup:** Configuring units for accurate modeling.
- **File Management:** Saving, importing, and exporting files (including CAD data).

II. 3D Modeling Techniques 🏗️

- **Standard and Extended Primitives:** Creating basic 3D objects like boxes, spheres, cylinders, and more complex forms.
- **Modifiers:** Applying parametric modifiers (e.g., Bend, Taper, Twist, Shell, Slice, Extrude, Lattice) to deform and shape objects.
- **Compound Objects:** Using Boolean operations (union, subtraction, intersection), ProBoolean, and ProCutter for complex shapes.
- **Spline-Based Modeling:**
  - Creating and editing 2D shapes (lines, circles, arcs, splines).
  - Converting 2D splines to 3D objects using modifiers like Extrude, Lathe, Loft, and Sweep.
  - Understanding vertex, segment, and spline parameters.
- **Polygon Modeling (Editable Poly):**
  - Working with sub-object levels (vertices, edges, polygons, elements).
  - Essential tools: Extrude, Bevel, Inset, Bridge, Cut, Quick Slice, Weld, Chamfer, Connect.
  - Low poly and high poly modeling techniques.
  - Graphite Modeling Tools for advanced polygon manipulation.
- **Architectural Objects:** Creating parametric walls, doors, windows, stairs, and foliage.
- **NURBS Modeling:** Introduction to Non-Uniform Rational B-Splines for smooth, organic surfaces (though less common in architectural visualization focused courses).

III. Materials and Texturing 🎨

- **Material Editor:** Understanding the Slate Material Editor and Compact Material Editor.
- **Material Types:** Standard, Arch & Design, Physical Materials, and common rendering engine materials (e.g., V-Ray Material).
- **Applying Materials:** Assigning materials to objects and sub-objects.
- **Maps:** Using bitmap textures (Diffuse, Bump, Specular, Reflection, Normal maps) for realistic surface details.
- **UV Mapping:** Understanding UV coordinates, UVW Map modifier, and Unwrap UVW modifier for precise texture placement.
- **Material Libraries:** Creating and managing custom material libraries.

IV. Lighting and Cameras 💡

- **Types of Lights:** Standard lights (Omni, Spot, Directional), photometric lights, and understanding their parameters (color, intensity, shadows).
- **Image-Based Lighting (IBL):** Using HDRI (High Dynamic Range Image) probes for realistic environmental lighting.
- **Exposure Control:** Adjusting overall scene brightness and contrast.
- **Light Lister:** Managing multiple lights in a scene.
- **Cameras:** Creating and manipulating standard and physical cameras.
- **Camera Views:** Setting up interior and exterior views, adjusting focal length, and depth of field.
- **Walkthrough Assistant:** Creating animated camera paths for architectural walkthroughs.

V. Rendering 🖼️

- **Rendering Concepts:** Understanding scanline, Mental Ray, ART Renderer, and Arnold Renderer (or V-Ray if included in the curriculum).
- **Render Settings:** Configuring output size, resolution, file format (JPEG, BMP, AVI, MPEG), and render elements.
- **Global Illumination (GI):** Understanding techniques like Irradiance Map, Light Cache, and Brute Force for realistic indirect lighting.
- **Post-Production Basics:** Simple image adjustments within 3ds Max or preparing renders for external software like Photoshop.

- **Render Quality vs. Render Time:** Optimizing settings for efficient rendering.
- **Cloud-Based Rendering:** Introduction to cloud rendering services.

VI. Animation Basics 🎬

- **Keyframe Animation:** Setting keyframes for object position, rotation, and scale.
- **Time Configuration:** Understanding frame rates and time sliders.
- **Path Animation:** Animating objects or cameras along a defined path.
- **Basic Object Animation:** Animating objects like doors, windows, or simple mechanical parts.
- **Character Studio (if applicable):** Introduction to rigging and animating characters (more common in game/film focused courses).
- **Walkthrough Animation:** Creating fly-through or walk-through animations for architectural visualization.

VII. Project Work and Advanced Topics 🎓

- **Architectural Visualization Project:** Creating a full architectural scene from modeling to final rendering, including interior and exterior scenes.
- **Scene Optimization:** Techniques for managing large scenes and improving performance.
- **Importing External Data:** Working with files from AutoCAD, Revit, and other software.
- **Video Post Effects:** Applying glows, contrast, and highlights.
- **Introduction to Dynamics and Particle Systems (optional):** Simulating real-world physics for effects like water or smoke.

This syllabus provides a solid foundation for anyone looking to master Autodesk 3ds Max for various 3D visualization and animation needs.