

Overview of 3D modeling techniques	4	Identify different techniques used in the creation of 3D models and understand when each is appropriate.
Overview of 3D modeling applications	5	Explore the wide range of modeling applications available including Maya, 3DS Max, Gmax, Blender Anim8or and others.
3D modeling and animation workflow	3	Discuss the process of model development through its various stages.
Basic modeling with NURBS	3	Explore and create different model examples using NURBS (Non-uniform rational B-splines).
Lab Exercises	5	Create basic NURBS models and develop and enhance them using both intermediate and advanced techniques.
Basic modeling with polygons	3	Explore and create different model examples using polygon-based methods.
Lab Exercises	5	Create basic polygonal models and develop and enhance them using both intermediate and advanced techniques.
Animation basics	5	Examine the basics of keyframes, skeletons and kinematics as used in model animation.
Lab Exercises	8	Animate a 3D model using standard forward kinematics on articulating limbs and trunks and enhance the realistic effect by also incorporating reverse kinematics on extremities.
Lighting and rendering	4	Explore the options for shadows, reflections and refractions in animation output.
Lab Exercises	7	Develop realism in a scene by adding proper lighting (both primary and supplemental) and environmental effects using a variety of raytracing and mental ray techniques.
Finalization and export of 3D model	3	Discuss the techniques used to add final dynamics to a 3D model animation and explore the options for exporting to destination media.
Lab Exercises	5	Prepare the animation project for a batch render, create an .iff sequence of the animation and render a final output file in .avi or other external format.
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COURSE OUTCOMES*	At the successful completion of this course, students will be able to:
	<ul style="list-style-type: none"> • Understand and use a simple 3D modeling program.

	<ul style="list-style-type: none">• Understand and use a high-end 3D modeling program.
	<ul style="list-style-type: none">• Create 3D animated models using an appropriate tool.

* Course Outcomes will be used in the Assessment Software for Outcomes Assessment. Limit to 3 - 5.