

# Course Outline

## CURRICULUM

The curriculum breakdown shows:  
Lesson context and how the objectives are covered

### Bouncing the ball

You will start by building and animating a simple bouncing ball that jumps through a hoop. You will explore Maya's user interface as you learn how to build and develop an animated scene. You will then begin to edit the quality of the original animation to add character to the bounce. You will layer the animation with secondary motion such as squash and stretch. In Maya, you can create these effects using non-linear deformers that allow you to reshape the ball as it animates.

**Note:** This first week will go at a very fast pace to get you hands-on experience with Maya. The focus will be on experiencing Maya instead of understanding all the underlying concepts. You will go into more detail using the second project over the final three days of the class.

#### Concepts covered:

- How to create primitive objects
- How to move objects in 3D space
- How to use Maya's view tools
- How to set keys on your objects
- How to playback animated sequences
- How to refine animated channels with the Graph Editor
- How to create a bend and a squash deformer
- How to use Set Driven Key and Auto Key

#### Exercise :

- Learning Maya Foundation: Project One
- Lesson 1: Bouncing a Ball
- Lesson 2: Adding Character

### Rendering and Special Effects

Now that you have animated the ball, you are ready to render the scene. The rendering process involves the preparation of shaders and textures for your objects and the manipulation of cameras and lights. You can also add effects such as motion blur to accentuate the motion during playback of the rendered frames.

You will then add some special effects as you turn the ring into a ring of fire using particles. The fire will be created using Maya's default particle fire effect. You will then create sparks that will be animated to appear when the ball touches the fire.

#### Concepts covered:

- How to work with the Hypershade panel to create shading groups
- How to texture map an object
- How to add lighting to your scene
- How to set up motion blur
- How to software render an animation
- How to add a fire effect to a NURBS torus
- How to collide the ball and the flames
- How to set up a particle event
- How to define a particle attribute using a ramp
- How to define a particle attribute using an expression
- How to software render a particle animation

How to hardware render a particle animation

**Exercise :**

Learning Maya Foundation: Project One

Lesson 3: Rendering

Lesson 4: Particles

## Curves and Surfaces

This lesson will introduce you to modeling with NURBS (Non-uniform rational B-spline) surfaces. This geometry type lets you create curves and surfaces to build up your models. In this lesson, you will build the jack-in-the-box using tools such as revolve, loft and extrude. You will also begin learning about how to use existing geometry to help you build new geometry.

**Concepts covered:**

How curves and surfaces work

How to build a box from a quarter cylinder

How to attach and close surfaces

## Organic Modeling

In this lesson, you will sculpt facial features onto Jack by manipulating the surface's control vertices (CVs). At first you will use the transform manipulators to edit the CVs, then you will put Maya's Artisan tools to work using a brush paradigm as you push, pull, and smooth the surface. Maya's Artisan tools offer a different approach to how you work in Maya. Rather than typing in values, Artisan lets you use a paint-like interface to edit shapes in Maya. In later lessons, you will also learn how to use Artisan for other important functions.

**Concepts covered:**

How to rebuild a surface

How to pull CVs using the Move tool's Normal setting

How to sculpt surfaces by painting with Artisan brushes

How to use different brush operations

**Exercise :**

Learning Maya Foundation: Project Two

Lesson 8: Organic Modeling

## Animation

In the last two lessons, you modeled various pieces of the Jack-in-the-box. You can now set key frames on the various parts to bring Jack to life. To start, you will build some skeleton joints that will help you control Jack. You will then add inverse kinematics to animate Jack's release. In this lesson, you will also use Maya's character definition tools that will help you create a pose-based animation that lets you quickly block out the motion.

**Concepts covered:**

How to set up skeleton joints

How to bind geometry onto joints

How to set up a Spline IK solution

How to create a new attribute

## Secondary Animation

This lesson is about adding some life to the mechanical motions generated by the pose-based animation of the last lesson. You are going to use traditional animation techniques such as anticipation, overlapping action and squash and stretch to enhance the quality of the motion.

In Maya, you have a lot of flexibility when it comes to refining your animations. You can edit the curves in the graph editor or you can add deformers to give life to a scene. By combining several of these techniques you will create a more effective animation.

**Concepts covered:**

- How to create overlapping actions in the graph editor
- How to use breakdown keys.
- How to insert in-between keys
- How to use a lattice deformer
- How to lock an object to a deforming surface

**Exercise:**

Learning Maya Foundation: Project Two  
Lesson 10: Secondary Animation

## Rendering the Jack-in-the-Box

In this lesson, you will set up materials, textures and lighting for Jack. You will explore the make-up of a typical shading group including its material node and any texture maps. This lesson will make extensive use of Maya's Interactive Photorealistic renderer (IPR). This tool allows you to create one rendering of the scene that can then be used to interactively update changes to the lighting and texturing of your scene. You will see how fast and intuitive it is to texture in Maya's IPR world.

**Concepts covered:**

- How to set up and tweak multiple lights to a scene
- How to set up an Interactive Photorealistic Rendering
- How to add bump and specular maps
- How to make connections in the Hypershade panel
- How to texture map a deforming object
- How to create a texture reference object
- How to set up camera attributes

**Exercise:**

Learning Maya Foundation: Project Two  
Lesson 11: Rendering

## Review

Close to the end, you will be given the opportunity to ask the instructor questions. This will give you the opportunity to explore some concepts more deeply and to discuss how the various parts of Maya work together.