

3DS MAX for Games

- Module I -

By
Christian Bradley

(Lesson Plan)

Lesson 1: Basic Interface and Modeling

A quick overview of how the reading from the text and the course videos work together: The text book is (). The class is based loosely on the content of the text, but not always in the same order. There are many subjects and concepts covered in the class videos not covered in the text, so you will need to use both resources as you move through the class. The videos are the main source of information for the course. The videos are mostly standalone skills that are meant to be built upon each other and as the weeks pass the videos will focus more on combining skills and processes rather than single modifiers or processes. For the time being the first few weeks will focus mainly on individual processes in MAX that at time may feel disconnected from the main project, but will show up in later videos as necessary skills you'll need to build larger objects with. Each lesson plan will list the videos to be viewed that week. Most videos are meant to be viewed first, and then reviewed while the student uses the MAX software to recreate the outcome. While most videos have accompanying files to get you started (and in many cases show you results along the way and a final outcome), some videos, especially in the first two weeks do not have accompanying MAX files. If the video does not have a corresponding MAX file it is probably because the subject matter in the video deals with interface or basic properties of the program that don't require a .max file.

Each week I will outline the reading and the videos here in the class plan. Use this outline to keep track of your progress through the class. The videos are numbered to help me organize the material, although the numbers are not that important to the student in general, you can certainly use the numbering to organize the material on your end as well. You will find all the material listed below on the discs provided by The Game Institute.

Introduction:

Tutorials 1000A, 1001 and 1002 will cover basic features and interface elements of the software. If you are familiar with MAX you might want to skip tutorial 1002. Don't skip tutorials 1000A or 1001 as those has information in them about how to use class docs and what the class will cover.

Tutorial 1003 will cover display issues that might be different for your computer. Any problems you're having with display settings (or MAX in general) will be covered in this tutorial.

Tutorials 1004 will cover basic object creation and how to access the object parameters. Tutorial 1005 is basically a discussion on Low Poly and High poly object creation. You'll find you will get a choice as to how you would like to create your final vehicle object as the polygon counts are not important to the final piece.

1006 and 1008 cover use of the view ports; if you are familiar with MAX you could probably skip these 2 tutorials.

1009, 1011, 1013 and 1015 start to cover the basics of MAX. General information like how to use the transforms, mesh types and selection types are covered.

1017 is the project intro; make sure to view the video so you know what is expected by the end of class.

1019, 1020, 1021, 1022 and 1025 deal with the more complex object manipulations you will want to learn in order to get nice looking polygon structures (and a nice looking final project)

Here is a list of the videos and files that make up the first lesson:

- 1001_Tutorial: Introduction.
- 1002_Tutorial: Basic Interface.
- 1003_Display Settings.
 - 1003.max
- 1004_Tutorial: How to Make Basic Objects, Primitives.
- 1005_Tutorial: Low Poly vs. High Poly.
 - 1005.max
- 1006_Tutorial: View port Controls.
- 1008_Tutorial: View Port Menus and Settings.

- 1008.max
- 1009_Tutorial: Move, Scale, Rotate. And Quad Menu.
- 1009.max
- 1011_Tutorial: Using Different Versions of MAX. Import. Export.
- 1011.max
- 1013_Tutorial: Edit Poly and Edit Mesh.
- 1015_Tutorial: Selections.
- 1017_Project 1 Intro.
- WonderfulWorldOfTanks.ppt
- WonderfulWorldOfTanks.ppt
- 1019_Tutorial: Tank Piece_EditPolyVertex.
- 1020_Tutorial: Tank Piece_EditPolyPolygon.
- 1021_Tutorial: Tank Piece_EditPolyConnectTargetWeld
- 1022_Tutorial: Adjusting an Objects Pivot, Linking and Unlinking
- 1025_Tutorial: Attaching Objects and Bridge.

Key Topics covered in the videos:

- Introduction to the class
 - Introduction to the main project (due towards the end of the course)
- Basic MAX interface
 - Display settings and other settings in MAX
 - How to make basic primitives and objects
 - View port controls and settings
 - Panning, rotating and zooming within the view ports
 - View port menus
 - The Quad Menu
- Low poly objects and High Poly objects.
 - Creating a few objects for the main project
- Moving around in 3D space
 - Getting used to the perspective view port
 - Moving, rotating and Scaling objects
 - Generating arbitrary plane-aligned bounding boxes
- Importing/exporting from MAX
- Using the Edit Poly object type
 - Sub objects within edit poly
 - Various modifiers and controls within edit poly
- How to select objects
- Adjusting or moving an objects pivot
- Linking and unlinking objects

Projects:

- Create a table with at least 5 objects placed on it.
 - Make a box primitive object
 - Use Auto grid to make 4 elongated box primitives and position them as the legs.
 - Use Auto grid to position at least 3 primitives on the table top.

Recommended Study Time: 1-2 weeks

Lesson 2: Modeling I

In this lesson we will be continuing to explore model basics, but move a little more into using those tools in conjunction with each other. We'll venture more into modifiers and how they work in the modifier stack. We'll tackle splines and add them to our mix of tools and we'll use those splines to make compound object types such as lofts and cross sections. We'll cover the duplicating processes of mirroring and cloning so you won't need to work as hard and we'll cover merging scene components together.

You'll also find some of the videos are labels as "sup". Any video with the prefix "sup" is a supplemental video and will usually be listed at the bottom of the video list. Supplemental videos are videos that simply were not part of the class originally, but that I added later after the class was completed. Think of supplemental videos as free extras added to the class. The topic covered in the supplemental should help you learn more processes and make you a better 3D artist in general.

2002 and 1003 cover how to apply and mix modifiers together to get mesh effects like bend, twist and taper.

2004 deals with those tricky splines and how to create them so you can use them as paths and objects.

2004 2005 and 2006 all tie together and focus on various kinds of lofts and uses for lofting in general. Lofts will help to add small details to the vehicle and help you too make more complex objects.

2009 focuses on cross sections. Cross sections take splines and create a cage that MAX can create a mesh from. The cage can be used to create tricky objects like engines or hull components.

2010 will show you how to mirror an object. Mirroring is different than cloning

2013 will show you how to clone various objects. Cloning will allow you to create duplicates and instances of your existing objects.

2011 will help keep your view ports nice and clean by showing you how to hide and unhide objects.

2015 and "Sup_Merging and Saving" deals with the merge command. Merging will take elements (lights, objects, etc.) from other scene files and merge them to your existing scene.

Use 2017 to help refine the vehicle body to look interesting and take advantage of some new edit poly commands.

Make sure to view 2020 so you can keep your scene manageable with selection sets.

Here is a list of the videos and files that make up the second lesson:

- 2002_Tutorial: Modifiers and how they are applied/work.
2002.max
- 2003_Tutorial: Modifiers.
2003.max
- 2004_Tutorial: Drawing Splines.
2004.max
- 2005_Tutorial: Loft.

- 2005.max
- 2006_Tutorial: Loft Deforms.
- 2006.max
- 2007_Tutorial: Lofts from Objects.
- 2007.max
- 2008_Tutorial: Lathe.
- 2008.max
- 2009_Tutorial: Cross Section and Surface.
- 2009.max

- 2010_Tutorial: Mirror.
- 2010.max
- 2011_Tutorial: Hide, Unhide.
- 2011.max
- 2013_Tutorial: Cloning.
- 2013.max
- 2015_Tutorial: Scene Merge, Scene Scale.
- 2015.max
- 2017_Tutorial: Box Modeling 1_the Tank Body, Bevel.
- 2017.max
- 2020_Tutorial: Selection Sets.
- 2020.max
- Sup_Box Modeling a Building (Supplementary video)
- Building in MAX.doc
- Sup_BasicMAX01. (Supplementary video)
- Sup_BasicMAX02. (Supplementary video)
- Sup_Merging and Saving. (Supplementary video)
- Sup_Merge_is now complete.max
- Sup_Merge_this scene.max

Key Topics:

- Modifiers
 - Using the modifier stack
 - Order of modifiers
- Creating splines
 - Making lofts from splines
 - Using loft deforms
 - Lofts from objects
 - Lathes
 - The cross section and surface modifier
- Duplicating objects
 - Mirror
 - Clone
- Hiding and un-hiding objects in the view ports
- Merging objects from other MAX scenes.
- Overall scene scale
- General box modeling techniques
- Saving scene material

Projects:

- Box Model a simple building
 - Convert a box primitive to an edit poly type object
 - Use bevel, connect, extrude (plus any other edit poly tools you want) to extrude and deform the faces of the primitive to make a simple box modeled building.
 - See: "Building in MAX.doc"

Recommended Study Time: 1 week

Lesson 3: Modeling II

In Lesson 3 we'll continue to push through the modeling processes in MAX. We'll start off by dealing with a few more compound objects including Booleans. We'll cover spline Booleans and merging as well which should help you make even more complex objects than ever. We'll use the splines covered in the last lesson to make lofts which will extrude a spline shape you create along a path (great for pipes!). The lesson will also dive a bit into animation for the first time since linking will be added to your skill set you might as well know how to animate some of those linked objects. Linking wouldn't be complete without tackling pivot points and you'll find those in this lesson as well. Lesson 3 will also introduce you to various cutting techniques used to divide your meshes up even further than just basic segment controls. Here's what we'll cover this week:

3002: Booleans!! Smash objects together to make new objects. All you need to deal with are those horrible mesh errors!

3004 and 3017: First create a set of splines, and then combine them to make complex shapes. Extrude the shape and you have an object. Extruding splines is an easy way to make complex structures like rooms, storage boxes and tank turrets.

3005 deals with path deform. Path deforms take an object and deform it long the splines you've created.

3015 focuses on continuous animation techniques. Just rotate the radar dish once and like magic it will continue turning forever!

3016 will teach you how to use the cut and slice tools. Want an edge in a particular spot or maybe divide a large poly object in two? Just use the cut and slice tools; they'll cut through anything that is made of polygons.

3020 The resource collector will go find all those textures and scene assets for you! No more trying to remember what texture maps are in your scene, just hit the resource collector and you are done!

3027 is a review of the first three weeks. Are you on schedule?

Here is a list of the videos and files that make up the third lesson:

3002_Tutorial: Booleans.

3002.max

3002B.max

- 3004_Tutorial: Extruding Splines to Make Surfaces.
 - 3004.max
 - 3004B.max
 - 3004C.max
- 3005_Tutorial: Path Deform.
 - 3005.max
- 3007_Tutorial: Box Modelling 2_Modeling the Tread Holders.
 - 3007.max
- 3008_Tutorial: Box Modelling 3_Modeling the Gun Turret.
 - 3008.max
- 3010_Tutorial: Review: Moving a Pivot.
 - 3010.max
- 3012_Tutorial: Grills, Radars, FFD Modifiers and Lattice.
 - 3012.max
- 3015_Tutorial: Rotating a Radar Dish.
 - 3015.max
- 3016_Tutorial: Cut Slice Plane and Slice.
 - 3016.max
- 3017_Tutorial: Extruding Splines to Make Surfaces 2.
 - 3017.max
- 3020_Tutorial: Resource Collector.
 - 3020_ResourceCollector folder
- 3021_Tutorial: Group and View Port Comfit.
 - 3021.max
- 3025_Tutorial: Snap to Grids.
 - 3025.max
- 3027_Review of First Three Weeks
 - 3027.max
- Sup Box Modeling the Tank Body (Supplementary video)

Key Topics:

- Booleans
 - Object Booleans
 - Spline Booleans
- Extruding splines to make objects
- More box modeling techniques
 - Target weld
 - Weld threshold
 - Creating new geometry
- More modifiers
 - Path deform
 - FFD
 - Lattice
- Pivots
 - Moving a pivot
 - How pivots affect linked objects
- Linking and unlinking objects together
 - Hierarchies and how they affect the linked objects
- Cutting meshes and creating new edges

- Edit poly: cut
- Edit poly: Slice plane
- Grouping objects together
 - Grouping pros and cons
 - Ungrouping
- Snap controls
 - Snap to grid
 - Snap to vertex
 - Snap to surface
- The resource collector
 - Saving your work so all assets get saved properly
- Review of the first few lessons

Projects:

- Box model a gun turret
 - See: 3008_Tutorial: Box Modelling 3_Modeling the Gun Turret

Recommended Study Time: 1 week

Lesson 4: Modeling III

read: Real world wear and tear.doc

Doc file covers adding wear and tear details to your texture maps to make them look more realistic. The Document will cover how these processes are done in Photoshop and how to decide what details to add.

In Lesson 4 we'll start to finish up our modelling technique and learn a few of the final process you'll need to know in order to make the final project sparkle! We'll explore a few of the modeling commands found in the upper menu area like the spacing tools. Soft selections will be covered in detail; the soft selections will really help to define your main project. Smoothing groups will be covered as well (don't get smoothing groups confused with mesh smooth). The smoothing groups will get rid of those pesky faceted surfaces that no doubt have been bugging you for a few lessons now. Use the smoothing groups to make the vehicle project look solid and more complete. We'll tackle scatter objects as well; scatter objects are probably the most complex tutorial yet and will add environmental details to your scenes like grass or rocks. Mesh smooth (don't confuse it with smoothing groups) will be a great way to make low polygonal objects look smoother.

4002: the spacing tool will make duplicates follow a path. Great for picket fences and vehicle details.

Path Deform (WSM) is covered in video 4005. The path Deform modifier allows you to deform an object (like tank treads) along a path you create. If you're smart you'll watch the video and learn how to create the path from an existing object so the path deform will fit perfectly.

4007 covers two more edit poly choices for manipulating an existing mesh. Bridge creates a connecting piece between two open boarders while connect will divide up existing geometry and make new edges.

4009 covers soft selections. Ever wanted to manipulate your polygon based object like clay? Well now you can, just turn on soft selections and adjust the falloff and you're ready to model with clay.

4010 and 4011 (Two for the price of one!) These two tutorials cover scatter and smoothing groups. Neither is related to the other, but both are pretty neat. Scatter takes an existing object and scatters it across another objects surface (think grass blades scattered across the ground). Smoothing groups visually make your object look smoother without adding polygons.

4013 covers mesh smooth and quick smooth, two ways of actually making the mesh smoother, this time by adding polygons or sub-dividing the mesh. The results look great, but don't ever go past four iterations! If you don't know what that means you better watch the tutorial.

Here is a list of the videos and files that make up the fourth lesson:

- 4002_Tutorial: Spacing Tool.
 - 4002.max
- 4004_Tutorial: Box Modeling 4_Storage Container.
 - 4004.max
- 4005_Tutorial: Path Deform (WSM) Loft for Pipe.
 - 4005.max
- 4007_Tutorial: Edit Poly: Connect and Bridge.
 - 4007.max
 - 4007B.max
- 4009_Tutorial: Soft Selections.
 - 4009.max
- 4010 and 4011_Tutorial: Scatter and Smoothing Groups.
 - 4010.max
 - 4011.max
- 4013_Tutorial: Mesh Smooth, Quick Smooth.
- Sup_ModelingTricks_01_Connect_TargetWeld_Cut
 - (Supplementary video)
- Sup_ModelingTricks_02_Chamfer_Bridge_Lattice
 - (Supplementary video)
- Sup_ModelingTricks_03Bevel_Create Poly_SoftSelection
 - (Supplementary video)

Key Topics:

- More modifiers and modeling techniques
 - Connect
 - Edge bridge
 - More loft types and techniques
 - Using the spacing tool
 - Modeling with soft selections
 - Using the compound scatter type
 - Creating complex (high poly) objects with mesh smooth
 - Creating polygons from edges
 - How to clone polygon selections
- Smoothing groups

Projects:

- Box Model 3 objects that can be used on the vehicle for the main project.

- See:
 - 3007_Tutorial: Box Modelling 2_Modeling the Tread Holders.
 - 3008_Tutorial: Box Modelling 3_Modeling the Gun Turret.
 - 3012_Tutorial: Grills, Radars, FFD Modifiers and Lattice.
 - 4004_Tutorial: Box Modeling 4_Storage Container.

Recommended Study Time: 1 week

Lesson 5: Creating and Applying Textures

- read:**
- Perspective Correction in Textures.doc
 - Creating Generics.doc
 - Perspective Correction in Textures.doc
 - 5050_Recreating textures.doc

In Lesson 5 we'll leave modeling for a little while and venture into texture map creation and applications. Hopefully your models will benefit from some good looking textures applied to them. Applying textures can be easy, but there are a few situations that demand a little more skill than just simple UVW coordinates. You've been provided with a few extra Doc files this week that cover the texturing process in more detail. Don't forget that just applying the textures is only half the battle; you'll need to learn how to make good looking and functional texture maps in the first place. Lucky for you we have a few videos that cover the process of making great looking textures in Photoshop in this lesson as well. I'll share some Photoshop tricks and techniques that will make the process in Photoshop a little easier as well as how to tile a texture so it repeats seamlessly. The lesson will cover texture types like HDR and various bitmap file extensions. Also in the lesson we'll dive into the exciting (although sometimes complicated for the beginner) world of multi sub objects types. Multi subs will allow you to put more

than one set of UV coordinates on an object as well as let you apply many different texture maps to a single object. For the really brave I've included a supplementary video on UVW Unwrapping and exploring the UVW Unwrap editor...although not necessary for the final project in general, the process can yield outstanding results.

Here is a list of the videos and PPT's that make up the fifth lesson:

The asset browser is a good way to view all sorts of assets you can use in your scenes. In tutorial 5001 you will see that the asset browser will allow you to view AVI, HDR, Bitmap, MAX scene files plus dozens of other formats.

5002 is a quick overview of Photoshop techniques and tricks that will help you make professional texture maps for your scene.

In tutorials 5003 and 5004 you see how you can apply texture maps to your objects and have those maps render correctly using UV mapping modifiers.

Ever wonder how the professionals make a picture tile seamlessly into infinity? In tutorial 5005 you'll learn all the secrets.

Tutorial 5006 will cover how to correctly scale a texture so it won't render blurry or stretched. Just a simple adjustment to the tiling number and your texture will look perfect in the scene.

Tutorials 5010 and 5011 will tackle the tricky procedure of placing more than one texture on a single object or group of polygons. Master this technique and life will be much easier!

5013, 5014 and 1015 will deal with all sorts of masking, alpha and decal tricks. If you want to add small details to your vehicles without the overhead pain of polygons, here are a couple of solutions to solve the problem.

Master the tricky skill of unwrapping a skin to fit on a 3D object, well, at least get a taste of the process in this video.

Tutorial 5025 will introduce you to the process of making normal maps.

Here is a list of the videos and files that make up the 5th lesson:

- 5001_Tutorial: Asset Browser.
 - 5001_Asset browser folder
- 5002_Tutorial: Making a Texture Map.
 - 5002_TexPrac Files (Photoshop)
- 5003_Tutorial: UV Mapping 1_Mapping Basic Objects.
 - 5003.max
- 5004_Tutorial: UV Mapping 2_Mapping the Tank Body.
 - 5004.max
- 5005_Tutorial: Making a Texture Tile.
- 5006_Tutorial: Mapping Scale and Proper UV.
 - 5006.max
- 5010_Tutorial: MultiSub 1_Mapping IDs and Gizmos.
 - 5010.max
- 5011_Tutorial: MultiSub 2_Mapping Tank Body Parts.
 - 5011.max
- 5013_Tutorial: Masks.
 - 5013.max
- 5014_Tutorial: Alpha Channels.
 - 5014.max
- 5015_Tutorial: UVW X Form and Decals.
 - 5015.max

- 5016_UVW Unwrap.
5016.max
- 5025_Tutorial: Normal Maps with Nvidia.
5025.max
5025_Nvidia_DDS Normal Map Plugins
- 5026_Tutorial: Spec_NormalMapping_SimpleObject.
5026.max
- 5050_Extra Tutorial_Recreating Textures.

Key Topics:

- The Asset Browser
 - How to easily import and view assets from around your computer.
- Making texture maps
 - Photoshop tips
 - Photoshop brushes
 - Photoshop Layers
 - Adding grime and dirt.
 - Tiling a texture
- Mapping basics
 - UVW Mapping
 - UVW Mapping types
 - Multi sub objects and applying surface ID's
 - Mapping scale and proper UV's
 - Alpha channels and masks
- The Material Editor
 - Making a basic bitmap shader
 - Making Multi sub object shaders
 - Finding your way around the material editor
 - Specular settings
 - Opacity settings and maps
 - Bump maps and settings
- The UVW Un wrap editor
- Fixing X forms
- Intro to normal maps
 - Nvidia DDS extensions and normal map plugin

Projects:

- Use Multi sub shader types and UVW mapping to apply texture maps to the tank body
 - See Videos 5003-5011.

Recommended Study Time: 1 week

Lesson 6: Creating Procedural Based Shaders

Lesson 6 delves into the material editor further and creating procedural based shaders. Procedurals are shaders that are generated by MAX. In general procedurals cannot be exported to a game engine because they can only exist within the MAX code the software runs with, but you can make your scenes look better within MAX by using procedurals and the other shader types found in MAX. We'll be revisiting the mutli sub material type in this lesson (it never goes away from here on out). We'll also be looking at the more popular shader types available in MAX like raytrace, Splat and gradient ramps. You'll get to play around with the types since the best way to explore the

many shader types is to just open them and explore. Lesson 6 will cover saving and retrieving shaders you've created and also how to take advantage of the many materials and shaders stored in MAX's material library. If you're really interested I've included how to make a cartoon shader and apply it to your objects. The cartoon shader won't export to a game engine, but it is one of the most requested features in MAX so I thought I'd include it here in this lesson.

Here is a list of the videos and PPT's that make up the sixth lesson:

Tutorial 6003 will take you back to the process of Multisub mapping various materials onto an object for a second pass through the process.

6004 is an introduction to the various procedural shader types available in MAX. Procedurals are shaders that are included with MAX and for the most part are produced by the software itself, no texture maps needed!

Tutorials 6007 through 6011 will focus on the material editor interface, shader types and specific settings to get those professional results you are after.

Video 6015 will take a side trip through the process of saving and retrieving materials you've previously made and how to apply those materials to existing objects. You will find the material libraries that come with MAX to be a huge help in learning how materials, shaders and bitmaps are made to get those great results we all want.

Ever wonder how a cartoon is generated from a 3D program. Tutorial 6023 explores this fun (and sometimes necessary) process; it is extremely easy!

Here is a list of the videos and files that make up the sixth lesson:

- 6003_Tutorial: Multi sub 3_Mapping Complex Objects.
 - 6003.max
 - 6003 folder practice tex
- 6004_Tutorial: Procedural Types.
 - 6004.max
 - 6004 AFTER.max
 - 6004_BunchOProcedurals.max
- 6007_Tutorial: Procedural Textures and the Material Library.
 - 6007.max
- 6009_Tutorial: Procedural Textures 2_Adding Bump Maps.
 - 6009.max
- 6010_Tutorial: Procedural Textures 3_Making Reflections.
 - 6010.max
- 6011_Tutorial: Procedural Textures 4_Mixing Procedural Slots.
 - 6011.max
- 6015_Tutorial: Material Library, Saving, Opening, Basic Menu.
 - 6015.max
- 6023_Tutorial: Cartooning Shader.
 - 6023.max

Key Topics:

- More multi sub editor controls
- More material editor controls and menus

- Making and finding Procedural shaders
- Exploring the material library.
- Saving shaders
- Retrieving shaders previously saved.
- Retrieving shaders and materials from your scene or object.
- Shader view port controls
- Using Material slots and the various slots available.
- Creating a reflective surface
- Cartoon shaders

Projects:

- Apply surface textures to the entire vehicle. (You can still model vehicle elements later, just textures to parts already completed).

Recommended Study Time: 1 week

Lesson 7 brings a short break to the course. Not as much material to cover this week so you'll have a little more time to model and work on the final vehicle project. This lesson we'll be looking at how to create lights and cameras in your scenes so we can render a good looking final vehicle scene. While most lighting we create in MAX cannot export with the object into a game environment, the lighting you create in MAX will go a long way toward your understanding lighting in general. In addition, the lighting you add to your scene will only make your vehicle look better. We won't cover lighting in detail, only enough to get you started. The study of light can take years to master, so if you find this lesson interesting take a look at books available that focus on 3D lighting techniques. Lesson 6 will also cover cameras with a general overview of putting cameras into a scene and mastering the placement controls so your camera is pointed right where you want it to be.

Here is a list of the videos and PPT's that make up the seventh lesson:

Tutorial 7002 and 7005 focus on the skills of lighting a scene. The videos will cover basic lighting techniques and how to make your scene look the best it can in a short amount of time.

Video 7010 will pull the previous tutorials together and explains the basic components of a well-lit scene. The tutorial will also cover the skylight system.

7011 shows you how to control the falloff and attenuation of your scene lights. By changing the attenuation settings you can turn a harsh bright light into a soft light perfect for rendering simple scenes.

You might not have given it much thought, but there are many different types of shadows lights can cast. Each shadow type is slightly different and used for different circumstances. Tutorial 7012 will walk you through the many choices.

Tutorial 7018 will take a side trip through the world of volume lights. Volume lights will not export to game engines, but they could make your scene look really good.

Need a camera in your scene? Want to get away from those ridged perspective views. Setting up a camera is easy! Tutorial 7020 will show you how.

Here is a list of the videos and files that make up the 7th lesson:

- 7002_Tutorial: Basic Lighting_1_Omni and Spot Lights.
7002.max
- 7005_Tutorial: Basic Lighting_3_Lighting Setup.
- 7010_Tutorial: Pulling it All Together, Scene Lighting and Skylights.
7010.Max
- 7011_Tutorial: Falloff.
- 7012_Tutorial: Shadow Controls.
- 7018_Tutorial: Volume Light.
- 7020_Tutorial: Camera Setup.

Key Topics:

- Lighting
 - Light types
 - Shadow types associated with each light
 - Changing light types in a scene
 - How to control shadow settings so your shadows look great.
 - Placement of lights within a scene.
 - Light colours and multipliers
 - Skylights
 - Falloff
 - Making volume lights

- Basic Camera setup and controls

Projects:

- Create lights for the vehicle scene using skylights and basic lights.
 - Apply a skylight to the scene, activate it and see what your render time is per frame so far.
 - If the scene takes too long to render, or you don't like the results of the skylight, use standard lighting (leave the skylight in the scene, but turn it off)

Recommended Study Time: 1 week

Lesson 8: Adding Details to the Environment

read: Backgrounds.doc

The backgrounds.doc will give you a first hand view into how a game cinematic has been created and finalized. The Doc file focuses on a different software program than MAX, but the concepts remain the same. The Doc file is not necessary to read if you're stretched for time but I thought it was a good resource to include in this course.

Lesson 8 starts to bring us full circle with many of the previous skills learned in the course coming back to play a role. We'll be revisiting the scatter type objects along with displacement maps and displacement vertex painting. The vehicle project should be coming along well by now and your vehicle should be completely textured and modeled. Only a few more lessons to go before the end of the course.

Here is a list of the videos and PPT's that make up the eighth lesson:

Tutorial 8006 will walk you through vertex colouring and how to use it for various surface effects.

Tutorials 8010, 8011 and 8012 will take a tour through the various ways to deform a high polygon mesh. The goal is to create mountains and backgrounds for the final scene, but the process can be used for adding any number of mesh details.

8014 will go through the process of texturing those mountains you just made in the previous tutorials.

Making textures for terrain is one thing, but making them look good is a whole other process. Tutorials 8017 and 8018 will show you a few of the different choices you have when it comes to using shader types to adjust or enhance the terrain textures.

8019 is a PowerPoint tutorial that walks you through the process of making a perfectly seamed skybox in the 3D software program called Bryce. Why Bryce? Because it is inexpensive (older versions are sometimes free from the website) and saves a ton of time! Not the most necessary video to watch, but if you like terrain building it is a good trick to know about.

8021 is another trick that won't export to games, but looks really cool! Scatter terrains or objects are great for adding small details like grass or rocks to a scene.

Here is a list of the videos and files that make up the eighth lesson:

- 8006_Tutorial: How to use Vertex Colouring.
- 8010_Tutorial: Landscape Paint Deformations.
 - 8010.max
 - 8010B.max
- 8011_Tutorial: Export Paint Deformation Maps.
- 8012_Tutorial: Landscape Photoshop Displacement.
 - 8012.max
 - 8012B.max
- 8014_Tutorial: Texture Creation for Mountains.
 - 8014_Sample Rock Textures
- 8017_Tutorial: Top Bottom Shader.
 - 8017_Sample Scene
- 8018_Tutorial: Blend Shader.
 - 8018_Sample Scene

- 8019_Tutorial: Making a Skybox: Bryce PPT.
8019.PPT
- 8020_Tutorial: Making a Skybox, MAX Scene.
8020_SampleSkyboxes (tons to pick from!)
- 8021_Tutorial: Grass and Foliage Placement.
- 8025_Tutorial: Merging Skybox_Final Scene Setup.
8025_SampleSkyboxes

Key Topics:

- Environment set-up for the final project
 - Deformations maps
 - Paint deformations
 - Exporting a deformation map from MAX
 - Vertex colouring
 - Photoshop techniques for making displacement maps.
 - Skybox creation and placement in the scene.
- More scatter objects
- Skyboxes and making the background for your final project
 - What are “skyboxes”
 - Making skyboxes
 - Setting up the skybox multi sub object.
- Shader types for the environment
 - Making and Applying Blend shaders
 - Using Top/Bottom Shaders

Projects:

- Create and texture the ground plane and environmental elements (not including skybox)
 - You may need to mode the environmental elements you’re adding to the scene i.e.: rocks, plants, grass, urban elements, etc.

Recommended Study Time: 1 week

Lesson 9: Basic Animation and Rendering

Week 9 is all about wrapping up the project and dealing with animation (like the treads or simple key frame animation) and fixing small texture and modeling issues. If your vehicle is mostly modeled, textured and the scene has a landscape and background, then you're in pretty good shape. If not, now would be the time for a big come from behind victory!

Tutorial 9000 and 9001 deal with simple key frame animation basics. There are a few new interfaces in these videos to learn, but nothing very complicated.

Get those treads rolling along with tutorial 9003!

Take the easy way out and just clone the tread animation and objects once the animation is complete. Tutorial 9004 will show you how.

Get a jump on the final week and start rendering the final scene. Tutorial 9012 will walk you through some rendering basics and the rendering interface.

Tutorial 9015 may not be for everyone, but you have grand visions of your vehicle spewing fire and shooting rockets of mass destruction then tutorial 9015 is for you. Learn the basics behind particle generation and the settings that will make rockets, flame throwers and fire put the "mass destruction" back into your render.

Here is a list of the videos and files that make up the ninth lesson:

- 9000_Tutorial: Animation Menu Basics.
9000.max
- 9002_Tutorial: Making Key Frames.
9002.max
- 9003_Tutorial: Animating the Treads of the Tank.
9003.max
- 9004_Tutorial: Cloning the Tank Treads.
9004.max
- 9012_Tutorial: Rendering the Final Scene.
9012.max
- 9015_Tutorial: Particle Basics.

Key Topics:

- Animation Menu basics.
 - Skybox creation and placement in the scene.
- Key frames
- Animating the path deforms for the treads
 - Cloning and copying the tread animations
- Rendering the final scene.
- Using and rendering particles.

Projects:

- Animate the treads of the tank
 - Either merge the tank onto a new scene, or delete all non vehicle objects/elements from the scene.
 - Animate the tank treads using path deform (WSM) and key frames.
 - Prove that the treads can animate around the vehicle tread housings.

Recommended Study Time: 1 week

Lesson 10: Final Scene and Model Check

Almost there....must...finish....project!

You are almost at the end of the first module. By this point you should know the MAX interface pretty well, be solving most of your mesh issues with no problems and have a fully functional, good looking, vehicle of doom!

Tutorial 10060 is a supplemental video that shows you the process of making a diorama to place your final vehicle into. The method is used quite a bit to show off models and looks really neat.

10078 will delve into the world of parallax mapping (sometimes called relief mapping) and correctly rendering displacement. It may not seem like it, but this method of rendering what looks to be high-poly objects is exportable to some game engines. The process is a really good way to add detail without the high overhead of polygons.

10005, 10008, 10013 and 10020 are all check lists you can use to make sure your final project is in a high scoring position. The check lists go through the main points you may have forgotten from the class.

The final projects are due in order to complete the next and final lesson. Once everything is turned in (see 10020_CI_Final Project Turn In) you are finished! Get everything wrapped up, spend some time on the final lighting and render options. Pick a good camera angle and double check those textures. You're almost finished!

Here is a list of the videos that make up the 10th lesson: (Note: No files are provided - You should be good enough by now to make your own!)

- 10060_Extra_Creating a Diorama.
- 10078_Relief and Parallax Mapping 01.
- 10005_CL_Scene Maintenance.
- 10008_CL_Environmental Hints.
- 10013_CL_Render Hints.
- 10020_CL_Final Project Turn In.

Key Topics:

- Explore different render options
 - Turnarounds and displaying final projects.
- Making final adjustments to the scene and models.
- Final project turn in

Projects:

- Submit finished vehicle mesh textured and lit.
 - Final scene with vehicle due next lesson (see lesson 11 checklists).

Recommended Study Time: 1 week

Lesson 11: Final

You are finally at the finish! You should have a vehicle model rendered and a final MAX scene ready to turn in. You'll need to also include the textures from your final scene (or else the scene won't be textured when I open it). The final render is the important piece since that is the main item that will show off the final project.

Here's a quick check list you can use to get that final project ready to turn in:

- Hand in one final MAX scene. Scene should include your vehicle, ground displacement plane and background. If you have a camera in the scene, set up one of the view ports as a camera view port so I can see the final camera placement you chose.
- Make sure you have treads on your vehicle that still have the path deform binding showing in the modifier stack. I'll check to make sure the tread moves correctly. The treads do not have to be animated in the final files you turn in.
- Include ALL textures used in the scene. Use the resource collector or file>archive to collect ALL the scene pieces. Don't forget the ground displacement map (if you created it in Photoshop) or the HDR lighting (If you used any). Double check everything by saving all the scene parts to a different folder on your hard drive and try to open the MAX file from that folder...if everything opens without errors then you are good to go. If you get errors you are missing a piece and the error will tell you which piece is missing.
- Hand in a final render. The render can be 640 X 480 (or equivalent) or larger. 72 DPI is fine. BMP, TGA, JPG or TIF files are accepted.

Feel free to e-mail me if you have any questions or problems. Remember my e-mail is: cbrad@earthlink.net or catch me on the message boards through Game Institute.

Name the final max scene and render in this format (using your name):

Last name_First name_FinalRender.bmp

Last name_First name_Final.max

Recommended Study Time: 1 week

If you haven't signed up already make sure to sign up for Module 2. Module 2 of this class will focus on using the skills we learned in the first module and applying those too making game assets. Module 2 will feature creating game props and one longer project: one game beastie!

Thanks to everyone for taking the class! I'm sure it has been frustrating at times and hopefully enjoyable most of the time. Learning a huge chunk of software like MAX can be a daunting task, and it takes a much longer period of time

than 11 weeks to get really good with these large programs. Stick with it and hang in there...you'll be comfortable in the software in no time and making all those great models of monsters, robots and props in the near future!