



**Gifted LearningLinks Program  
Honors Elective  
Course Syllabus**

**Instructor name: Thom Miecznikowski  
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**Course Title: 3d Graphic Modeling for Games, Illustrations & Animated Short Features**

**Session Date:** 2010-2011 Academics Year, monthly enrollments

**Course Description:**

From the movies to medicine to architecture, 3d graphic modeling allows people to manipulate characters and objects. This course utilizes concepts and tools that professionals apply to create games and illustrations as well as animated shorts and videos. Combine your interests in computers and storytelling with 3d animation.

**Outcomes:** Upon successful completion of this course, students will:

- a. The student will have a solid understanding of 3d modeling, texturing and animation
- b. A portfolio of still images representing their CG work.
- c. A short film.

**Resources and Materials:**

- a. Textbook, Essential Blender available as a PDF download from [www.blender.org/estor](http://www.blender.org/estor)
- b. Personal computer, PC or Mac. Check system requirements at the [www.blender.org](http://www.blender.org) web site.
- c. Blender is an open source, free software for the creation of 3d models and animation. It can be downloaded by going to <http://www.blender.org/download/get-blender/>
- d. Before installing blender on your computer you will need to install Python vers.2.6.2. This is a compiler that Blender uses to run some advanced scripts.

**Note:** While a staff member (which includes but is not limited to instructors, teaching assistants, residential staff, office staff) may use or refer students to third-party web sites for instructional purposes, s/he is required to review thoroughly any such web sites for inappropriate content before referencing them. This includes clicking on all links contained in any such web site, reviewing the materials contained on every page within a web site, and ensuring that the web site does not provide links to other inappropriate web sites. If there is any doubt about whether something is appropriate, a staff member is instructed to err on the side of caution and not use the web site or check with a CTD supervisor. If a referenced third-party web site is later determined to contain inappropriate content, the staff member may be subject to discipline.

**Schedule:**

	<b>Topic/Focus</b>	<b>Activities &amp; Reading Assignments</b>	<b>What do I need to post to the Discussion Board?</b>	<b>What do I need to turn in?</b>
<b>Week 1</b>	Getting familiar with the Blender interface	<ul style="list-style-type: none"> <li>▪ Download and install the Blender software.</li> <li>▪ Explore the interface and basic navigation.</li> </ul>	Describe the steps taken to select and move the default geometry.	<ul style="list-style-type: none"> <li>▪ Write a short introduction of yourself and tell me something of your long term goals as a CG artist.</li> <li>▪ A short description of the installation process and include any difficulties experienced.</li> </ul>
<b>Week 2</b>	The interface and navigating	<ul style="list-style-type: none"> <li>▪ Read chapter two of “Essential Blender”.</li> </ul>	Questions and observations.	Answer the posted questions.
<b>Week 3</b>	Object manipulation and geometry primitives	<ul style="list-style-type: none"> <li>▪ Read chapter three</li> <li>▪ Use the software to create simple models from manipulated primitives.</li> </ul>	Questions and observations about the basic modeling tools.	Images (screen grabs) or files of simple models as described in the lesson plan.
<b>Week 4</b>	Mesh modeling	<ul style="list-style-type: none"> <li>▪ Read chapter four.</li> <li>▪ Create a basic character using a combination of primitive and mesh modeling tools.</li> </ul>	Questions and observations about the mesh modeling tools.	<ul style="list-style-type: none"> <li>▪ Images (screen grabs) or files of simple models as described in the lesson plan.</li> <li>▪ Write a short description of your process.</li> </ul>
<b>Week 5</b>	Sculpting	<ul style="list-style-type: none"> <li>▪ Read chapter five.</li> <li>▪ Work with the more advanced modeling tools to refine your character model.</li> </ul>	Questions and observations about the sculpting tools.	<ul style="list-style-type: none"> <li>▪ Images (screen grabs) or files of your character.</li> <li>▪ Try to show a sequence of the evolution of the model.</li> </ul>

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<b>Week 6</b>	Animation and Character animation	<ul style="list-style-type: none"> <li>▪ Read chapter six and instructor's notes.</li> <li>▪ Online, look at examples of short animations and research the term "the illusion of life"</li> <li>▪ Start to focus on the esthetics of animation rather than the technology.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Discuss your thoughts about key frame animation, motion and time as it relates to film.</li> <li>▪ Begin generating ideas for a short film of approximately one minute in length.</li> </ul>	Write a short paper to show your understanding of animation concepts or answer questions in the lesson plan.
<b>Week 7</b>	Rigging, binding and controlling your character	<ul style="list-style-type: none"> <li>▪ Read chapter seven and the instructor's notes on bones, constraints and key framing</li> </ul>	<ul style="list-style-type: none"> <li>▪ Discuss the ideas about actions, timing, squash and stretch and what creates tension and release.</li> <li>▪ How can you use it to tell a story or express an emotion?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Using what you have learned thus far, how will this affect your short film? Develop a scenario for your film.</li> <li>▪ Draw a short story board.</li> </ul>
<b>Week 8</b>	Shape keys for facial expression	<ul style="list-style-type: none"> <li>▪ Read chapter eight.</li> <li>▪ Explore the shape key tool and build a library of phonemes or expressions for your character to use.</li> </ul>	Discuss what you have learned about "tweening", "Pose to pose" and "linear animation"	Screen grabs of your facial shapes and character poses.

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<b>Week 9</b>	Materials and textures. Making it real.	<ul style="list-style-type: none"> <li>▪ Read chapter nine and the instructor's notes.</li> <li>▪ You will need a paint program from here on to support your modeling efforts.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Discuss how light and texture help to tell a story. How will you use materials to set a mood in your film?</li> <li>▪ Animation is as much "art" as it is "technology" - deal with it.</li> </ul>	Post a project complete with maps and materials of props in your film or your character.
<b>Week 10</b>	Advanced materials and textures	<ul style="list-style-type: none"> <li>▪ Read chapter ten.</li> <li>▪ Refine the texturing of the props and character in your film.</li> </ul>	Questions? (You will have questions.)	Post images
<b>Week 11</b>	Lighting and rendering. Making it realer.	Read chapter 11 and the instructor's notes. (We are in it deep now.)	How does light work with modeling and texturing to help you tell a story.	Post images or scene files. (Take a breath.)

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Week 12	Special effects/ particles	<p>A change of pace...</p> <ul style="list-style-type: none"> <li>Read chapter 12</li> <li>There are many areas of discussion. Special effects could very easily be a whole class of its own. (If this is of special interest to you, let your instructor know and they will talk you out of it. No, just kidding this is my specialty and I would be happy to discuss how you might explore this area.)</li> </ul>	<ul style="list-style-type: none"> <li>Why do we need special effects?</li> <li>What role do they play in film making?</li> <li>How might you use them in your film?</li> </ul>	<p>Post images of a simple particle effect like a fountain or campfire.</p>
Week 13	Special effects (cont.) Rendering and compositing	<ul style="list-style-type: none"> <li>Read chapter thirteen and the instructor's notes. We will see the behind the scenes skills that make the magic.</li> </ul>	<ul style="list-style-type: none"> <li>This is where things come together literally. We start polishing our work.</li> <li>Take a look at your favorite effects movie. Can you spot and break down the effects shot?</li> </ul>	<p>Submit renderings and test wireframes if needed</p>
Week 14	Customizing Blender	<p>You're almost there. Time to start doing things your way.</p> <ul style="list-style-type: none"> <li>Read chapter fourteen.</li> </ul>	<p>Try and make some simple modifications to the user tools that reflect your own style of working.</p>	<p>Write your thoughts on how you would like the tools to be realized</p>

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<b>Week 15</b>	Ridged body physics	<ul style="list-style-type: none"> <li>Read chapter fifteen and the instructor's notes. We are going to explore more about using the interaction of objects and their effect on a scene.</li> </ul>	Create a very simple simulation of two or more objects interacting through collision.	Answer the questions posed in the instructor's notes
<b>Week 16</b>	Final project	Begin to assemble your images for your portfolio. (Your short should be near completion.)	Requests for input as appropriate	First review of portfolio images
<b>Week 17</b>	Final project	Begin final polish of your portfolio and short film.	Requests for input as appropriate	Revisions of portfolio images
<b>Week 18</b>	Final project	Portfolio and film review	A link to your portfolio and a link to your short film.	<ul style="list-style-type: none"> <li>Write a short description (less than 5 pages) of your thoughts on your CGI work.</li> <li>Focus on how your perceptions have changed, what you found surprising and how you will go forward from this point.</li> </ul>
<b>FINAL EVALUATION</b>				

**Student Evaluation and Grading Policies for Credit Courses Only:**

a. CTD Grading scale

<b>A+</b> 97-100	<b>B+</b> 87-89	<b>C+</b> 77-79	<b>D+</b> 67-69	<b>F</b> Below 60
<b>A</b> 93-96	<b>B</b> 83-86	<b>C</b> 73-76	<b>D</b> 63-66	
<b>A-</b> 90-92	<b>B-</b> 80-82	<b>C-</b> 70-72	<b>D-</b> 60-62	

- b. Breakdown of final grade (submitted projects and final project (movie/portfolio))
- c. Upon completion of the course the student's portfolio and or short animation will be evaluated and graded.
- d. Interim progress reports are emailed when a student is earning a grade of C or below.

**Instructor Biography:**

Thom Miecznikowski is a career computer animator and art director. He has been involved in the creation of dozens of Television commercials, video games, short and feature films. He is a recognized special effects artist who began his career on film and was involved at the very beginning of computer animation in commercial production. He was the primary artist operator on Chicago's first quantel paint box and later trained on Chicago's first seat of Alias 3d animation software. He has taught 3d animation for a number of educational programs, tech camps and Columbia college and is now happy to be a part of Northwestern's online learning program.

A small sample of his work may be viewed at: [www.monkeywrenchstudio.com](http://www.monkeywrenchstudio.com)  
In the portfolio / past reels section.

**Contact Information:**

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