

ITT Technical Institute

GC2530

Animation

Onsite Course

SYLLABUS

Credit hours: 4.5

Contact/Instructional hours: 56 (34 Theory Hours, 22 Lab Hours)

Prerequisite(s) and/or Corequisite(s):

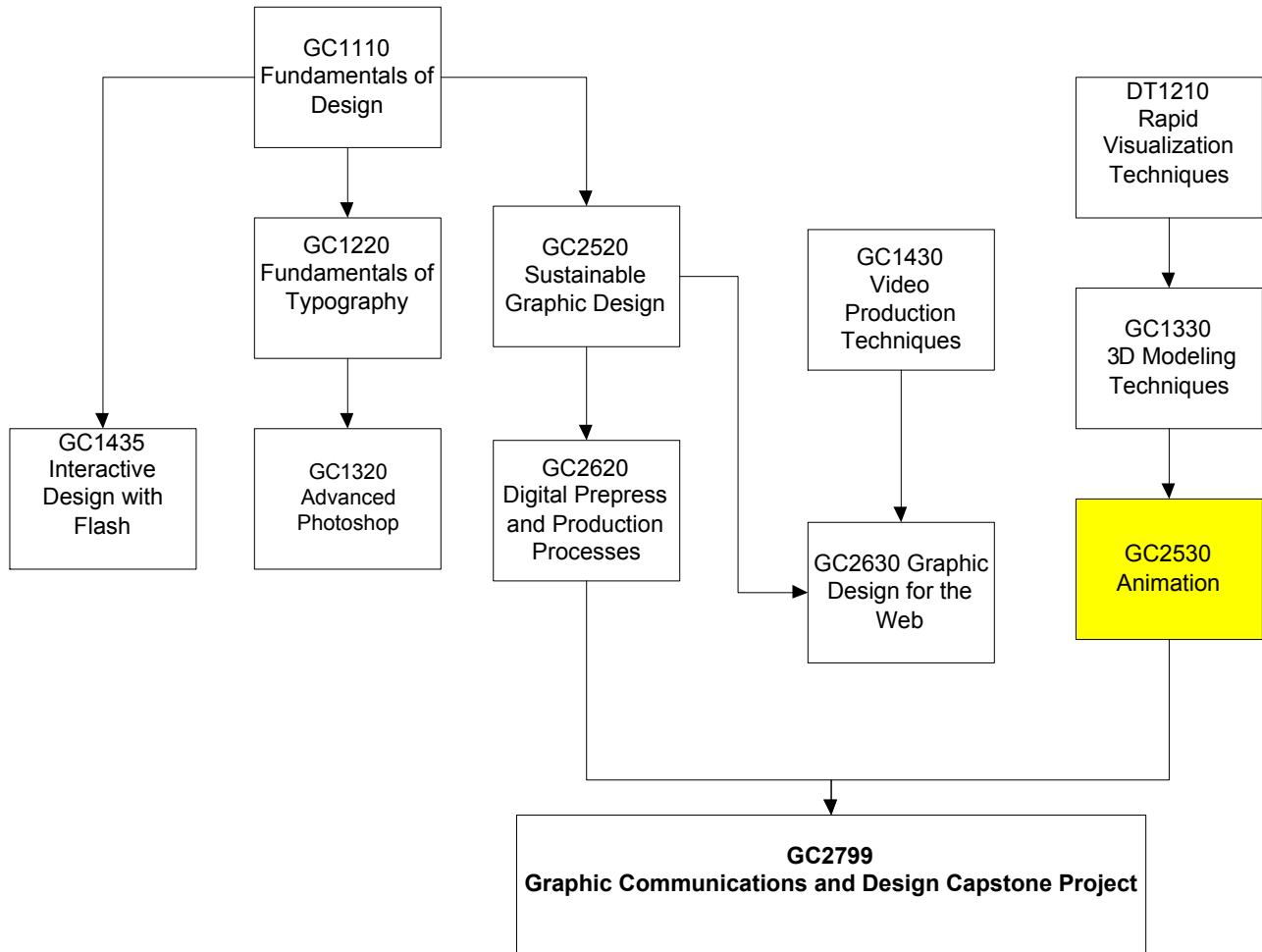
Prerequisites: GC1330 3D Modeling Techniques or equivalent

Course Description:

This course focuses on principles of form topology, visual design and movement as applied in the creation of simple animated sequence. Students are introduced to methods of integrating lighting, texture mapping, rendering and finer details of motion graphics to create 3D computer animated solutions.

Where Does This Course Belong?

The following diagram demonstrates how this course fits in the standard program:



NOTE: Refer to the catalog for the state-specific course and program information, if applicable.

Animation is a foundational course of the Graphic Communications and Design program that will provide students the opportunity to learn the basics of creating animations with 3ds Max. The focus of the class is to get the students up and running fast as they dive into the tasks of building animation sequences.

Each core course is designed to provide ITT Tech students with a well-rounded education in the context of their technical programs. Each course emphasizes one or more of ITT Tech's Graphic Communication and Design Student Learning Outcomes.

1. Demonstrate skills necessary in the professional environment including effective communication skill and ability to work in teams.
2. Conduct basic research and apply the tools of critical reading, analytical thinking, reasoning, and mathematics to effectively solve practical problems.
3. Describe and apply hands-on skills in software applications to develop graphic communications for the print industry.
4. Design and develop interactive software applications utilizing motion graphics.
5. Develop hands-on skills in designing interactive web-based communication systems.

Course Summary

Major Instructional Areas

1. Principles of animation
2. Timeline in 3ds Max
3. Basic animation techniques in 3ds Max
4. Animation controllers, constraints, parameters
5. Particle systems
6. Animation with Reactor
7. Animating effects
8. Demo reel/portfolio

Course Objectives

1. Apply the 12 principles of animation to 3ds Max animation.
2. Demonstrate basic skills in creating and modifying key frames on the timeline.
3. Manage graph editors to manipulate key frames.
4. Render animations in 3ds Max.
5. Apply controllers/constraints to objects.
6. Apply wire parameters to control objects.
7. Apply cinematography principles to animations.
8. Create a basic real-world sunlight system in 3ds Max environment.
9. Apply particle flow (PF) techniques to create various effects of particles.
10. Create animated effects in 3ds Max.
11. Create a physics-based simulation using Reactor.
12. Create a complete animated scene in 3ds Max for demo reel/portfolio.

Learning Materials and References

Required Resources

Complete Textbook Package	New to this Course	Carried over from Previous Course(s)	Required for Subsequent Course(s)
Murdock, K. (2011). <i>3ds max 2012 bible</i> . Hoboken, NJ: John Wiley & Sons, Inc. w/CDROM		■	■
Beane, A. (2012). <i>3D Animation essentials</i> . Hoboken, NJ: John Wiley & Sons, Inc.	■		■

Recommended Resources

Books, Professional Journals

- Animation Journal
<http://www.animationjournal.com/>
- Animation Studies Journal
<http://journal.animationstudies.org/>
- Animation
<http://anm.sagepub.com/>
- Journal of Visualization and Computer Animation
<http://www.informatik.uni-trier.de/~ley/db/journals/jvca/index.html>
- Computer Animation and Virtual Worlds
[http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1546-427X](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1546-427X)
- Animation Practice
<http://www.intellectbooks.co.uk/journals/view-Journal.id=199/>

Professional Associations

- International Animated Film Association
ASIFA <http://www.asifa.net>
- Association for Computing Machinery's Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH) <http://www.siggraph.org/>
- Society for Animation Studies
<http://www.awn.com/sas/index.html>
- Toronto Animated Image Society
<http://www.awn.com/tais/>
- 11 second Club
www.11secondclub.com/

ITT Tech Virtual Library (accessed via Student Portal | <https://studentportal.itt-tech.edu>)

- Search via Periodicals> ProQuest
 - Research and markets; the art of 3D computer animation and effects, 4th edition. (2009). *Computer Business Week*, 29.
 - Hong, W., & Thong, J. Y. L. (2004). Does animation attract online users' attention? The effects of flash on information search performance and perceptions. *Information Systems Research*, 15(1), 60-86
 - Samudhram, A. (2002). Applying different animation effects. *Computimes Malaysia*, 1-1.

NOTE: All links are subject to change without prior notice.

Information Search

Use the following keywords to search for additional online resources that may be used for supporting your work on the course assignments:

- - Principles of animation
 - Animation controllers
 - Animation constraints
 - Animation parameters
 - Particle systems
 - Animation with Reactor
 - Animating effects
 - Demo reel/portfolio

Suggested Learning Approach

In this course, you will be studying individually and within a group of your peers. As you work on the course deliverables, you are encouraged to share ideas with your peers and instructor, work collaboratively on projects and team assignments, raise critical questions, and provide constructive feedback.

Use the following advice to receive maximum learning benefits from your participation in this course:

DO	DON'T
<ul style="list-style-type: none">▪ Do take a proactive learning approach▪ Do share your thoughts on critical issues and potential problem solutions▪ Do plan your course work in advance▪ Do explore a variety of learning resources in addition to the textbook▪ Do offer relevant examples from your experience▪ Do make an effort to understand different points of view▪ Do connect concepts explored in this course to real-life professional situations and your own experiences	<ul style="list-style-type: none">▪ Don't assume there is only one correct answer to a question▪ Don't be afraid to share your perspective on the issues analyzed in the course▪ Don't be negative about the points of view that are different from yours▪ Don't underestimate the impact of collaboration on your learning▪ Don't limit your course experience to reading the textbook▪ Don't postpone your work on the course deliverables – work on small assignment components every day

Course Outline

<p>Unit 1: ADVANCED MATERIALS & TEXTURES</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Complete animated scenes in 3ds Max for demo reel/portfolio. • Use specialized textures and materials to add detail to a 3ds Max scene. • Explain the various career paths and opportunities for 3D modelers and animators. • Apply the 12 principles of animation to 3ds Max animations. • Create realistic animations with rigged models. 			<p>Out-of-class work: 8 hours</p>
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Beane Chapter 1; Appendix 2: Interview 1 • Murdock, Chapters 30-31 	Assignment	Unit 1 Assignment 1: Walk Cycle Animation for Pre-Rigged Human Character Model	3%
		Unit 1 Assignment 2: Jump Cycle Animation for Pre-Rigged Human Character Model	3%
		Unit 1 Assignment 3: Tripping and Rising Cycle Animation for Pre-Rigged Human Character Model	3%

<p>Unit 2: UVs AND MAPPING</p> <p>Upon completion of this unit, students are expected to:</p> <ul style="list-style-type: none"> • Identify important components of animation education. • Describe the three main stages of the animation production pipeline and the various component phases of: pre-production, production, and post-production. • Use painting on a model, UV's and Mapping to add detail to a 3ds Max model/scene. • Use texture mapping, baking textures, and normal maps to optimize a 3ds Max model for use in a video game application. 			<p>Out-of-class work: 8 hours</p>
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category	Activity/Deliverable Title	Grade Allocation (% of all graded work)
<ul style="list-style-type: none"> • Beane, Chapters 2, 5; Appendix 2: Interview 2: <i>Larry Richman</i> • Murdock, Chapters 32-34 	Exercise	Unit 2 Exercise 1: Character Design	4%
	Assignment	Unit 2 Assignment 1: Character Modeling	3%
	Project	Unit 2 Project Part 1: Storyboards	4%

Unit 3: ANIMATION CONTROLLERS AND WIRING

Out-of-class work:
8 hours

Upon completion of this unit, students are expected to:

- Explain the various career paths and opportunities for 3D modelers and animators.
- Apply animation layers and modifiers to 3ds Max models and animations.
- Apply the 12 principles of animation to animate layers in 3ds Max.
- Use scripting and expressions in 3ds Max to animation objects.
- Apply wire parameters to 3ds Max animations.
- Manipulate animation key frames with the track view graphic editor.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
<ul style="list-style-type: none"> • Beane, Chapter 3; Appendix 2: Interview 3 • Murdock, Chapters 35-37 	Exercise	Unit 3 Exercise 1: Animatics	4%
	Assignment	Unit 3 Assignment 1: Plane Take-Off with Animation Layers	3%
		Unit 3 Assignment 2: Animating a Flowing River with Graph Editors	3%
	Project	Unit 3 Project Part 2: Modeling Props for	4%

Unit 4: RIGGING, BONES, FK AND IK

Out-of-class work:
8 hours

Upon completion of this unit, students are expected to:

- Explain the various career paths and opportunities for 3D modelers and animators.
- Employ the 12 principles of animation to animation layers in 3ds Max.
- Rig a 3ds Max model for animation.
- Differentiate between FK and IK and employ each in 3ds Max animations with a rigged model.

READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
<ul style="list-style-type: none"> • Beane, Chapters 4, 6; Appendix 3: Interview 1 • Murdock, Chapter 38 	Exercise	Unit 4 Exercise 1: Action Sequences in the Animated Digital Short Film	4%
	Quiz	Unit 4 Quiz 1	1%
	Project	Unit 4 Project Part 3: Rigging the Main Character for Your Animated Digital Short Film	4%

Unit 5: CHARACTER ANIMATION TOOLKIT AND SKINNING			Out-of-class work: 8 hours
Upon completion of this unit, students are expected to: <ul style="list-style-type: none"> • Explain the various career paths and opportunities for 3D modelers and animators. • Animate character models with the Character Animation Toolkit as well as apply and adjust options as needed. • Skin a character in 3ds Max and use of skin modifiers. • Bind skin to a skeleton in 3ds Max. 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
<ul style="list-style-type: none"> • Beane, Appendix 3: Interview 2 • Murdock, Chapters 39-40 	Assignment	Unit 5 Assignment 1: Attaching Skin to a CAT Rig	3%
		Unit 5 Assignment 2: Making an Inanimate Object Walk	3%
	Project	Unit 5 Project Part 4: Skinning the Main Character for the Animated Digital Short Film	4%

Unit 6: PARTICLES, PHYSICS AND REACTOR			Out-of-class work: 8 hours
Upon completion of this unit, students are expected to: <ul style="list-style-type: none"> • Evaluate a demo reel. • Configure animations using particles in 3ds Max. • Employ Space Warps in 3ds Max to create animations. • Combine particle systems and space warps in 3ds Max to create animations. • Configure a physics-based animation using the 3ds Max Reactor plug-in. 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
<ul style="list-style-type: none"> • Beane, Appendix 3: Interview 3 • Murdock, Chapters 41- 43 	Assignment	Unit 6 Assignment 1: Building a Fireworks Fountain in Particles	3%
		Unit 6 Assignment 2: Adding Effects	3%
	Project	Unit 6 Project Part 5: Applying Particles to the Short Film	4%

Unit 7: ANIMATING HAIR AND CLOTH			Out-of-class work: 8 hours
Upon completion of this unit, students are expected to: <ul style="list-style-type: none"> Configure hair and cloth dynamics to apply to 3ds Max models. 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
<ul style="list-style-type: none"> Murdock, Chapter 44 	Assignment	Unit 7 Assignment 1: Draping Cloth Over a Jet	3%
		Unit 7 Assignment 2: Adding Hair or Cloth to the Digital Short Film's Main Character Model	3%
	Project	Unit 7 Project Part 6: Model, Rig and Skin all Remaining Cast Members for the Digital Short Film	4%

Unit 8: ANIMATING EFFECTS AND ADVANCED LIGHTING			Out-of-class work: 8 hours
Upon completion of this unit, students are expected to: <ul style="list-style-type: none"> Configure animations utilizing particles in 3ds Max. Apply lighting solutions to 3ds Max models including one, two, and three point lighting solutions. 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
<ul style="list-style-type: none"> Beane, Chapter 7 Murdock, Chapters 45-46 	Assignment	Unit 8 Assignment 1: Set Building for Digital Short Film	3%
	Project	Unit 8 Project Part 7: Set Design in the Animated Digital Short Film	4%

Unit 9: RENDERING ANIMATIONS			Out-of-class work: 8 hours
Upon completion of this unit, students are expected to: <ul style="list-style-type: none"> Apply lighting solutions to 3ds Max models including one, two, and three point lighting solutions. Resolve rendering issues as they apply to 3ds Max models. Employ rendering solutions to 3ds Max models and animations. 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
<ul style="list-style-type: none"> Beane, Chapter 8 Murdock, Chapters 47-49 	Project	Unit 9 Project Part 8: Rendering with iRay	4%
		Unit 9 Project Part 9: First 10 Seconds	4%
	Quiz	Unit 9 Quiz 2	1%

Unit 10: FINAL PROJECT			Out-of-class work: 8 hours
Upon completion of this unit, the students are expected to:			
<ul style="list-style-type: none"> • Build a complete animated scene in 3ds Max for demo reel/portfolio. • Apply the 12 principles of animation to 3ds Max animations. • Resolve rendering issues as they apply to 3ds Max models. • Configure hair and cloth dynamics to apply to 3ds Max models. • Create realistic animations with rigged models. 			
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
<ul style="list-style-type: none"> • Beane, Chapter 9 	Assignment	Unit 10 Assignment 1: Portfolio Module	3%
	Project	Unit 10 Project Part 10: Presentation & Critique of Short Digital Film Finals	4%

Unit 11: COURSE REVIEW AND FINAL PROJECT PRESENTATION			Out-of-class work: 8 hours
READING ASSIGNMENT	GRADED ACTIVITIES / DELIVERABLES		
	Grading Category		Grading Category
Review of all chapters	Project	Unit 11 Project Part 11: Final Project (PORTFOLIO)	4%

NOTE: Your instructor may add a few learning activities that will change the grade allocation for each assignment in a category. The overall category percentages will not change.

Evaluation and Grading

Evaluation Criteria

The graded assignments will be evaluated using the following weighted categories:

Category	Weight
Assignment	42%
Project	44%
Exercise	12%
Quiz	2%
TOTAL	100%

Grade Conversion

The final grades will be calculated from the percentages earned in the course, as follows:

Grade	Percentage	Credit
A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

Academic Integrity

All students must comply with the policies that regulate all forms of academic dishonesty or academic misconduct, including plagiarism, self-plagiarism, fabrication, deception, cheating, and sabotage. For more information on the academic honesty policies, refer to the Student Handbook and the Course Catalog.

(End of Syllabus)