



Course Syllabus

Division: Business and Creative Arts

Course Name: 3D Character Development (DC01M) Course#: DMT2550

Class Information

Class Days: T & Th	Class Time: 12:00pm – 1:45pm
Location: Classroom: E214	Laboratory: E214
Hours: Credit: 3 Contact:	Lecture: 2 Clinical:
Lab: 2	

Contact Information

Instructor: Thomas Hoffman	Office Location: E215B
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Full-time Contact Person: Thomas Hoffman	Phone(s): 419. 559.2233

Course Information

Course Description:

DMT 2550 is a course for those who are looking to pursue a career in 3D modeling and animation of organic characters for simulations, entertainment or gaming applications. Students will explore the specifics of 3D character project management and experience a multimedia project based workflow. While developing a conceptual 3D character through the various stages, students will become familiar with conceptual techniques such as job proposals, designing model sheets, and creating storyboards. Experience with polygon modeling in Autodesk Maya and digital sculpting with Autodesk Mudbox will enhance the students understanding of industrial standards commonly required of a 3D designer. The final stages of the character development process include complex animation techniques which use keyframing and inverse kinematics of a character rig within Autodesk 3ds Max.

Prerequisite(s): DMT 2500 or Instructor Permission

Corequisite(s): None

Entry Level Skills and Knowledge: Fundamentals of 3d Software

Required Texts, Supplies and Equipment:

Textbook: **3D Modeling-Animation-Rendering** *An Illustrated Lexicon Color Ed.* By Michael E. Mortenson ISBN 9781453728482 (Reference Only)

Materials: USB Hard drive (recommended) or large Flash Drive for saving lab work
Angel email account
Sketch Book 9 x 12 or 14 x 17
Drawing Pencils

Software: Educational Versions of Autodesk Maya 2014, 3ds Max 2014 & Mudbox 2014 available free at www.autodesk.com

Grading:

90 – 100 = A

80 – 89 = B

70 – 79 = C

60 – 69 = D

59 - 0 = F

Course Requirements:

Module 1: Character Concept	20% (200pts)
Module 2: Character Model	15% (150pts)
Module 3: Character Mapping	10% (100pts)
Module 4: Character Animation	20% (200pts)
Module 5: Character Sculpture	10% (100pts)
Module 6: Character Presentation	25% (250pts)

All assignments ***must be completed with a passing grade*** to receive credit for the course. There will be **NO make-up on labs** unless previously arranged before the lab due date.

Learning Outcomes:

General Education

1. Communicate effectively.
2. Evaluate arguments in a logical fashion.
3. Demonstrate an understanding of cultural differences and the knowledge of how to work effectively in a global and diverse culture and society.
4. Employ the methods of inquiry characteristic of natural sciences, social sciences, mathematics, and the arts and humanities.
5. Demonstrate literacy in electronic environments, which may include hardware, applications, and/or media.

Course Specific Learning Outcomes:

1. Students will demonstrate their ability to conceptually design and propose a character to be produced through design sketching and model sheet development.
2. Students will produce a 3d polygon mesh of a character using model sheet guides and various modeling techniques within Autodesk Maya
3. Students will utilize best practices when preparing a 3d model's uv layout for sculpting and texturing.
4. Students will explore the various digital sculpting and texturing tools available in Autodesk Mudbox.
5. Students will create a character rig and edit various components to achieve an acceptable skin form.
6. Students will use keyframing techniques to animate the various compositions of their character's movements while utilizing professional shooting techniques
7. Students will propose the final character and display the various stages of the development process in a formal presentation which will compile all assignments from the course.

Assessment of Student Learning:

At the conclusion of DMT 2550, the student will present their conceptual character to the class. The presentation will feature the various stages of the character development including the characters biography, original sketches, modeled renderings and final animation composition. A complete package of all work will be submitted in its entirety. Students will be assessed on their professional presentation and organization of final submitted prints and media.

This is a college level course. Please be advised that most grades will be determined on the basis of quality. Be aware that simply fulfilling all course requirements satisfactorily and on time earns you a “C” grade. The quality of your work will determine if your grade will be higher than average.

Background of this Course:

New to the Digital Media Arts and Technology Program in early 2011, DMT 2550 was developed to offer students within the 3d Animation Program of Study to explore one of the leading careers offered to those who complete the program. A demand for specific instruction in regards to modeling organic mesh models and extensive use of digital sculpting opened up the opportunity for a new course to be introduced. With the recent acquisition of Maya to the Autodesk Family, Autodesk began offering Maya with 3ds Max to facilities such as ours who instruct students in animation. With the addition of Maya and Mudbox, it was evident that a course specifically designed for character development was necessary.

A student in DMT 2550 will explore the various stages of character development workflow by engaging in relevant activities that will prepare them for a career in digital media design, animation, game development or digital video production.

Course Overview: Development Units

This course has been designed to mock a full character developmental process. Within this course, the various phases of this character development are categorized into modules. The following are brief explanations of each module that students will explore within this course.

Module 1: Character Concept

In this module, the student will creatively explore the conceptual planning stage of a 3d character with creative writing and artistic sketching. The students will propose a character concept through a written character biography which will both describe physical appearance, as well as a background story which will align with the chosen character theme. Various character sketches will be developed to build the foundation for the final conceptual stage of model sheet layout. A symmetrical plan of the character will then be used within the 3d program for design guides.

Module 2: Character Modeling

In this module, the student will use Autodesk Maya to create a scaled low-polygon mesh using various techniques such as extruding, bridging and adding edge loops to aid in the manipulation of their character. Best practices of polygon management will be practiced using vertex, segment, and face manipulation.

Module 3: Character Mapping

Students will learn the process of UV Unfolding/Unwrapping of poly mesh surfaces to be textured in a 2d imaging software. The image maps created will then be re-introduced to the mesh model.

Module 4: Character Animation

Once the physical model of the character is prepared, a series of virtual bones and joints will be aligned within the characters body structure. This bone system will be connected using the technique known as rigging. This character rig will be linked and utilize the system known as inverse kinematics. This phase will allow the student to pose the character and animate various movements such as walking, climbing, or swimming.

Module 5: Character Sculpting

Using Autodesk Mudbox, students will be introduced to the fundamentals of digital character sculpting. This process includes optimizing the character mesh and adding details that were unable to be produced within the low polygon mesh. This process also includes the introduction to digital texturing which apply fine details to the skin surface, as well as the ability to materialize and colorize the features of the character. A higher resolution version of the character will be produced during this phase.

Module 6: Character Presentation

The final phase of the process is to conduct an in-class presentation of the 3d character concept. The various animations will be composed into a video demonstration showing the features of the model. The student will then present the character by reviewing the various stages and providing visual evidence of the process through a visual media presentation that offers a review of the biography, still shots of the conceptual sketches, model renderings, unfolded uvs, sculpting levels, animation rig, storyboard, various poses and camera angles. The final model and all projects assets will be packed into one folder and submitted to the instructor at the conclusion of the presentation.

Terra Art Show Submission:

With the permission of student, the work submitted may be presented at the annual Terra Art Show held in the Spring of 2014.

Course Resources:

Kermanikian, Ara. (2010). *Introducing Mudbox* Wiley Publishing, Inc., Indianapolis, Indiana ISBN978-0-470-53725-1

Maraffi, Chris (2004). *Maya Character Creation – Modeling and Animation Controls* New Riders Publishing, Berkeley, California ISBN 0-7357-1344-8

College Policies:

Academic integrity and honesty are basic core values of Terra State Community College. Students are expected to follow established standards of conduct, including academic integrity and honesty, as well as all other College policies. The Student Code of Conduct, which defines “cheating” and “plagiarism,” in addition to other forms of misconduct, can be found in the *Terra*

Community College Catalog and Student Handbook or on the Terra website at www.terra.edu. Please also refer to these sources for information regarding College policies, tutoring assistance, procedures for receiving accommodations for documented disabilities, course withdrawal procedures, career planning, and other sources of support for Terra students.

Plan of Work: Revised 1/06/2014

Week	Activities
1	Course Introduction & Objectives General Course Information (Presentation) Project Planning (Workflow) Stages (Presentation) Lab: Complete Character Biography
Week	Activities
2	D01: Character Biography Due Tuesday, January 21st Character Concept & Sketching Figure Drawing (Presentation) Model Sheet Development Lab: Complete Character Sketches
Week	Activities
3	D02: Character Sketches Due Tuesday, January 28th Introduction to Maya Maya File Management Polygon Modeling with Maya (Presentation) Introduction to Mesh Editing Tools and Techniques Polygon Management Building a Model Cage (Base Mesh) Lab: Complete Character Model Sheet
Week	Activities
4	D03: Character Model Sheets Due Tuesday, February 4th Modeling the Torso and Abdominal Area Modeling Lab Lab: Complete Character Torso and Abdominal
Week	Activities
5	Modeling Arms & Legs Lab: Complete Character Arms & Legs
Week	Activities
6	Modeling the Head and Face Lab: Complete Character Head & Face
Week	Activities
7	M01: Character Model Rendering Due Tuesday, February 25th Understanding UV Unfolding Lab: Extract and Unfold Model UV's

Week	Activities
8	T01: Character UVs Due Tuesday, March 4th Texture Creation in Photoshop Reapplying Image Maps to Model Lab: Character Texture Creation & Application
Week	
9	Spring Break – No Class
Week	Activities
10	T02: Character Model with Texture Rendering Due Tuesday, March 18th Basics of Storyboarding Storyboard Lab Lab: Storyboard Project
Week	Activities
11	A01: Storyboard Due Tuesday, March 25th Fundamentals of Bone Systems The Rigging & Skin Process Lab: Character Rig
Week	Activities
12	A02: Character Rig Screen Shot Due Tuesday, April 1st Creating Hair & Cloth Lab: Hair and Cloth
Week	Activities
13	Keyframing the Animation Sequences Setting up the Final Animation Lab: Character Animation
Week	Activities
14	Introduction to Mudbox Basics of Mudbox Pipeline Mudbox Interface Digital Sculpting Techniques Saving a model Understanding Subdivision Layers Lab: Character Sculpting & Rendering Animations
Week	Activities
15	Lab: Character Sculpting & Rendering Animations
Week	Activities
16	Lab: Character Sculpting & Rendering Animations A03: Character Animation Due Tuesday, May 6th S01: Character Sculpture Due Tuesday, May 6th
Week	Activities

17	Final Presentations – Thursday, May 8th Final Proposal Package Due Thursday, May 8th
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