# **DD 207 - 3D Design and Animation**

**Meets:**

**Office:**

**Email:**

**Phone:**

**Course description:**

This class introduces students to 3D computer animation with a series of exercises and projects created to develop a strong foundation. Students will develop necessary modeling, rigging, and animating skills, as well as a solid understanding of the complex software interfaces. Along the way students will be exposed to project development strategies as well as more complex issues dealing with 3D design.

**Course Objectives:**

Students who successfully complete this course will have working knowledge of:

3D Software basics

Manipulating views

Modeling with polygons

Modeling with NURBS

Modeling from photos of objects

Shading objects (texturing, also called materials)

Rendering and exporting

Basic lighting

Basics of animation

**Credit hours:**

3 hours

# **Prerequisites:**

DD 107 - Concepts in Animation

GD 110 - Visual Design for Games

**Strongly suggested:**

This class has been designated as web-enhanced. Many of the required tasks will be performed

on-line. In addition, many of the research assignments will require the use of library databases. It would be an advantage if students had:

* Familiarity with the Internet
* Access to the Internet from home or elsewhere
* An active email account.

**Grading:**

Exercises 80

Participation 20

Total 100

**Grades:**

90-100 A

80-89 B

70-79 C

60-69 D

0-50 F

There is no R grade in this course.

**Due dates:**

Late assignments will not be accepted without a physician or counselor’s note.

**3D Computer Animation Assignments (CAA):**

This course is a three-hour studio course. This course will be an organic mixture of lectures, workshops, studio time and critiques. There will be 13 scaffolded assignments spread over the course of 15 weeks. 20% of the grade will be based on engagement and consistent attendance. The balance of the grade will be determined by thirteen critiqued exercises and a final portfolio presentation.

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| Assignment | Type | Graded points |
| Toy robot (Part 1) | Take home and in class | 5 |
| Toy robot (Part 2) | Take home and in class | 5 |
| Toy robot (Part 3) | Take home and in class | 5 |
| Toy robot (Part 4) | Take home and in class | 5 |
| Spaceship (Part 1) | Take home and in class | 5 |
| Spaceship (Part 2) | Take home and in class | 5 |
| Flying text | Take home and in class | 5 |
| Logomator | Take home and in class | 5 |
| Final project (Part 1) | Take home and in class | 5 |
| Final project (Part 2) | Take home and in class | 5 |
| Final project (Part 3) | Take home and in class | 10 |
| Final project (Part 4) | Take home and in class | 10 |
| Final project (Part 5) | Take home and in class | 10 |
| Total |  | 80 |

**Notes on the grading criteria:**

Work will be evaluated according to the following criteria:

* Understanding and interpretation of readings
* Aesthetic and execution of projects
* Research and Analysis of related issues
* Contribution to in-class discussion

**Participation:**

A student’s participation grade is based primarily on their attendance and participation in

class. Every student begins the term with 20 participation points. Attendance is mandatory

for every single scheduled class. For each class missed, 6 participation points will be

deducted. Tardy students will have 2 participation points deducted. More than three

absences amount to a failure, as a student may not earn less than 0 participation points.

**Academic policies (from Catalogue):**

Hostos Community College believes that developing student's abilities to think through

issues and problems by themselves is central to the educational process. Since the

Hostos College degree signifies that the student knows the material s/he has studied,

and the practice of academic dishonesty results in grades or scores that do not reflect how

much or how well the student has learned, understood, or mastered the material, the

College will investigate any form of academic dishonesty brought to its attention. If the

charge of academic dishonesty is proved, the College will impose sanctions. The three most

common forms of academic dishonesty are cheating, plagiarism, and bribery.

**Cheating (from Catalogue):**

In the collegiate setting, cheating is defined as the purposeful misrepresentation of

another's work as one's own. Faculty and students alike are responsible for upholding the

integrity of this institution by not participating either directly or indirectly in act of cheating

and by discouraging others from doing so.

**Plagiarism (from Catalogue):**

Plagiarism is a form of cheating which occurs when persons, even if unintentionally, fail to

acknowledge appropriately the sources for the ideas, language, concepts, inventions, etc.

referred to in their own work. Thus, any attempt to claim another's intellectual or artistic

work as one's own constitutes an act of plagiarism.

**Bribery (from Catalogue):**

In the collegiate setting, bribery involves the offering, promising, or giving of items of value,

such as money or gifts, to a person in a position of authority, such as a teacher,

administrator, or staff member, so as to influence his/her judgment or conduct in favor of

the student. The offering of sexual favors in exchange for a grade, test score, or other

academic favor, shall be considered attempted bribery. The matter of sexual favors, either

requested or offered, in exchange for a grade, test score or other academic favor, shall also

be handled as per the Sexual Harassment procedures of the College.

**College attendance policy (from Catalogue):**

Students are expected to attend all class meetings in the courses for which they are

registered. Classes begin at the times indicated in the official schedule of classes. Arrival in

class after the scheduled starting time constitutes lateness.

The maximum number of absences is limited to 15% of the number of scheduled class hours

per semester and a student absent more than the indicated 15% is deemed excessively

absent. Attendance is monitored from the first official day of classes. In the case of

excessive absences or lateness, the instructor has the right to lower the grade, assign a

failing grade, or assign additional written work or readings.

Absences due to late registration, to a change of program, or to extenuating circumstances

will be considered by the instructor on an individual basis. Each department and program

may specify in writing a different attendance policy. Instructors are required to keep an

official record of student attendance and inform each class of the College's or department

attendance policy.

**NOTE:**

Any work missed during any period of absence must be made up by the student.

To meet financial aid criteria, a student must attend class at least once in the first three

weeks and once in either the fourth or fifth week of class.

**Course schedule:**

Readings must be completed for each class. Not all assigned texts will be discussed in class

or covered in the class lectures.

## Week 01 - Intro

What is C4D - maxon C4d Reel

Purpose - getting to know the program, 3D in general, Production pipeline

C4D / 3D in game design

C4D / 3D in Video/TV/Animation production/Game industry

3D and Compositing

Teacher’s background

Students background

Expectations

## Week 02 - The program interface, Basic Modeling,

Purpose - Getting to know the program, Setting up a basic scene

Project - Toy Robot

Topics - Modeling with primitives, PSR keys, Object vs world mode, using deformers,

rendering a single frame, rendering in viewport

Homework - create a toy robot, using primitives and deformers, beveling, adding subdivisions

## Week 03 - Basic Modeling, Lights and Cameras

Purpose - Understand how to set up Cameras and lights, shades, render from different cameras

Project - Toy Robot

Topics - Simple lighting, Shadow , Camera, Object manager control, Traffic lights commands

Homework - add 3 lights, 2 camera, render two frames,

## Week 04 - Materials and Textures

Purpose - learn to assign materials and Textures

Project - Toy Robot

Topics - Assigning materials, Creating basic textures, The difference between material and texture, creating reflective objects, Floor, backdrop, background object, Adding materials to objects, materials hierarchy

Homework - Find color scheme/inspiration. Add materials to robot, add texture to a part of your robot, put robot parts on layers

## Week 05 - Intro to Animation

Purpose - understanding different techniques of animation, and some of the 12 principles of animation

Project - Space Chase

Topics - Animating key to key, animating along a spline

Homework - Create a simple planetary system, create your own simple spaceship

## Week 06 - Intro to Animation

Purpose - understanding different techniques of animation, and some of the 12 principles of animation

Project -Space Chase

Topics - Animating along a path, importance of parenting and hierarchy

Homework - Animate your spaceship, animate my police spaceship, camera follows

## Week 07 - Mograph

Purpose - Learning the robust tools of mograph and what can it do

Project - Floating graphics

Topics - Mograph Cloner, Plain Effector, Motext, Random effector,

Homework - Create a flying text/shapes, use effector

## Week 08 - Mograph

Purpose - learning more effector tools

Project - the logo mator

Topics -, delay , target, shader, random

Homework - Finish logomator

## Week 09 - Intermediate modeling

Purpose - Learning additional modeling tools to create more advanced shapes

Project - Final project

Topics - Splines , Extrude, lathe, loft, sweep, spline mask, instance, text

Homework - Planning your final project, adding intermediate modeling objects

## Week 10 - Intermediate modeling

Purpose - Continuing learning and practicing modeling tools, improving knowledge of the tools.

Project - Final

Topics - Splines , Extrude, lathe, loft, sweep, spline mask, instance, text

Homework - Working on final

## Week 11 - Polygon/Subdivision modeling

Purpose - learning how to create advanced objects, manipulations the basic components of geometry,

Project - Final

Topics - Converting to polymodel, using Subdivisions, easy access between Vertices, Edges and Polygons, tools

Homework - Working on final

## Week 12 - Polygon Modeling

Purpose - learning how to do advanced objects, manipulating the basic components of geometry,

Project - Final

Topics - creating cell shaders, adding to polygon model, other shaders

Homework - change your model’s materials, work on polygon smoothing, beveling

## Week 13 - Simulation , Dynamics, hair (Segment 1)

Purpose - understanding what 3D software can do - simple particles, hard body dynamics, hair

Project – Final

## Week 14 - Simulation , Dynamics, hair (Segment 2)

Purpose - understanding what 3D software can do - simple particles, hard body dynamics, hair

Project - Final

## Week 15 - presentation, critique

Purpose - learning to present and explain your design and execution

Project - personal

Topics - showing final project, talking about it