



# Broward Community College

## Course Outline

STATUS:           A          

COMMON COURSE NUMBER:           GRA 2152C          

COURSE TITLE:           Advanced Digital Image Design          

CREDIT HOURS:           3          

CONTACT HOURS BREAKDOWN:

Lecture/Discussion           32          

Lab           32          

Other                                   

Contact Hours/Week           4          

CATALOG COURSE DESCRIPTION:

Prerequisite: GRA 1151C, GRA 1801C

Co requisite: None

This is an advanced level course where students will solve complex digital imaging, illustration and composition problems that require both 2D and 3D special affects. Students will be introduced to the fundamentals of creating and animating 3D images using 3D animation and modeling software packages, including creating objects, building models, animating, creating a scene, applying textures and paint, setting lights and cameras and rendering the final animation. Projects will satisfy the current industry client base which demands that a graphic artist conceive a given graphic idea which can be produced in a variety of print outputs, as well as output for the Web TV and multimedia.

UNIT TITLES:

1. Complex 2D and 3D Digital Imaging, Illustration and Design Problems
2. Overview if a 3D Modeling and Animation Concepts and Software Applications.
3. Learning How to Work in Three Dimensions.
4. Modeling an Object and Assembling a Model of Component Objects
5. Animating a Model, Lighting a Scene
6. Applying Materials
7. Advanced Image Design Projects (as defined by Changing Industry Requirements, e.g., Animated 3D. Figure Design, Industrial Design, Architectural Design, Medical Illustration, other.
8. Portfolio and Critique.

## **I. Course Overview:**

Upon successful completion of this course, the students should be able to demonstrate in-depth knowledge of the digital imaging, illustration and compositing process and will produce complex 2D and 3D images for output to various print, web, multimedia and TV applications. They will assemble a 3D model of an object, animate it, add lights, apply materials and render the animation for final output.

## **II. Units:**

### **Unit 1. Complex 2D and 3D Digital Imaging, Illustration and Design**

#### General Outcome:

1.0 The students should be able to demonstrate knowledge how to solve complex graphic design problems for client and be able to produce final projects in both print and electronic media (web, TV, multimedia).

#### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

1.1 Demonstrate knowledge of complex 2D and 3D image creation in both historical and contemporary applications.

1.2 Conduct research on various integrated approaches to graphic imaging and describe the various output media that may be required for a given design idea, e.g., brochures, posters, packaging, signage, web, TV.

1.3 Define the special concerns related to production for multiple outputs: print, web, TV and multimedia.

1.4 Identify methods for distinguishing the success of a created image.

1.5 Identify:

- 1.5.1 Graphic application software packages require to produce various output, e.g., 3D affects software, photo-editing software, illustration software, photo and image libraries, etc.
- 1.5.2 Peripheral devices, e.g., flatbed scanner, slide scanner, digital camera, video camera, etc.

## Unit 2. Overview of a 3D Modeling and Animation Concepts and Software Applications

### General Outcome:

2.0 The students should be able to demonstrate knowledge of 3D Animation.

### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 2.1 Demonstrate knowledge of the history of 3D modeling and animation and describe various 3D animation processes.
- 2.2 Identify the commercial markets for 3D modeling and animation.
- 2.3 Identify various 3D modeling and animation software applications and describe the advantages and disadvantages of various 3D-animation software applications.
- 2.4 Identify careers in 3D modeling and animation.
- 2.5 Understand the features and capabilities of 3D-application software package by active practice.
  - 2.5.1 Open an object model and view it from a variety of angles.
  - 2.5.2 View and describe the modeling function, move components on the model.
  - 2.5.3 View and describe the animation of a model.
  - 2.5.4 View and describe the adding of lights to a model.
  - 2.5.5 View and describe the adding of materials and creation of special effects to a model.
  - 2.5.6 View and describe the rendering of a still image and an animated move to external files.

### Unit 3. Learning How to Work in Three Dimensions

#### General Outcome:

3.0 The students should be able to demonstrate a knowledge of how to think and work in three dimensions.

#### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

3.1 Demonstrate knowledge of looking at objects in two dimensions using the initial flat grid working plane of the 3D animation software.

3.2 Demonstrate knowledge of thinking in three dimensions using a 3D grid feature of the 3D animation workspace.

3.3 Use the 3D software workspace to view objects from any angle.

3.4 D software working plane as background for objects drawn in the workspace.

3.5 Demonstrate knowledge of how to use the 3D software working plane.

3.6 Move objects.

3.7 Change the view of objects.

**Unit 4. Modeling an Object and Assembling a Model of Component Parts**

General Outcome:

4.0 The students should be able to model a simple object and assemble an object from various component parts.

Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 4.1 Open pre-constructed scene and hide unneeded objects.
- 4.2 Create a 3D object.
- 4.3 Modify the object created.
- 4.4 Create a 3D object using extruding tools.
- 4.5 Link 3D objects to create a model.
- 4.6 Use construction objects.
- 4.7 Cut and past objects.
- 4.8 Link objects for animation.

## Unit 5. Animating a Model, Lighting a Scene

### General Outcome:

5.0 The students should be able to model and create overall affects on a model scene by adding and customizing lights.

### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 5.1 Play an existing animated sequence to see how the animation works within the 3D animation software package.
- 5.2 Animate the visibility of an object by making it disappear and reappear.
- 5.3 Rotate a component part of the model.
- 5.4 Animate motion by making the model jump as the component object appears.
- 5.5 add a background color to better see lighting effects.
- 5.6 Change the properties of the default light to dim the scene.
- 5.7 Render the effect.
- 5.8 Add a spotlight to shine on the model.

## Unit 6. Applying Materials and Rendering a Model

### General Outcome:

6.0 The students should be able to apply materials to a model and render the 3D model.

### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 6.1 Apply materials.
- 6.2 Create a new material.
- 6.3 Apply new material.
- 6.4 Use a texture map.
- 6.5 Render a single frame.
- 6.6 Render animation.

## Unit 7. Advanced Image Design Projects

### General Outcome:

7.0 The students should be able to complete a minimum of two complex modeling/animation projects as defined by changing industry requirements and demands, e.g., animated figure, industrial product design, architectural design, medical illustration and other. Projects will satisfy client requirements and will be produced in print and electronic media (web, TV, multimedia).

### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 7.1 Describe the qualities unique to a given modeling project; research and collect various designs, describing the purpose and intent of each design.
- 7.2 Distinguish qualities that make a model/animation successful.
- 7.3 Identify a client, real or simulated and follow the business to process the final project output, e.g., client overview, budget, timeline, research, concept formulation, mock up storyboard, client approval.
- 7.4 Complete project according to client specifications.

## Unit 8. Portfolio and Critique

### General Outcome:

8.0 The students should be able to present a project to the class for peer, instructor and business professional review. Projects will be measured according to specific criteria and recommended revisions will in order to receive a final grade.

### Specific Learning Outcomes:

Upon successful completion of this unit, the students should be able to:

- 8.1 Reproduce projects in multiple output media: print, web, TV and multimedia.
- 8.2 Present project in a formal class evaluation setting, using business presentation strategies and tools to classmates, instructor and visiting industry professionals.
- 8.3 Revise projects according to evaluation input.
- 8.4 Present final revised project to class, instructor and business professional.