

**Common Course Outline**  
**CGVC 221**  
**Introduction to 3D Illustration**  
**3 Semester Hours**

**The Community College of Baltimore County**

**Description**

**CGVC 221 – 3 Credits – Introduction to 3D Illustration**

Explores the creation of 3D imagery for use in both print and interactive media. Major topics include the fundamentals of 3D modeling; including materials, textures, and surfacing, as well as lighting and scene creation. Project workflow and appropriate file formats for print and screen-based delivery are covered as students work through a series of progressively more complex illustration projects.

**3 credits; 2 lecture hours per week; 2 laboratory hours per week**

**Prerequisites: CGVC 120 and CGVC 121, or consent of the program coordinator;**

**this course may not be offered in all semesters, see registration schedule**

**Overall Course Objectives**

Upon successfully completing the course students will be able to:

1. navigate a 3D environment;
2. create polygonal and NURBS based objects;
3. edit splines, points, and curves;
4. generate surfaces through sweeps, extrudes, and lofts;
5. apply materials to create realistic surfaces;
6. characterize material properties and purposes;
7. create custom textures for mapping or projection;
8. animate translation of objects;
9. animate a camera using position, tilt, pan, and roll;
10. light a scene; and
11. render scenes as frame sequences and digital video.

## **Major Topics**

### I. Overview

- A. The working window
- B. Preset Libraries
- C. The Menu Bar
- D. Displaying a scene
- E. Creating Objects
- F. Undoing operations
- G. Cartesian Coordinates
- H. Navigating in three dimensions

### II. Production Pipeline Overview

- A. Storyboarding
- B. Modeling
- C. Shading
- D. Rigging
- E. Animation
- F. Rendering
- G. Editing / compositing

### III. Creating Objects

- A. Primitive versus procedural objects
- B. Polygons versus NURBS
- C. Drawing and Importing Paths
- D. Extruding
- E. Sweeping
- F. Lofting

### III. Editing Models and Attributes

- A. Smoothing
- B. Beveling
- C. Editing Points
- D. Translating
- E. Scaling
- F. Rotating

### IV. Materials/Shaders

- A. Shading
- B. Ambience
- C. Diffuse
- D. Specularity
- E. Reflection
- F. Refraction
- G. Color
- H. Texture
- I. Transparency
- J. Image Maps

### V. Animation

- A. Key framing

- B. Interpolation
- C. Path Animation
- E. Graph editing
- VI. Camera Setup and Animation
  - A. Depth of Field
  - B. Lenses
  - C. Roll, Pan, Tilt
  - D. Visualization
  - E. Animatics
- VII. Lighting
  - A. Spot lights
  - B. Area lights
  - C. Directional lights
  - D. Intensity
  - E. Color
  - F. Decay
  - G. Cone
  - H. Shadows
  - I. Strategy
- IX. Rendering
  - A. Scanline
  - B. Raytracing
  - C. Non-realistic
  - D. File Formats

### **Course Requirements**

Grading/exams: Grading procedures will be determined by the individual faculty member but will include the following:

Projects will include a minimum of two wireframe and textured models, one rendered at high-resolution for print, and one animation sequence.

A minimum of two tests including a final exam.

### **Other Course Information**

This course is a required course in the Computer Illustration degree program within Computer Graphics and Visual communication.

This course is taught in a computerized environment.

Individual faculty members may include additional course objectives, major topics, and other course requirements to the minimum expectations stated in the Common Course Outline.