

ARTD 240

3D Modeling

3 Credits

Community College of Baltimore County
Common Course Outline

Description

ARTD 240 – 3D Modeling: explores the creation of 3D forms for fabrication and 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 output are covered as students work through a series of progressively more complex projects.

Pre-requisites: ARTD 140 or permission of the program coordinator

Overall Course Objectives

Upon completion of this 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. output models for digital fabrication production;
10. light a scene; and
11. render scenes as frame sequences and digital video.

Major Topics

- I. Overview
 - a. The working window
 - b. Layers and organization
 - c. Viewports and displays
 - d. Primitive objects
 - e. Undoing operations
 - f. Cartesian coordinates
 - g. Navigating in three dimensions
- II. Production Pipeline Overview
 - a. Storyboarding
 - b. Modeling
 - c. Shading

The Common Course Outline (CCO) determines the essential nature of each course.
For more information, see your professor's syllabus.

- d. Rigging
 - e. Animation
 - f. Rendering
 - g. Editing and compositing
- III. Creating Objects
 - a. Polygons
 - b. NURBS
 - c. Drawing and Importing Curves
 - d. Subdivision surfaces
 - e. Extruding
 - f. Sweeping
 - g. Lofting
 - h. Revolving
- IV. Editing Models and Attributes
 - a. Smoothing
 - b. Beveling
 - c. Editing points
 - d. Translating
 - e. Scaling
 - f. Rotating
- V. Materials
 - a. Specularity
 - b. Reflection
 - c. Refraction
 - d. Color
 - e. Texture mapping
 - f. Transparency
 - g. Image maps and decals
- VI. Animation
 - a. Turntable animation
 - b. Path animation
- VII. Lighting
 - a. Spot lights
 - b. Area lights
 - c. Directional lights
 - d. Intensity
 - e. Color
 - f. Decay
 - g. Cone
 - h. Shadows
 - i. Strategy
- VIII. Rendering
 - a. Scanline
 - b. Raytracing
 - c. Non-realistic
 - d. File formats
 - e. Image sequences
- IX. Output for 3D Printing

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- a. Repairing meshes
- b. Wall thickness
- c. Scaling
- d. Hollowing forms
- e. Optimizing for print
- f. Support structures
- g. File types

Course Requirements

Grading will be determined by the individual faculty member, but shall include the following, at minimum:

- Two wireframe and textured models:
 - One rendered at high-resolution
 - One animation sequence
- One 3D printed model

Other Course Information

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.

Date Revised: 11/4/2025