EID-482 Progressive Technologies

Fall 2021 | T/Th 6:00 pm – 8:50 pm | Room: Eiben 104

Instructor: Aaron Shimizu
Phone: 808-218-5917
Email: aaron.shimizu@chaminade.edu

Course Description

Students will learn how to create realistic renderings, video animations and virtual reality experiences. Understanding and utilizing current and emerging software will provide students with a variety of media technology skills required for professional practice.

Course Objectives

1. Create High-Quality Materials: Student will be able to create and find high quality, seamless, textured materials. The use of higher-quality materials as a starting point will produce higher quality renderings. [PO: 2, 5] (CIDA: 6,11, 13)

2. Bump Maps: Student will be able to create bump maps that will add realism and depth to rendered materials. [PO: 2, 5] (CIDA: 6,11, 13)

3. Renderings: Student will be able to create photorealistic still renderings and 360-degree interactive renderings. [PO: 2, 5] (CIDA: 6, 8, 11, 12,13)

4. Animations: Student will be able to create a realistic, animated fly-thru, providing a tour for the client, walking through the space. [PO: 2, 5] (CIDA: 6, 8, 11, 12,13)

5. Virtual Reality: Student will be able to create an immersive, interactive virtual environment that allows the client, themselves, to move through the environment before being built. [PO: 2, 4, 5] (CIDA: 6, 7, 8, 11, 12,13)

6. Captured Reality: Student will be introduced to tools and methods used to bring real-world elements into renderings, fly-thru's and virtual reality. [PO: 2] (CIDA: 8, 13)

Course Projects

- Materials Library: Create a library of high-quality materials that include bump maps. Library should consist primarily of seamless textures.
    - Assignment: Create 10 custom, seamless materials using Photoshop. Populate and provide a material library of at least 100 total interior materials.
    - Deliverable: .jpg or .png image files sent via Google Drive.
- Model Scene: Design and model a space. The space that is modeled can be related to either a studio project or any space that the student is interested in. The Revit model should be fully modeled with materials assigned to each element.
    - Assignment: Provide a Revit model of the selected space.
    - Deliverable: .rvt file sent via Google Drive.

- Rendering: Create photorealistic renderings using the Revit model. Based on the results of the rendering, adjust the Revit model.
  - Assignment: Provide 10 photorealistic renderings (five still / five 360) along with the updated Revit model.
  - Deliverable: .jpg or .png image files and .rvt file sent via Google Drive.
- Processing Captured Reality: Instructor will provide 3D scan. The project focuses on the post processing of the scan rather than the scanning process itself.
  - Assignment: Process three 3D scans into a usable model that can be inserted into a Sketchup model.
  - Deliverable: .skp file sent via Google Drive.
- Rich Photorealistic Content: Create 2D and 3D RPC content.
  - Assignment: Process 2D image into RPC content using Photoshop and ArchVision. Find .Obj file online and convert into RPC content using ArchVision.
- Point-Cloud Scan-To-BIM: Instructor will provide 3D scan. The goal of this project is to introduce students to the process of turning a point-cloud scan into a BIM model.
  - Assignment: Link point-cloud model into Revit project. Trace over point-cloud.
  - Deliverable: .rvt file sent via Google Drive.
- Animation: Map and render an animation flight path.
  - Assignment: Provide photorealistic rendered animation along with the update Revit model. Fly-thru must be a minimum of 1 minute.
  - Deliverable: .mp4 and .rvt files sent via Google Drive.
- Virtual Reality: Prepare model for export to Virtual Reality.
  - Assignment: Provide Virtual Reality ready model.
  - Deliverable: .rvt file sent via Google Drive.

Pre-Requisites:
- EID-217 Introduction to CAD
- EID-319 Advanced CAD (Revit)

Technology Requirements
- Student must purchase an individual, educational license of ArchVision, cost: $99.
- Student must have a student or personal Adobe account to access photoshop on school workstations.

Grading
- Attendance and Participation - 30%
- Projects - 70%

Class Schedule
- Week 1 - Materials and bump maps.
- Week 2 - Material Library project due. Start modeling scene.
- Week 3 - Continue modeling scene.
- Week 4 - Continue modeling scene.
- Week 5 - Continue modeling scene.
- Week 6 - Model Scene project due.
- Week 7 - Start test renderings, adjust model as necessary.
- Week 8 - Continue test renderings and model adjustments.
- Week 9 - Rendering project due.
- Week 10 - Captured reality processing.
- Week 11 - Processing Captured Reality project due.
- Week 12 - Set test capture video paths and adjust model as necessary.
- Week 13 - Continue test video and pathing.
- Week 14 - Animation project due.
- Week 15 - Work on Virtual Reality project.
- Week 16 - Virtual Reality project due.

*Class syllabus and schedule are dynamic and subject to adjustment at the instructor's prerogative for course continuity.