Course Syllabus

ULTRAREAL

A4534x TECHNIQUES OF THE ULTRAREAL
A4542x IMAGINING THE ULTRAREAL

Phillip Crupi- pwc2110@columbia.edu
Joseph Brennan- jab2315@columbia.edu

Spring 2017
Wednesday 7-9PM
Avery 600 - Ware Lounge
Office Hours: Wednesday, 9PM

Description

The use of perspective and rendering is often an afterthought. With the abundance of 3D modeling software and the ability to see every angle of a project instantaneously, renderings are often thought of as a last minute tool for representation. This class challenges the participants to not only think of rendering as a method of presentation, but also a tool for design. We encourage the use of perspective and rendering early and often in the design process. In addition to learning techniques for creating ultrarealistic images, we will teach a workflow that encourages early exploration. We will focus on color, light, material, context, reflection, and opacity throughout the course of the entire design project. Will will look for inspiration in many places, including art, photography and cinematography.

The class will use V-Ray for 3D Studio Max as the main engine for exploration, but will also encourage the use of other modeling applications, post processing software, and 3rd party plugins. Students will also be required to explore additional methods of composition, including sketching and photography. No knowledge of V-Ray or 3DS Max is required, but students should be able to model in an application of their choice. The class will focus on Rhino and 3DS Max as modeling tools.

Class Structure

Classes will consist of a combination of student presentations, lectures, and software demonstrations. There is a more detailed breakdown of each class in the schedule below. Other instructional video tutorials will be found online at digicon-nyc.tumblr.com. (Links to an external site.) There will be weekly office hours with teaching assistants and critics, as well as several
weekend working sessions with critics. Please note, that online tutorials and office hours are not a substitute for attending lecture.

Session A will start to explore the basic aspects of the rendering process, including but not limited to modeling, cameras, lights, and material. Session B will expand on these ideas and delve deeper into each aspect, as well as introduce additional techniques. Students who take session B are highly encouraged to take session A.

Grading is dependent on multiple factors. The first is weekly progress and participation. We will check blogs on a weekly basis. In order to achieve the level of quality that this class requires, it is necessary to test and revise the techniques that we show you each week. A few groups will be asked to present their progress in the beginning of class throughout the semester. The second factor in grading is overall quality of midterm and final images.

*Project*

Students will be encouraged to work in small groups of up to four (4) members for the semester. The project will consist of a small scale pavilion or other architectural object that will be developed and presented through rendering. Images will be uploaded to a team website each week, and critics and assistants will provide feedback. The project must be new, original work. Students are not allowed to use an existing project or previous studio work. You must design, model, and render a project from scratch.

In addition to the project, there will be small assignments throughout the course of the semester. Each group must create a Tumblr blog and upload assignments and progress images on a weekly basis.

*Schedule*

**January 18th - Intro**

**LECTURE: Visual Studies presentation, project intro, and project walkthrough**

- Introduction to the class and review syllabus
- Walkthrough sample project
- Discuss major goals for a rendering project
- Website explanation
- Session A and/or B explanation
- Review of first assignment
- Questions

**Due Next Week:** One sketch of a proposed perspective for each student, uploaded to blogs

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**January 25th - Photography & Composition**

**REVIEW: Perspective Sketches**
- Several groups will be selected to present their sketches

**LECTURE: Photography and Camera Techniques**
- Digital SLR Camera Set-up
- F Stop
- Shutter Speed
- Composition set up

**DEMONSTRATION: Intro Photoshop**
- Photoshop Perspective Correction
- Image Cropping & Composition

**Due February 10th:** Photo Composition Assignment

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**February 1st - 3D Modeling and Max Basics**

**DEMONSTRATION: Rhino Bootcamp**
- Modeling techniques, specifically for Floors, Windows, & Repetitive Elements
- Exporting to 3DS Max

**DEMONSTRATION: Max Bootcamp**
- Importing from Rhino
- Merging vs. Importing
- 3DS Max settings, units
- Modeling in Max

  - using the modifier stack
Viewport Navigation

- Archiving your work for file sharing
- Camera Set Up

**Due Next Week:** Photo Composition Assignment

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**February 8th - Lights, Camera, Vray**

**REVIEW PHOTO ASSIGNMENT**

All groups discuss composition

**DEMONSTRATION: Vray Basic Settings**

Vray Basic Settings

Saving Settings for Batch Rendering

Basic Lighting

Setting up Cameras

- shutter speed
- f stop
- white balance
- vignetting
- tilt/shift
- perspective correction

Basic Materials

- WHITE 200
- GLASS

Rendering & Saving

**Due Next Week:** Perspective Screenshots of model, uploaded to blog

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**February 15th - Parametric Workflow for Mapping and Materials 01**

**DEMONSTRATION: Using Parametric Workflow for Material Mapping**
Grasshopper and adding randomness to geometry to create variation in renderings

Exporting and mapping these materials

Using 3DS export to preserve UVW maps

**DEMONSTRATION and ONLINE: Materials**

Procedural Materials

- Titanium
- ETFE
- Metals
- Water
- Chrome
- Plastic
- Channel Glass
- Frosted Glass

**Due Next Week:** Material Palettes

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**February 18th or 19th - WEEKEND DESK CRITS**

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**February 22nd - Materials 02**

**REVIEW MATERIAL PALETTES**

Selected groups discuss material choices

**DEMONSTRATION: Materials**

Bitmap Materials (Arroway, CG Textures, Dirt Maps)

- scale

- bump, displacement, reflectivity
- UVW Map modifiers
- Material IDs

Unfolding geometry to map textures

**Due Next Week:** Rendered views of model with at least 1 refined material

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February 25th or 26th - WEEKEND DESK CRITS

March 1st - Materials 03
DEMONSTRATION: Custom Bitmaps
Using existing bitmaps to compile and create new ones
Extracting geometry to create maps
Creating maps from scratch
Dirt Maps
FSSS2
Crazy Bump
Due Next Week: Midterm Images: Custom bitmaps, Rendered view of model with custom bitmap material

March 8th - Kinne Week
DEMONSTRATION AND LECTURE: Advanced Visualization Techniques

March 15th - NO CLASS, SPRING BREAK

March 22nd - Collage Images
DEMONSTRATION: Custom Photo merging and collaging
How to collage Photos with renderings
Extracting render elements
Perspective Matching in 3D Max
Photoshop Blending Techniques
Due Next Week: Collage swap assignment

March 29th - Composition and Site Context
REVIEW COLLAGE SWAP ASSIGNMENT
Selected groups review their collaged swap assignments
LECTURE: Context

DEMONSTRATION: 3DS Max and Photoshop for Custom Environments
Grass, rock, paths using Photoshop
Proxy Objects
Creating rocky cliff face using Photoshop and displacement
Environment fog and containers

DEMONSTRATION: Forest Pack
Advanced context modeling
Forest Pack Pro plug-in
Using particle systems to mimic flowing water

Due Next Week: Context Catalog

April 5th - Lighting

LECTURE: Lighting Systems

DEMONSTRATION: Interior Lighting
Advanced lighting
Interior lighting
IES profiles

Due Next Week: Nighttime view of model

April 8th or 9th - WEEKEND DESK CRITS

April 12th - 3/4 REVIEW

April 15th or 16th - WEEKEND DESK CRITS
April 19th - Advanced Post Processing

REVIEW NIGHTTIME RENDERS
Selected groups review night renders

DEMONSTRATION: Post Processing
Using Vray render elements
Adjusting levels
Layer masks
Lens blur / depth of field
Using After Effects / Magic Bullet / Volumetrics

Due Next Week: First draft renders of final images

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April 26th - NO CLASS, FINAL STUDIO REVIEWS
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May 3rd - DESK CRITS
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------------------ May 5th - ALL FINAL IMAGES DUE & FINAL REVIEW (TENTATIVE) ------------------