STATE UNIVERSITY OF NEW YORK
Technology Division, Architecture Program

Architecture 300 - Architectural Digital Design
Spring Semester 2009 3 Credit Hours
2:00 to 6:00 pm, Tuesdays

Faculty: Christopher A. Lobas, Architect
Office Phone: (607) 746-4076
Email Address: professorlobas@gmail.com

Cathedral Ceiling, Archiseed
Rendering company, Kuala Lampur, Malaysia

COURSE DESCRIPTION

The digital design course is built on the practical foundation of previous Architectural Graphics Courses. In these classes, the architectural student became familiar with numerous graphic means of projecting an architectural design, so as to reveal it from additional vantage points and , with practice, with greater verisimilitude, flair, and even drama.

This class also presumes that the student has the beginnings of proficiency in basic and intermediate computer aided drafting. These skills will be adapted towards the implementation of more sophisticated tools. These will be simply used to expand the student repertoire of architectural depiction of building form and internal space.

These specific tools are not the ultimate topic of this class. Each programs utilized in the classroom and studio require adaptation to a specific codified interface, but ultimately the skills acquired in each program are translatable to a wide array of technologies.

Students will be expected to demonstrate a high degree of resourcefulness in the creation of work for this class, and ultimately, the creation of design and drawing will result by using "any artistic means necessary." This includes having a sketchbook next to your computer table at all times, in order to grasp and depict elements graphically with ease and accuracy!

The class will progress from
1) Learning programs with simple applications
2) Depiction of projects designed by a number of firms
3) Depiction of built works in the surrounding region
4) Creative / fantastic final project

High Cathedral, Derek Goeckeritz, 3d Artist

Cathedral Nave, Archiseed
Rendering company, Kuala Lampur, Malaysia

COURSE OBJECTIVES

1) Plastic Modeling and Rendering

This course is built on the AutoCAD platform, and expertise in its use shall be the primary measure by which work will be evaluated. We will unfold the industry standard drafting software into its full range of plastic modeling and rendering capabilities.

Concurrently, the student should gain pertinent knowledge for utilizing the program to increase speed and accuracy in standard office drafting.

Software utilized: AutoCAD Architecture 2009,
some 3ds Max Design 2009

Jubilee Church (Dio Padre Misericordioso)
Richard Meier, Architect Rome
Modeled by 3DAllusions.com contributor

2) Building Information Modeling

As time permits, students will receive a very cursory primer in BIM, and gain an understanding of the implications of this advance.

BIM, or building information modeling, was invented as a means to create and communicate building geometry, all its constituent construction elements, and to track these through the entire life cycle of the building. Model elements are categorized by number, size, material, cost, and predicted lifespan. Models in BIM can be so specifically constructed as to be linked to databases with information relevant to material suppliers, code officials, consultants, and contractors.

For three-dimensional design and presentation modeling, this software is much less flexible than AutoCAD Architecture, but each successive version is more solid.

Software utilized: Autodesk Revit Architecture 2009
The Revit platform is anticipated to merge with the AutoCAD platform within the next five years, with the best elements of each.

Bank Project in Poland
Drawn and rendered in Revit

Project Drawn in SketchUp
Rendered in Podium

3) Intuitive Modeling

Most students have already realized the potential of the intuitive and quick student modeling standard to depict form and surface. Students are encouraged to note how the SketchUp program is translatable to AutoCAD Architecture.

Auxiliary tools may be utilized in this course, time permitting:

- Adobe CS3, specifically Photoshop and Illustrator
- Google Earth and Microsoft Virtual Earth
- Autodesk Impression
- Microsoft Photosynth
- Other players to be named later

Students will also receive further edification in previous coursework in HDR, High Dynamic Range digital photography and tone mapping.

At right, please see image created with High Dynamic Range processing of three photographic images, each with varying exposure levels, merged in an HDR program. (Entry, University of Detroit-Mercy Loranger School of Architecture)

THE STUDIO PROJECTS

CONCEPTUAL SCHEDULE:

1) First 5 weeks:

- Sketchbook-to-Digital practices introduced
- Model a project from a real architect
- Studio-Seminar Format, open exchange of techniques between class members encouraged

2) Next 8 weeks:

- Modeling and rendering a local community project
- Other projects will also be permanent masonry buildings
- You will model both the building exterior and one major interior space
- Not only must you model and render the building, but you are expected to integrate same in a gorgeous, breathtaking presentation.

3) Final 2 weeks

- Modeling and rendering one creative / fantastic project
- This will be a short sketch design project specifically undertaken to test the limits of your ability to convey a project with new technologies. Unconventional methods, integration of digital and analog media, and mixed media are all encouraged. Design challenge to be determined.

EVALUATION (Grading Criteria) Overall presentation quality is imperative for all three of these phases.

Introductory Interpretive Modeling (Interpreting plans into models)

Work from drawings from a number of local and distant architects. Evaluation will be based on accuracy (a general correctness of the entire model) over precision (level of exactitude of specific elements). The drawings will not necessarily be complete, so you are expected to use a degree of design intuition to complete this stage.

Major Modeling Project

Work from drawings obtained from the community member or from other sources, photographs that you take at the site, and measurements as you deem necessary. Accuracy in modeling and verisimilitude in rendering are the criteria for grading this project. Strive for a well-composed, thoughtful, solid presentation. Trick effects are not discouraged, but certainly not essential.

Creative Design Project

Risk and artistic experimentation are valued just as highly as the final product, so long as some of the breakthroughs you realize are brought to fruition on the project. The modeling and presentation choices you make ought to be inextricably bound to the nature, concept, overall aesthetic, and organizational principles of your design.

GRADING CRITERIA:

Work of the highest echelon, work nearly representative of that of a professional architect: A

Work of a higher than average quality; accurate, workmanlike projects at a student level: B

Work of average quality, reasonably well-wrought, but with few distinguishing characteristics: C

Work lacking in quality of accuracy, creativity, or craft: D

Work with nary a trace of redeeming value whatsoever: F

REQUIRED TEXT:

Accessing AutoCAD Architecture 2009

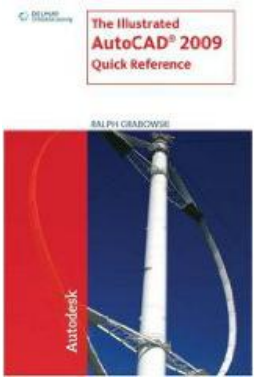
William G. Wyatt, Sr.

Quick Reference

Ralph Grabowski

Delmar Cengage

RECOMMENDED TEXT:



The Illustrated

AutoCAD 2009

Delmar Cengage

Publishing

Publishing

- Another excellent reference for hybrid drawing techniques:
  Lewis.Tsurumaki.Lewis: Opportunistic Architecture. New York: Princeton Arch. Press, 2008

MATERIALS REQUIRED:
A SKETCHBOOK. The professor has made an arrangement for these with a local bookstore. This will be discussed in the first class period.

Also, please bring along your drawing boards, your pentel sign pens, and plenty of trace paper.
Finally, please obtain a jump drive. 2GB should be plenty for this class. NO floppy discs necessary.

IMPORTANT PROVISION:
Students will be meeting with community members and obtaining floor plans and elevations of their historic properties. Students will be expected to either borrow plans en masse or make photocopies or scans of plans provided by the community groups. Although there is a possibility that these scans or copies can be made on the campus, this may not come to fruition. Be prepared to pay the requisite costs to obtain these scans or duplicates.

MATERIALS THAT WOULD BE GREAT (but are not required):
A camera, preferably one that can automatically bracket shots at varying speeds or aperture adjustments. This feature is always available in SLR (single lens reflex) cameras, but not necessarily all digital models. Also, a tripod would be invaluable here.

PROJECT DOCUMENTATION
Documentation of all studio projects (including models, drawings, sketches, and all relevant developmental work) is important for your portfolio and for the architecture program review process. You will be required to submit a CD of high quality images at the end of this semester. This documentation will not be graded, however, students who do not submit the CD will receive an incomplete grade (I) for the course.

The CD is **due Tuesday, May 12, 2009 by 5:00pm**.

SEMESTER SCHEDULE

This is the general schedule for design this semester, as we know it at the beginning of the semester.
All classes are held on Tuesdays.

January

Week 1 20 Syllabus Reviewed. Major Projects Assigned in Brief

Covered in class:
Settings for AutoCAD Architecture and SketchUp
Drawing setup basics
Preliminary use of walls, doors, windows
Mass Elements versus 3D Solids
AutoCAD surfaces, old school, yo

Readings Assigned:	Level of Reading:
Chapter 1: Setup	Skim
Chapter 2: Floor Plans	Moderate
Chapter 3: Walls	Thorough
Chapter 5: Windows and Doors	Moderate

Week 2	27	Floor Plans should be completed.	
		Covered in class: Style Manager and use of styles Continued study on Massing Space Planning	
		Reading Assigned: Chapter 4: Space Plans Chapter 6: Door/Window Assemblies	Level of Reading: Moderate Moderate
February			
Week 3	3	Masses should be entirely blocked out. Preliminary materials should be selected.	
		Covered in class: Door/Window Assemblies Roofs and Roof Slabs Slabs for Floors and Ceilings	
		Reading Assigned: Chapter 7 Chapter 8 Chapter 9	Level of Reading: Thorough Moderate Skim
Week 4	10	Student should be adding detail to model.	
		Covered in class: Workspaces Views and Visual Styles Rendering capabilities	
		Reading Assigned: Handouts or Articles posted on web	Level of Reading: TBD
Week 5	17	First Model completion Deadline Second Project Assigned in Detail	
		Covered in class: Rendering capabilities, continued	
		Sketchbook Review I	
Mid-Winter Break			
March			
Week 6	3	First Model rendering substantially complete Community Building project assigned in detail	
Week 7	10	Floor Plans should be completed	

Week 8	17	Exterior Masses should be entirely blocked out
Week 9	24	Major interior space should be blocked out
Week 10	31	Preliminary materials should be selected
		Covered in class: 3DS Max considered as a an alternate rendering program Safe use of "Laser" cutter Safe use of CADCAM plastic object generator
		Sketchbook Review II

Spring Break

April

Week 11	14	Continue work on Community Building project
Week 12	21	Continue work on Community Building project
		Covered in class: Revit Architecture introduction and questions Comparisons to SketchUp
Week 13	28	Continue work on Community Building project Creative / Fantastic Final Project Assigned

May

Week 14	5	Community Building completion deadline Sketches for Creative / Fantastic Final Project due
		Sketchbook Review III
Week 15	12	All three projects should be completed and rendered. Student should deliver final images to Community Building client in person **CD OF ALL WORK must be turned in**