

ARCH 1191

VISUAL STUDIES I

1 classroom hour, 2 lab/studio hours, 2 credits

Course Description: Visual Studies I is taken in tandem with ARCH 1110: Architectural Design I: Foundations to introduce the language of architectural representation and visualization, providing students with the techniques and skills to perceive visual cues, make aesthetic evaluations, translate information into graphic representation, create visual design, and formulate and render concepts in two or three dimensions. This course introduces basic skills for the manipulation of freehand and digital images, models, and data, and includes an introduction to computer systems, file management, word processing and spreadsheets, scanning and image editing.

Course context: This course is a requirement and serves as the basis for all courses involving presentation and representation including the Design Studio sequence and the Building Technology sequence.

Prerequisites: None

Co-requisites: ARCH 1110: Architectural Design I: Foundations

Required Texts:

Rhino Level I and II Training Manuals (Free from:
<http://download.rhino3d.com/Rhino/4.0/Rhino4Training>)

Software Primers:

<https://openlab.citytech.cuny.edu/fuselab/project-components/digitalspine/>

Recommended Texts:

Zell, Mo, *Architectural Drawing Course: Tools and Techniques for 2D and 3D Representation*, 2008, Boston: Barron's. Print.

Ching, Frank, *Architectural Graphics*. 2009, Hoboken, NJ: John Wiley & Sons.

Lupton, Ellen, *Graphic Design: The New Basics*. 2008, New York: Princeton Architectural Press.

Tufte, Edmund, *Envisioning Information*. 1990, Cheshire, CT: Graphics Press.

Tufte, Edmund, *Beautiful Evidence*. 2006, Cheshire, CT: Graphics Press.

Samara, Timothy, *A Handbook of Basic Design Principles Applied in Contemporary Design*. 2008, Providence: Rockport Publishers.

McCandles, David, *Visual Miscellaneum*. 2009, New York, NY: Collins Design Publishers.

Websites: Visual Economics, Information is Beautiful, Mathematica, and Google Earth/Maps resources

Attendance Policy: No more than 10% absences are permitted during the semester. For the purposes of record, two lateness are considered as one absence. Exceeding this limit will expose the student to failing at the discretion of the instructor.

Course Structure: This course will be offered as a lecture/lab format with hands on tutorials that introduce concepts, techniques and methods needed for completion of the assignments. Students will produce a series of projects through hand tools and techniques and digital means that communicate ideas and incorporate data of increasing complexity in a variety of presentation formats. These assignments will be presented as part of in class presentations or in conjunction with ARCH 1110 presentations.

Grading:

In-class Exercises and Homework (to be submitted electronically or no grade will be awarded)	75%
Portfolio	15%
Class Participation and Attendance	10%

Academic Integrity: Students and all others who work with information, ideas, texts, images, music, inventions and other intellectual property owe their audience and sources accuracy and honesty in using, crediting and citation of sources. As a community of intellectual and professional workers, the college recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension and expulsion.

Learning Objectives

Upon successful completion of this course, the student will:

1. **Recognize** the complexity of the physical world (Knowledge)
2. **Demonstrate** understanding of computer hardware and software as used in architectural practice (Knowledge)
3. **Demonstrate** knowledge of graphic conventions and methods of organization (Knowledge and Skill)
4. **Communicate** ideas and information verbally (Gen Ed)
5. **Recognize** design concepts and vocabulary (Gen Ed)
6. **Document** analogue materials into digital format and process and edit for presentations and portfolio. (Skill)
7. **Create** digital 3-D models of medium geometric complexity and produce orthographic, axonometric, and perspective views. (Skill)
8. **Create** digital two-dimensional orthographic drawings. (Skill)
9. **Demonstrate** ability to draw proportionately from life, including drawing the human figure and the built world. (Skill)
10. **Create** analogue and digital renderings. (Skill)
11. **Manipulate** vector and raster files. (Skill)

Assessment

To evaluate the students' achievement of the learning objectives, the professor will do the following:

1. **Review** students' 2-D and 3-D analog and digital representation skills. (Los: 2, 6, 7, 8, 9, 11)
2. **Observe** students' progression from simple to complex thinking as shown in sketches and completed projects. (Los: 1, 4, 7)
3. **Observe** students' use and manipulation of computer hardware and software. (Los: 2, 3, 11)
4. **Inspect** students' portfolios for quality of documentation and editing as well as organization. (Los: 3, 6)
5. **Inspect** student digital files for use/application of professional standards. (Lo: 3)
6. **Review** students' drawing and modeling work where students must exhibit their visual representation skills (2-D and 3-D). (Los: 3, 4, 5, 6, 7, 8, 9, 10, 11)
7. **Assess** the students' use of professional vocabulary during oral presentations. (Los: 4, 5)

Course Outline: Visual studies is closely correlated with Architectural Design I: Foundations; therefore, the following outline sequences skills to support project development in studio.

WEEK 1: INTRODUCTION

Lecture: An Overview lecture will introduce the language of architectural representation and visualization, formative terms and concepts. Additional lecture topics include an introduction to computer hardware and peripherals, and file types and folder structure.

Assignment: Template generation for digital documentation and organization of work generated in Foundations and Visual studies courses.

Skills: Content and layout organization and hierarchy; template generation

WEEK 2: COMPOSED IMAGES

Lecture: Present examples of successful hand and digitally produced drawings and graphics, and photography from small objects in the studio to large landscape photos. Discuss image **resolution**, framing, composition, balance, contrast, and hierarchy. These concepts will reinforce the weekly sketches in ARCH 1110. Introduce Basics of Photoshop: demonstrate image manipulation tools such as levels, contrast, hue/saturation, cropping, rotation, and image and canvas size. Post-process digital photos and scanned images.

Concepts & Vocabulary: Framing, composition, balance, contrast, hierarchy, texture, media, white space, paper sizes (A4 vs. 8.5x11)

Assignment: Use the digital photograph of Rectilinear Forms (1110, Week 1, Exercise 1). In Photoshop resize the image and check its resolution. Correct any issues with color, brightness, and distortions. Clean Images to be portfolio ready.

Skills: Digital photography and output to projector, and printer, Image Framing, composition, balance, contrast and hierarchy, digital camera settings, output methods (digital image, projector, printer) and resolution (dpi).

WEEK 3: ANALOG AND DIGITAL GRAPHICS

Lecture: Introduce scanning and image manipulation. Demonstrate scanning hardware and software. Review image manipulation tools such as levels, contrast, hue/saturation, cropping, rotation, and image and canvas size. Introduce layers.

Concepts & Vocabulary: Contrast, color affect, proportions, size.

Assignment: Scan digital image chosen for 1110 Week 3, Exercise 3. Proceed analyze the photo for number, position, size, shape, direction, texture, surface quality, and color by separating elements in different layers in Adobe Photoshop.

SKILLS: Scanning, and Image Editing Software (Adobe Photoshop).

WEEK 4: TYPOGRAPHY AND PAGE COMPOSITION

Lecture: Introduction to page composition of multiple components (images, text, and graphics). Working with photographs and sketches from the previous exercises, explore several page layouts and incorporate graphics and text. Discuss differences of content and conventions between construction drawing and presentation drawings.

Concepts & Vocabulary: Geometric and spatial relationships, white space, hierarchy, page flow, scale.

Assignment: Working with 1191, Exercise 3, concentrate on sheet composition and create title block in InDesign. Note differences in file size, quality of raster text vs. non-raster text, ease of layout manipulation, layer management, etc.

Skills: Image Editing Software (Adobe Photoshop/Adobe InDesign), layer management and output to printer.

WEEK 5: RASTER VS. VECTOR

Lecture: Introduction to raster versus vector software languages. Recreate the previous exercise using a vector based software. Analyze the differences in interface, usability, ease of editing, and output quality. Add graphic elements such as lines and areas to help reinforce page design. Discuss when one software type is appropriate over another. Reinforce page composition methods for successful communication.

Concepts & Vocabulary: Eye movement, information visualization and communication.

Assignment: Duplicate 1110 Exercise 5 Basic Geometry Recognition using Adobe Illustrator. Format and layout in either Adobe Illustrator or InDesign. Output is 11x17. Use hand-drafted drawings as underlays.

Skills: Vector based page-layout/drawing software (Adobe Illustrator), 2D drawing and editing

WEEK 6: VECTOR DRAWING

Lecture: Working with a drafted drawing from ARCH 1110 add depth cues such as line weight, shade/shadow. This should be done by hand using pen and pencil, and should be also be done by scanning the image and tracing in a vector based software.

Concepts & Vocabulary: Line weight, shade and shadow, depth, foreground/middleground/background

Hand Skills: pen and pencil medium, rendering techniques

Assignment: Work with 1110, Exercise 2B, Geometry recognition. Layout in Illustrator or InDesign.

Skills: Drawing in a vector-based software (Adobe Illustrator), use of value and texture

WEEK 7: EXCEL

Skills: Excel Spreadsheet, and charts and graphs generated; Word processing software (Microsoft Word) and spreadsheet software (Microsoft Excel)

WEEK 8 & 9: Vector Drafting in CAD

Lecture: Introduce 2D-CAD (Autocad) drafting and highlight similarities and differences between hand drafting and digital drafting (line weights, layer management, blocks for page size and

titleblock). Highlight differences between page layout in CAD versus InDesign/Illustrator/Photoshop.

Concepts & Vocabulary: Line weight, Layers, pens, blocks, Mtext, drafting tools (line, polyline, circle, copy, etc.)

Assignment: Draft any of the previous hand drafted exercises from 1110 (Exercise 2, Exercise 4, Exercise 5) include at least one drawing that was not previous hand-drafted. (Total drawings should include: plan, elevations, sections, plan and or elevation oblique and/or isometric).

Skills: CAD 2D drafting and Layout

WEEK 10 : 3D MODELING

Lecture: Introduce architectural 3D digital modeling by showing examples. Examples display various modes of output (screen capture, rendered, photo-realistic rendering, 3D print).

Concepts & Vocabulary: Nurbs, meshes, parametric modeling, vector based drawing, Boolean operations

Assignment: Generate a three Dimensional grid and create a series of 9 compositions extruding rectilinear forms utilizing the grid to constrain the proportions and volume of the parts. Use points, curves, surfaces, solids, and Boolean operations.

Skills: 3D modeling software (McNeel Rhinoceros), curves, surfaces, Booleans

WEEK 11: 3D MODELING CONTINUED

Lecture: Continue working on 3D model from previous class. Introduce manipulation and editing tools.

Concepts & Vocabulary: Nurbs, meshes, parametric modeling, vector based drawing, Light, shade and shadow, foreground/middleground/background, horizon, scale

Assignment: Render perspective in V-Ray, Use Exercise 9.

Skills: Rendering software (Rhino Render and V-Ray)

WEEK 12: Workflow: Rhino > Illustrator > InDesign

Lecture: Work on 1110's exercise 11 in Rhino extracting vector drawings from 3_D model.

Concepts & Vocabulary: Design decision, geometry

Assignment: generate catalog of drawings from 3 D model iterations

Skills: workflow

WEEK 13: DIGITAL RENDERING

Lecture: Photomontage creation

Assignment: Continue refining and adding context to the rendered output. Render in various materials, but each rendering should contain a limited palette of materials (1-2). Post-process rendered output in a raster based software to add context. Use Exercise 11.

Skills: 3D modeling software (McNeel Rhinoceros) and rendering software (V-Ray), post-processing entourage elements with Photoshop

WEEK 14: Laser cutting

Lecture: how to prepare Rhino files for laser cutting

Assignment: Select the most successful 3-D model iteration and prepare the file for Laser Cutting. Laser cut and assemble the model for presentation.

WEEK 15: Portfolio FINAL PRESENTATION:

Lecture: Final pin-up and presentation of Exercise 10 and all weekly sketches. Verbal presentations by students with a review jury of at least one outside critic. Written feedback on student performance completed and distributed.

Skills: Presentation: PowerPoint Portfolio presentation pre-requisite for 1210 and co-requisite for 1110. Formatting Presentations, Oral Presentation, Written Reflective Piece.