Faculty: Carlo Frugiuele, Beth Weinstein

TF 9-12:00pm, 55 W. 13th St Rm 908 and Rm 206

Course Outline:

		Theme 1: 3 Modes of Projection: Orthographic, Parallel and Perspective
Week 1	09 / 06 T	Lecture 1a: Measuring, representing and organizing Cartesian space Hand exercise: introduction to orthographic projection – studio assignment To read: Alberto Perez Gomez. *AR + PH*, pp 10 – 16. P. J. Booker. *History of Engineering Drawing, pp 1-7, 37-47* P. Frankl / E. Panofsky: *"The Secret of the Medieval Masons"* R. Evans. *TDB*, "Translation of Drawing to Building", pp. 153 –93.
	09 / 09 F	Lecture 1b: Digital exercise; software intro, interface, grid, units, basic volume modeling
Week 2	09 / 13 T	Lecture 2a : Anthropo-morphics/metrics Hand exercise: body as measuring device; orthographic projection Digital exercise: more advanced modeling, boolean, nurbs, lofting, extruding To read: Marco Frascari. "The body + architecture in the drawings of Carlo Scarpa" Marco Frascari. "A tradition of architectural figures: a Search for *Vita Beata*" Le Corbusier. *the Modulor I + II* "Preamble", "Chronological Review".
	09 / 16 F	Lecture 2b: Digital exercise: more advanced modeling, boolean, nurbs, lofting, extruding
Week 3	09 / 20 T	Lecture 3a: View from Infinity: Parallel Projection Hand exercise: construction of oblique views To read: Yve-Alain Bois. *Daidalos,* "Metamorphosis of Axonometry". Massimo Scolari. *AD Profile*, "Elements for a History of Axonometry"
	09 / 23 F	Lecture 3b Digital exercise: lights (standard / photometric), materials and texture mapping, cameras
Week 4	09 / 27 T	Lecture 4a: Perspective Projection Hand exercise: body/construction unit as measuring device; perspective projection To read: S. Edgarton. *Renaissance Rediscovery of Linear Perspective.* 42-9, 124-52 R. Evans. *Projective Cast*, "Piero's Heads", pp. 123-42, 147- 58.
	09 / 30 F	Lecture 4b Digital exercise: working w/ a system of integrated tools - Viz to Photoshop
Week 5	10 / 04 T	No Class – Rosh Hashana
	10 / 07 F	**PIN-UP + DISCUSSION 1**
		Theme 2: Construction + Subtraction
Week 6	10 / 11 T	Lecture 5a: Ruled + Rotated Hand exercise: constructing translation device To read: Roever, W. "The Mongean Method of Descriptive Geometry", pp 1-6. Szambien. *Daidalos*, "Architectural Drawing at the Ecole Polytechnique" R. Evans. *Projective Cast*, "Comic Lines", pp. 295 – 320.
	10 / 14 F	Lecture 5b: Digital exercise: wire-frame, transparent, layered and hybrid drawings
Week 7	10 / 18 T	Lecture 6a:. Traits, Trompes, and Stereotomy Hand exercise: folding + unfolding the logics

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		To read: P. J. Booker. *History of Engineering Drawing,* pp 48-63 R. Evans. *Projective Cast,* "Drawn Stone", pp. 179 – 239. S. Allen. *Practice* , "Le Corbusier + Modernist Movement". pp. 112-121
	10 / 21 F	Lecture 6b:
Week 8	10 / 25 T	Work session Traits + trompes, / stereotomy + collage To read: Ben Nicholson. *The Appliance House*. pp. 16-23
	10 / 28 F	**MIDTERM PIN-UP + DISCUSSION 2 (juried)**
		Theme 4: Depth, Transparency + layering / Color + Light
Week 9	11 / 01 T	Lecture 7a: Shade + Shadow, Depth w/o Optics Hand exercise: construction of shade + shadow in orthographic projection To read: A. Perez Gomez. *AR+PH*. "Sciographia and Projected Shadows" pp 111-25 Frances Butler. *VIA 11*, "The Shadow that does not know" Robin Evans. *Via 11*, "Architectural Projection"
	11 / 04 F	Digital exercise: selected shadows, composite drawings, "exclude" lighting, materials
		Theme 3: View from Infinity
Week 10	11 / 08 T	Paraline Review**:** iso, axo, cavalier, cabinet, obliques + exploded axos continued… Hand exercise: construction of oblique views + isometric views To read: El Lissitzky. *Russia: An Architecture for World Revolution*, "A and Pangeometrie". 138-49
	11 / 11 F	Digital exercise: experimenting w/ user view, transformation of 3d into 2d drawings
Week 11	11 /15 T	Hand exercise: construction of exploded views Digital exercise: exploded axonometric / perspective drawings
	11 / 18 F	**PIN-UP + DISCUSSION 3**
		Theme 4 (cont): Depth, Transparency + layering / Color + Light
Week 12	11 / 22 T	Lecture 8a: Depth, Transparency + layering / Color + Light Hand exercise: construction of depth To read: Colin Rowe. *Mathematics of the Ideal Villa.* "Transparency: Literal + Phenomenal" Johannes Itten. *The Elements of Color*. 7-16, 19-23, 79-82
	11 / 26 F	**Thanksgiving NO CLASS**
Week 13	11 / 29 T	Digital Exercise: composed thoughts, exploded drawings, projections and experiments
	12 / 02 F	In class work session
Week 14	12 / 06 T	**NO CLASS**
	12 / 109 F	**NO CLASS**
Week 15	12 / 12 M	**FINAL REVIEW (2-6pm) (juried)**
	12 / 16 F	CD ROM Archive due, 4pm

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Required readings can be found in the course reader.

The course reader is available through the copy shop just west of the 13th Street entry.

Other references:

Albers, Josef. *Interaction of Colors: revised edition.* Yale University Press, New Haven: 1963

Allen, Stan. *Practice: Architecture, Technique and Representation.* Overseas Press Association, Amsterdam: 2000.

Ching, Francis. *Architectural Graphics, 4th Edition*. Wiley, New York: 2003.

Evans, Robin. *Translations from Drawing to Building and Other Essays.* MIT Press, Cambridge/London: 1997. (abbreviated as *TDB*)

Evans, Robin. *The Projective Cast. Architecture and its Three Geometries.* MIT Press, Cambridge/London: 1995.

Itten, Johannes. *The Elements of Color*. Wiley, New York. 2001 (originally *The Art of Color,* 1961)

Kemp, Martin. *The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat.* New Haven, CT : Yale University Press: 1990.

Martin, C. Leslie. *Design Graphics*. Collier – MacMillan, Toronto: 1962 / 1968

Perez-Gomez, Alberto and Pelletier, Louise. *Architectural Representation and the Perspective Hinge.* MIT Press, Cambridge/London: 1997. (abbreviated as *AR+PH*)

G. Young and H.B. Baxter . "Descriptive Geometry", 1924

H. Shupe and P. Machovina. “Engineering Geometry and Graphics", 1956

C. Rowe and J. McFarland, 1939" Engineering Descriptive Geometry, the direct method for students, draftsmen, architects and engineers".

Materials + Equipment (beyond those for studio):

Sketch book (for everyday use); heavier paper for pencil than for ink.

Sketch pad, 14” x 17” block, scroll bound at short end, with a cardboard or clipboard back, 70 lb. minimum (the weight is important!!!). For example, Bienfang Raritan Heavy Weight or Strathmore medium wt.

Or

On a clip board, 1/2 sheets of the below paper (creased + divided precisely to create 15 x 22 format paper)

Opaque Paper, approximately 5 individual sheets; any of the below.

- Fabriano 22” x 30”, 140#, hot press
- Arches “aquarelle Magnani
- Canson Montival

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Course Description:

This course investigates the relationship between geometry and architecture through an understanding of their techniques in representation and spatial reasoning. Practices of parallel (orthographic / oblique) and central (perspective) projections are explored through accounts and examples in art and architectural history. Through readings and lectures, different methodologies in representation are traced and examined across different historical, theoretical, and cultural movements: from Euclid to medieval masons, to Descartes and Monge, to Moholy Nagy and Matta Clark, to Xenakis and Miralles. Further interpretation and discussion will allow students to uncover the comprehensive codification of representation in the Modern and Postmodern paradigm. More specifically, the recent impact of computers on architecture's oscillation between traditional and contemporary methods of two and three dimensional representation will come into focus. Conceived as a year-long course, in the second semester we will focus upon the third and fourth dimensions of the architectural projection.

Course Structure:

The schedule consists of weekly assignments, both hand drawn and digitally created, which will be introduced and reviewed as indicated on the calendar. Most class sessions will include a lecture or presentation of new material followed by a hands-on tutorial workshop. Occasional work sessions will be scheduled to allow for more in-depth development of skills with faculty guidance. Additionally there will be 6 to 9 hours of work outside of class per week. There will be three pin-ups and a final review which will require additional preparation outside of class time. Comparison of the differences between the hand/eye relationship of traditional drawing and the mouse-screen interface of computer simulations is explored through both the tutorial workshops and pin-ups and group discussions.

Project Descriptions:

Theme 1:
The first assignments are intended to introduce you to the essential tools and means of communicating spatial information through orthographic projection (plan, section + elevation), parallel projection and simple perspective. Simultaneously, you will be introduced to the basic tools associated with the digital modeling and drawing platform we will use for this class.

Theme 2:
Investigation of projection and sectioning as operations to reveal unknowns.

Theme 3:
Each of the conventions of paraline projection will be investigated in order to reveal their inherent opportunities and limitations.

Theme 4:
Expression of depth through means other than literal representation of dimensions. Shade, shadow, tone, layering, and other means will be investigated

Final Drawing
The final drawing will be a combination of orthographic, paraline, and simple perspective drawings to reveal and unfold a specified space or construction.

Grading:

1. Attendance and promptness are important requirements. This is a course in the processes of representation and spatial reasoning, and the work you do in class will be evaluated as 25% of the grade.

2. Completion of weekly assignments and active participation in pin-ups / reviews and in-class discussions: 30% of grade

3. Two juried presentations: 30% of grade

4. CD-ROM archive containing all exercises, completed assignments and final projects from the semester: 15% of the grade