

Design Communication II: Introduction to Architectural Computer Graphics

ARCH 610 – Fall 2018

Syllabus

"I prefer something like the cave-like-unintentional space. Something that is in between nature and artifact – formless form." - Sou Fujimoto

"I'd like to think that we are now entering a third, more mature phase in our relationship to digital technology. Thanks in part to a new generation of architects who have been educated entirely within the digital regime, and on the other hand to the first generation of digitally trained architects who have continued to evolve their thinking, the computer is beginning to have a practical impact, beyond the formal or the metaphorical." - Stan Allen

Instructors

Philip Speranza, Assistant Professor
Andrew Heinrich, Graduate Employee

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Time and Place

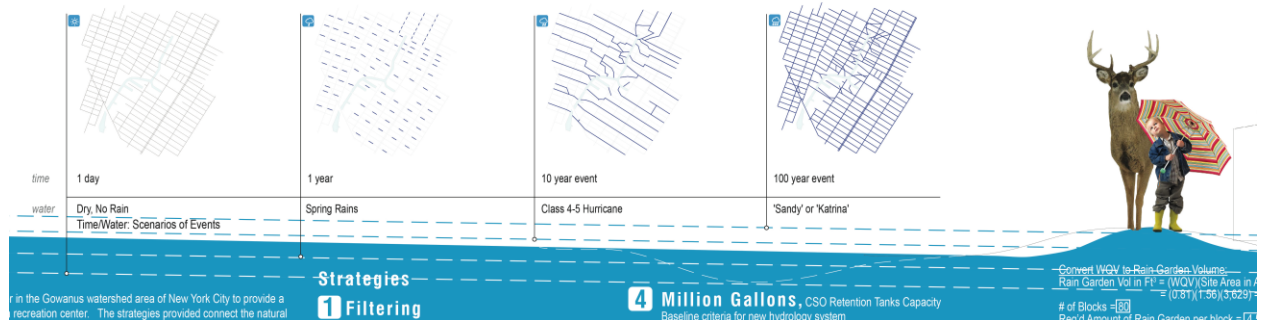
Class meets on Tuesdays and Thursdays from 10:00- 11:50 AM, LA 279
Labs Wednesdays, 10:00-10:50 and 11:00-11:50, LA 100

Design communication pervades the way design approaches today may be seen as systematic frameworks for participation that evolves through understandings of contextual experience from the bottom-up. This course will teach design communication methods each student's to explore their design intents in three parts: I. Qualitative diagramming; II. Analog parametric design; and III. Digital parametric design. Students will bridge analog and digital media to create systems approaches acknowledge existing and proposed environmental conditions. This method of systems thinking allows students to use digital media to apply both qualitative and quantitative understandings of the natural environment not as unrelated singular moves but as interrelated systems of design intention. The course will introduce theoretical ideas in a lecture format, meet for one hour in small computer lab settings and provide opportunities for one-on-one learning in a studio setting. The course is a 'flip' style course with tutorials and other material provided online via a course blog. You must register for a one-hour lab section.

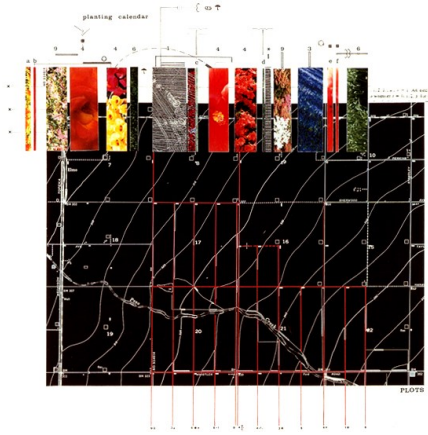
Hardware & Software Requirements: PC or Mac with MS Windows, Adobe Creative Cloud for students and teachers (Photoshop, Illustrator and In-Design). Rhino 6.0 and V-Ray 3 for Rhino. Please install them before fall term.

<https://archenvironment.uoregon.edu/architecture/workspaces/technology>

<https://blogs.uoregon.edu/designtech/home/computer-purchasing/student-computer-purchasing/#architecture>



'Civic Hydrology,' Gowanus Waterwork International Competition, Speranza Architecture + Ivan Kostic and Brian Nguy



James Corner, Time, Material, Place Diagram



UO Urban Interactions Lab, UixD

Course Objectives

Students will use design communication to explore the following architecture objectives:

- I. **Diagramming:** Drawing relationships as a generative design tool
 - Diagramming object/environment affect
 - 3D to 2D workflow, modeling to drawing
 - Single idea “d” diagrams: ink drawings and digital hard-lined
 - Collage Diagrams: vectorial space, materials/textures, time
 - Time-Based Diagrams
 - 4th degree generative diagrams
 - Simple volume surface modeling for use in diagramming precedents
 - Abstracting plan and section from volumetric models
- II. **Analog Parametric Modeling:**
 - History of tiling types as used in patterning
 - Two-dimensional tiling exercises, including transformative step-by-step diagrams of operations
 - Three-dimensional tiling exercises, considering volumetric implications and scale
 - Lighting and mapping, consideration of affect and human interface
- III. **Digital Parametric Modeling:**
 - Analysis of studio design intent, generative diagrams, and material affect to create a parametric wall system and optionally for a plan/section organizational system for the studio project
 - Considering mapping data sets into the parametric system to inform a single operation such as a material assembly with consideration of affects to human experience
- *. **Presentation Methods:**
 - Studio board layout and other communication methods will be studied using case-study examples and diagrams to support the final studio presentation
 - Design Communication II final as an exploratory digital fabrication connecting virtual and physical media tested in a 1:1 mockup of material affect.

STUDENT PERFORMANCE CRITERIA ADDRESSED

- A.3, VISUAL COMMUNICATION SKILLS

Course Goals:

- Teach new media emphasizing design process, strengthening skills to be used in a studio.
- Introduce integrated methods encompassing digital and non-digital media.
- Develop learning strategies for changing technology including systems and non-linear design.
- Design problems that will challenge students at all levels.

Critical Design Issues

- Context
- Organizational systems
- Performative systems
- Documentation and Analysis
- Synthesis of systems
- Abstraction of systems
- Material Affect
- Non-Linear Parametric Design

Course Method

This course is organized as one lecture group and smaller lab groups as coordinated with studio sections in which students engage in independent project-based learning. The course time will be split between lectures, discussion and workshops using the analog and digital media in the studio environment. The work will be shared in class to foster peer-to-peer learning. Class meetings include a variety of communication formats including lectures, tutorials, desk-critiques, pin-ups, reviews, in-class discussions and reading assignments. **Students are required digitally post work to the weblog unless stated otherwise: *last_first_610_F18_01.jpg at 2000x2000 pixels*.

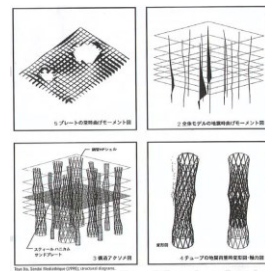
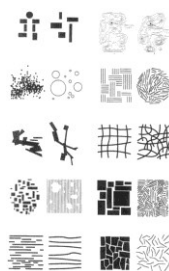
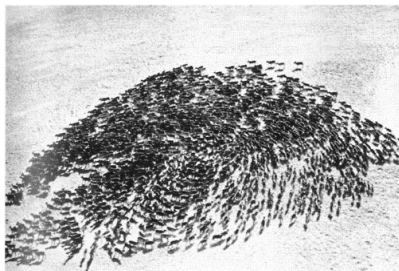
// Student should watch tutorials as homework BEFORE class.

Evaluation, Assessment and Feedback

Performance will be graded as per the outline below. Student work will be evaluated for understanding of each week's lecture information, posted information and learning objective in each assigned exercise.

Attendance Policy

Attendance is mandatory. Lateness will be counted 15 minutes after class has started. Absences will be counted 30 minutes after class has started. After 3 unexcused absences your grade will be lowered by a grade point for each additional absence if you do not have a written medical, school or religious excuse and should be reported to the instructor prior to the missed class if at all possible. All students are expected to participate in class discussions and develop projects beyond the minimum requirement.



Reindeer herd reacting to helicopter overhead; Field condition diagrams by Stan Allen, Toyo Ito diagrams

Grading

10% PROJECT 1.1 /// Diagramming
10% PROJECT 1.2 /// Time-based diagrams
10% PROJECT 1.3 /// Generative Diagrams + Precedent
10% PROJECT 2.1 /// 2D Tiling
10% PROJECT 2.2 /// Lighting and Mapping
30% PROJECT 3.1 /// Parametric Material Experience
10% PROJECT 3.2 /// Final Studio Presentation
10% PROJECT 3.3 /// Final Fabrication

Students will not receive a final grade until all work has been uploaded for digital submission.

Projects

The projects for this course are designed to encourage exposure to various means of communicating your designs through a variety of tools including everything from hand sketching to digital modeling. Detailed descriptions and requirements will be given at the time each project is assigned.

Schedule *(this schedule may change with notice)*

Diagramming

Week 1	T	09/25	Diagrams Introduction	Lecture/Workshop
	Th	09/27	Collage Diagrams Workshop	
Week 2	T	10/02	Time-Based System	Lecture/Workshop
	Th	10/04		Workshop
Week 3	T	10/09	Generative Diagram+ Parti	Lecture/Workshop
	Th	10/11		Workshop

Analog Parametric Design

Week 4	T	10/16	2D Tiling Exercise	Lecture/Workshop
	Th	10/18		Workshop
Week 5	T	10/23	Lighting/Mapping	Lecture/Workshop
	Th	10/25		Workshop

Digital Parametric Design

Week 6	T	10/30	Grasshopper Principles	Lecture/Workshop
	Th	11/01		Workshop
Week 7	T	11/06	Grasshopper Operations	Lecture/Workshop
	Th	11/08		Workshop
Week 8	T	11/13	Grasshopper Analysis Input	Lecture/Workshop
	Th	11/15		Workshop
Week 9	T	11/20	Presentation Exercise	Lecture/Workshop
	Th	11/22	**NO CLASS - THANKSGIVING	

Weeks 10-11 Studio Final Week, TBD
Final Exercise Due, TBD

Project Ownership, Publication, And Publicity

Work created for credit and/or using the facilities of the School of Architecture and Allied Arts belongs jointly to the school and the student. The AAA reserves the right to document and display all original work for the purpose of documenting student performance as mandated by the National Architecture Accrediting Board [NAAB]. Furthermore, the school reserves the non-exclusive right to use images or

likenesses of the work for publicity and display in print and electronic media as well as to submit such work for competitively reviewed exhibitions or to various award programs, The School and its representatives [including faculty and teaching staff] have the non-exclusive right to use such work as illustrations in scholarly and/or technical publications and presentations.

Accommodations

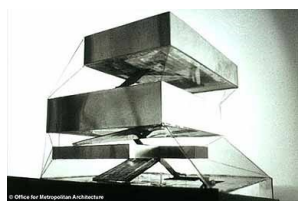
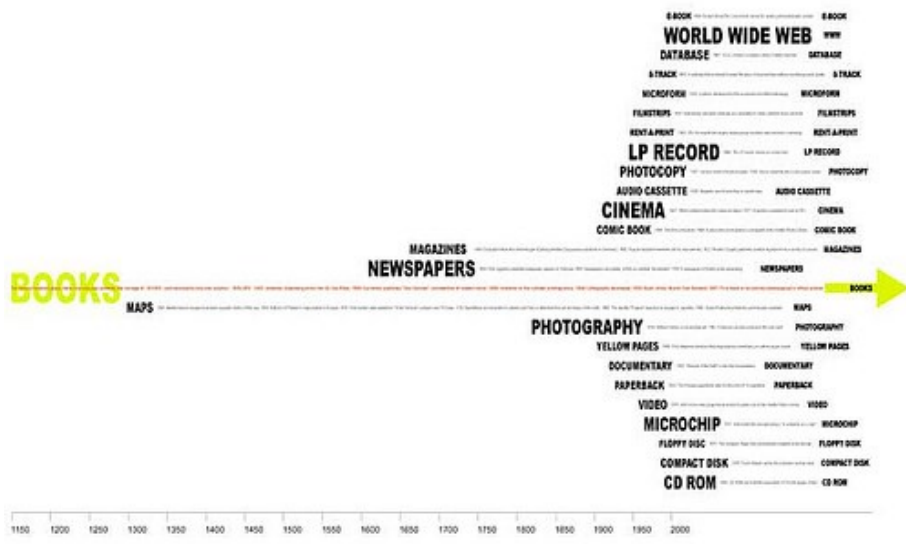
If you have a documented need for and anticipate accommodations in this course please communicate with the instructor as soon as possible. You may also request that the counselor for students send a letter verifying the need for accommodations. This is intended to support a accessible learning environment and is in way intended to inhibit privacy.

Graduate Employee Role:

The Department of Architecture maintains a tradition of peer teaching that benefits both students and GEs. Graduate Employees will conduct both graduate and undergraduate labs under the direct supervision of the instructor. These sessions will be conducted according to protocols that have been approved by the instructors and that are common to all sections of the course. GEs will lead labs and may occasionally provide supplementary lessons on certain topics. However, the instructor will meet with the GEs on a weekly basis at least, to coordinate material and ensure that sections are being run consistently and according to the instructors' specifications. GEs will work under the direct supervision of the instructors, who will have ultimate responsibility for determining and entering grades. All grading will be done according to clear criteria that are used by the course instructors and all GEs assisting in the course. The course instructors will regularly monitor the grading activities of GEs with respect to accuracy and fairness. All graduate students have the option of having their work evaluated solely by the instructors.

Reading List

Allen, S. (1999), "Field Conditions," *Points and Lines*, Princeton Architectural Press, New York, NY.
Allen, S. (1998), "Diagrams Matter", in *ANY 23*, Dec. 1998
Koolhaas, R. (1994), *Delirious*, Monacelli, New York, NY.
de Landa, M. (2000), *A Thousand Years of Nonlinear History*, Zone Books, MIT Press, Cambridge, MA.
Latour B. and Albeno Yaneva (2008), "Give Me a Gun and I Will Make All Buildings Move: An Ant's View of Architecture," in *Explorations in Architecture: Teaching, Design, Research*, edited by R. Geiser, Basel: Birkhäuser
Schwartz, P. (1991), *The Art of the Long View*, Doubleday, New York, NY
Zaera-Polo, Alejandro (2010) "Between Ideas and Matters: Icons, Indexes, Diagrams, Drawings and Graphs", *AD The Diagrams of Architecture*, Wiley, West Sussex, England
Zaera-Polo A., Stan Allen, Jeffrey Kipnis, Sarah
Whiting, Jesse Reiser, Daniel Lopez-Perez, Pep Aviles (2009) "Envelope, Faculty Conversation," *Pidgin No. 7*



OMA, Rem Koolhaas, Seattle Public Library