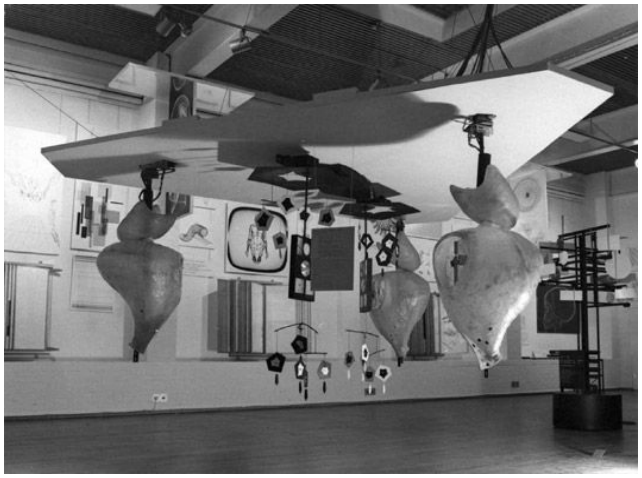
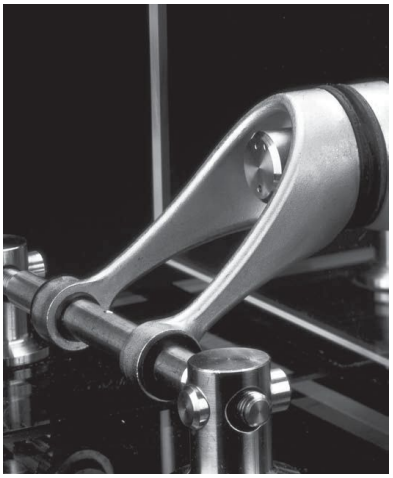
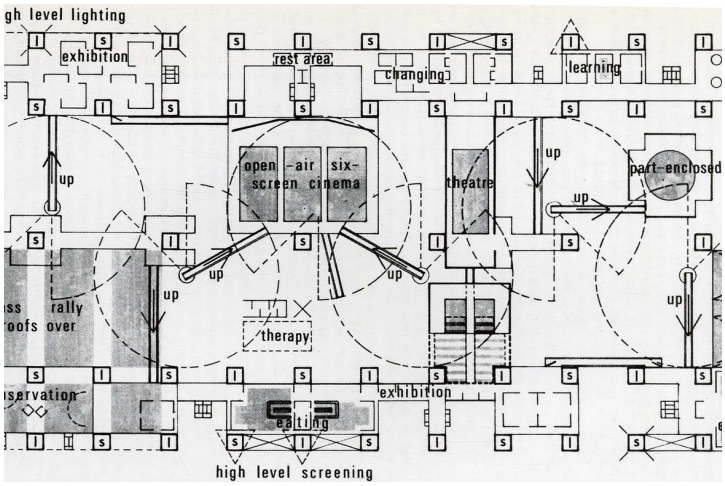
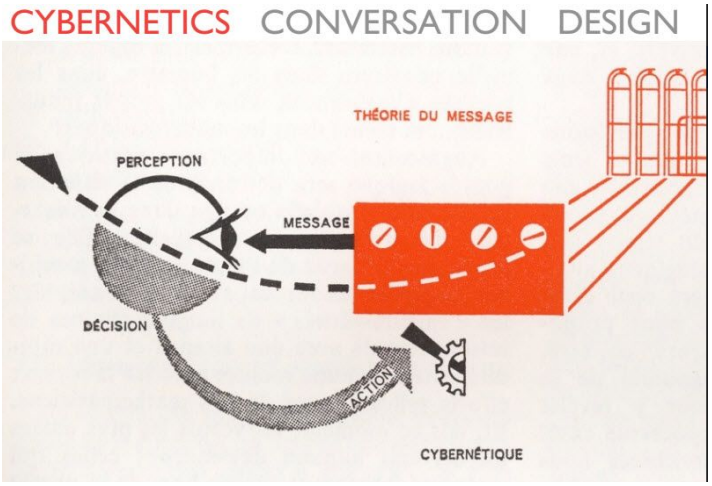
Type of Course: Advanced Studio ARCH 85101 / 51000 / 92102
Class Meetings: M/TH: 2:00PM – 5:50PM
Instructor: Loukia Tsafoulia
Location: TBD
Semester/Year: Spring 2018

Performance Space & Conversational Machines

Design as Conversation & Design the Conversations between Human/Machine/Environment





Top Left: The Colloquy of Mobiles created by Pask for the 1968 exhibition Cybernetic Serendipity held at the ICA in London.
Top Middle: The Financial Times Printing Plant, London (1993), architect Grimshaw.
Top Right: Prototype of the glazing bracket, The Channel Tunnel Terminal at Waterloo Station, London (1993), architect Grimshaw.
Bottom Left: Plan of Cedric Price's "Fun Palace" in collaboration with Joan Littlewood and Gordon Pask. Available at: *https://folio.brighton.ac.uk/user/km226/exemplary-project-cedric-price.*
Bottom Right: image from Cuso Seminar— University of Fribourg, Dr Paul Pangaro — New York City. November 2014

// Course Description & Learning Objectives

"a building cannot be viewed simply in isolation. It is only meaningful as a human environment. It perpetually interacts with its inhabitants, on the one hand serving them and on the other hand controlling their behavior. In other words structures make sense as parts of larger systems that include human components and the architect is primarily concerned with these larger systems; they (not just the bricks and mortar part) are what the architect designs."
Gordon Pask, A Comment, a Case History and a Plan. In Cybernetics, Art, and Ideas

"Let us build machines that can learn, can grope and can fumble, machines that will be architectural partners, machines that can learn about architecture and perhaps even learn about learning about architecture. Architecture Machines."
N.Negroponte, 1970.

"the cybernetic brain was not representational but performative [...] and its role in performance was adaptation."
Andrew Pickering, The cybernetic Brain

Our environments are in a constant state of becoming, in a seemingly continuous loop of recurrence with the world. The studio will investigate our environments in transience. Our constructed spaces, interior and exterior, will be thought as highly flexible and adaptive organs. Studying spaces and systems that are not static due to seasonal, social, functional, climatic and psychological considerations the studio will describe a relationship that a system desires to have with its environment. Following the second-order cybernetic frame of subjectivity and conversation that gives rise to a view of design concerned with more than the form of objects, the studio will focus on systems rather objects, embrace complexity, and move from form-giving to conversation-managing. The studio will therefore investigate Space as an informational environment and as a system of interactive parts. It will explore experiments that shifted the design invention towards shaping physical space through real-time data, systematization and information processing. From the late 1940s onwards this realization triggered radical debates that have addressed the reinvention of the build product and a shift towards design that prioritize performance and interaction over its mere formal manifestations.

In an effort to define the notions of *performance* and *conversation* the studio will explore the development of computing, calculating and interactive machines in their historical context juxtaposed to the use of advanced digital tools now. The general approach aims at growing an intuitive feeling for complex, dynamic and self-organizing architectural systems and the codes they are made of. We will define computing machines as extensions of the architect up to the point where a machine-understanding of the project's environment actively adds to the design process.

Performance will be seeked not only as an experience but as a way of research and a way to create knowledge and awareness; As a role, as a process, as a response to social, experiential and environmental considerations. Architecture will be engaged with diverse, more temporal modalities.

Conceptually, the course will draw parallelisms between the performative design machine and the Vitruvian machine. The design machine being a schema for design modeled after informational process models of thought, it suggests a multiplicity of interpretations and applications in various contexts and processes in architecture discourse. The Vitruvian machine will be analyzed as to its 3 principles of architecture, encoded in the categories of venustas, firmitas and utilitas - typically translated as beauty (geometry), firmness (material) and commodity (function). The mapping of the Vitruvian Machine and the Design machine will reveal similarities between the two models.

The studio will start by researching the early cybernetics experiments in Britain during the 40s and the system thinking at MIT during the 60s. As it develops, the studio will also point to possible futures that were not explored because of the advent of cybernetics. Students will trace the role of information in the shaping of dynamic environments via constructing a hand in hand history of communication and cybernetics to a history of design. This interdisciplinary discourse leads to the understanding of a space composed of linkages, relays, diversions, and holes. As Reinhold Martin puts it "It is a space uncontained and perhaps uncontainable"[1].

Through the use of digital and analog technology students will then develop deployable design systems. They will first produce a prototype and then develop it at a different context. The first prototype will be a conversational machine, allowing interaction with its environment. Driving force will be a deeper question for deployment. The studio will refer to the various reasons for a system deployment as well as the material, environmental, and psychological transformations involved.

Throughout the semester emphasis will be placed on design research and empowering students to identify & define design problems, establish evaluative criteria, analyze solutions, and predict the effectiveness of implementation. A goal for student growth is to encourage them to transition into taking greater initiative in their individual development of higher-level design competencies. The studio contains an understanding of the theoretical and applied research methodologies and practices used during the design process.

// Course Structure, Proposed Program and Sites of Intervention

The studio will work with both group and individual projects.

The course is organised in 3 main phases and 6 smaller parts. During the first phase, students will begin with research, analysis and representation of cybernetic systems. In the second part of the course students will be working on material experiments for interactive components. Using their knowledge from the first two parts students will expand their research to create a historiography of performative interventions and conversational machines that will serve as the material to curate into a publication. As a second phase, students will develop deployable design systems. They will produce a physical prototype that allows interaction in a systematic way. As a final phase students will identify a site and a program to transform and deploy this system.

Paper Response
Throughout the semester there will be weekly responses to provided texts. Each student will choose one or more fragments from the given readings and write a critical response in which these fragments appear as an evidence for their interpretation and analysis of the questions they find most intriguing. Students can refer to just one of the texts or select two or more for a comparison. This is not intended as a summary of the reading, but as a critical response that can be used in class and interact conceptually with design tasks. The short papers (250 words) don't need to be structured as a formal essay, but must bring evidences from the readings (in adequate citation format) to support the student analysis and interpretations.

PHASE 1: Research, Representation & Material Experiments

1st Part: Research & Representation (1 week) *Individual work.* 5% of Grade
Date Issued: Jan. 29th_Date Due: Feb 5th
Generate a series of analytical representations for the cybernetic machine precedents from the given list. How do they operate? Create operational / behavioral diagrams mapping the system's behavior.

Deliverable: A series of diagrams of Operation mapping time, movement and the performative aspects of

[1] Martin, Reinhold. "The Organizational Complex: Cybernetics, Space, Discourse." *Assemblage*, no. 37 (1998): 103–27.

the machine.

2nd Part: Material Experiments (2 weeks) *Groups of 2* 10% of Grade
Date Issued: Feb 5th_Date Due: Feb.22th
a. Generate material experiments that respond to a performative machine and a series of diadrastic components learning from the findings of part 1. You will be testing materials with plasticity and flexibility, materials that conceptually are in an infinite state of motion.
Primary Material: Fabrics, inflatables, plastics.
Secondary Material: Plastics, wood, acrylic.
b. Create a taxonomy of the individual experiments as a big class group.

Deliverable: Physical Material Experiments and a taxonomy of all class study models/components.

3rd Part: Analysis & Curation (1 week) *Class Group work with individual components* 10% of Grade
Date Issued: Feb 15th_Date Due: Feb 26th
a. Create a historiography of performative interventions and experiments on conversational machines based on the provided readings, the paper responses (see description above) as well as part1.
b. Curate all research and representation work into a website and a presentation boards for an exhibition. *This part will take place in 2 phases, before and after the midterm.*

Deliverable: Graphically Illustrated booklet consolidating the 4 weeks of research and experimentation.

PHASE 2: Pre-Design

4th Part: Testing Systems | 1st Prototype (3 weeks) *Groups of 2* 30% of Grade
Date Issued: Feb 26th_Date Due: March 15th
Using the findings from part2 material experiments and through the use of digital and analog technology develop a physical prototype that acts a performative machine. This prototype should be a deployable design system that allows interaction with its environment. Prototypes created by different studio teams might interact with each other. The premise is that even though the systems will be tested within the space of SSA, they address scenarios in which the prototypes may be deployed elsewhere. In essence, the prototypes can be modified with consideration to a number of contextual, functional and experiential challenges. Students will generate a diagram explaining the behavior of their system and how it could be applied in different contexts for discussion during the midterm review.

Deliverable: A Physical model and Operational Diagrams.

MIDTERM REVIEW MARCH 15th

PHASE 3: Final Development & Proposal

5th Part. Intervention & Full Scale Prototyping (8 weeks) *Individual work* 40% of Grade
Date Issued: March 19th_Date Due: May 10th
Identify a focusing problem / Prototype a solution.

Continuing the work from part 4 think of your system applied at a different context with overlapping functional, climatic or experiential needs. So, based on all the previous parts (including research, in class discussions, precedents studies, and material experiments) identify a focusing problem of your interest. Students will raise a deeper question for their system deployment. Students proposals might vary in nature; they might focus on urban typologies interventions, on infrastructures and components of existing buildings (apertures,dividers, screens), on systems addressing disaster relief or crisis scenarios, other. Students will prototype full scale models of the design system proposed or a detail of it depending on the intervention scale.

Deliverable: Orthographic Drawings, Diagrams, 3d representations of the intervention, physical models and a physical detail in full scale.

6th Part: Curation (2 last weeks running in parallel with part 5) *Class Group work with individual components* 5% of Grade
Date Issued: April 30th_Date Due: May 14th
Curate all research and representation work into a website and the studio research booklet.

Deliverable: Graphically Illustrated booklet and website consolidating semester's research work.

Expected Studio Impact:
An exhibition and a publication of the studio's research and work to be curated for the end of Fall 2018 .

// Weekly Schedule

Note: schedule below is subject to revision through the duration of the semester.

PHASE 1: Research, Representation & Material Experiments

W1	*1st Part: Research & Representation*
Mon 01.29	First day of class (Lottery and general presentation)
Thu 02.01	Studio / Desk Crit
	Portfolios DUE: M.Arch I, M.Arch II, and B.Arch 4th year students
W2	*2nd Part: Material Experiments*
Mon 02.05	Studio / **Pin Up Part 1 /** Introduce Part 2
Thu 02.08	Studio / Desk Crit
	6:30pm. Lecture: Elizabeth Christoforetti
W3	
Mon 02.12	No Class / Lincoln's Birthday
Thu 02.15	Studio / Desk Crit / Introduce Part 3
	6:30pm. Lecture: Ivan Rupnik
W4	*3rd Part: Analysis & Curation*
Mon 02.19	No Class / President's Day
Tue 02.20	Classes follow a Monday Schedule, Studio / Desk Crit
Thu 02.22	Studio / **Pin Up Part 2**
	6:30pm. Lecture: Iñaqui Carnicero

PHASE 2: Pre-Design

W5	*4th Part: Testing Systems | 1st Prototype*
Mon 02.26	Studio / **Review Part 3** / Introduce Part 4
Thu 03.01	Studio / Desk Crit
	6:30pm. Lecture: Vishaan Chakrabarti
W6	
Mon 03.05	Studio / Desk Crit
Thu 03.08	Studio / Desk Crit
	6:30pm. Lecture: Celeste Olalquiaga
W7	

Mon 03.12 Studio / Desk Crit
Thu 03.15 Mid-term Review

PHASE 3: Final Development & Proposal

W8 *5th Part. Intervention & Full Scale Prototyping*
Mon 03.19 Studio / Introduce Part 5
Thu 03.22 Studio / Desk Crit

W9
Mon 03.26 Studio / Desk Crit
Thu 03.29 Studio / Desk Crit

W10 *S P R I N G R E C E S S*
Tue 04.02 No Class / Spring Break
Thu 04.05 No Class / Spring Break

W11
Mon 04.09 Studio / Desk Crit
Thu 04.12 Studio / Desk Crit
6:30pm. Lecture: Mario Gooden

W12
Mon 04.16 Studio / Desk Crit
Thu 04.19 **Pin Up: Progress Work**

W13
Mon 04.23 Studio / Desk Crit
Thu 04.26 Studio / Desk Crit
6:30pm. Lecture: Georgeen Theodore and Tobias Armborst (Inteboro)

W14 *6th Part: Curation*
Mon 04.30 Studio / Desk Crit / Introduce Part 6
Thu 05.03 Studio / Desk Crit

W15
Mon 05.07 Studio / Desk Crit
Thu 05.10 Studio / Desk Crit

W16 **Final Review (Date to be confirmed)**

// Bibliography / References:

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- Alexander, Christopher. Systems Generating Systems. AD 38 (1968): 605–610.
- Alexander, Christopher. Pattern Manual (Draft). Berkeley: Center for Environmental Structure, University of California, 1967.
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2006
- Branko Kolarevic. Malkawi Ali M Performative Architecture: Beyond Instrumentality New York, London. Spon Press, 2005
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- Eames, Charles, and Owen Gingerich. “A Conversation with Charles Eames.” American Scholar 46, no. 3 (1977)
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- Friedman, Yona. Catalogue of Manuals 1973-1981 (Paris.s.e04p. lists, 114 manuals.
- Gertz, Emily. Di Justo Patrick, Environmental Monitoring with Arduino, OReilly, Maker Press, 2012
- Habraken N.J., Boekholt J.T., Thijssen A.P., Dinjensp.J.M. *The systematic design of Supports*. Cambridge: MIT Press, 1976.
- Hayles, Katherine. How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics. Chicago, IL: U of Chicago, 1999.
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- Menges, Hensel. Performance Oriented Architecture: Rethinking Architectural Design and the Built Environment, Wiley AD, 2013
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- Negroponte, Nicholas. *The Architecture Machine.* Cambridge, MA: MI T Press, 1970.
- Pask, Gordon. The Architectural Relevance of Cybernetics. Architectural Design 39, no. 7 (1969)
- Pask, Gordon. Aspects of Machine Intelligence. In Soft Architecture Machines, edited by Nicholas Negroponte, 6–31. Cambridge, MA: MIT Press, 1975.
- Pask, Gordon. A Comment, a Case History and a Plan. In Cybernetics, Art, and Ideas, edited by Jasia Reichardt, Greenwich, CT: New York Graphic Society, 1971.
- Pickering, Andrew. The Cybernetic Brain: Sketches of Another Future. The University of Chicago Press, 2011.
- Shannon, Claude, and Warren Weaver. The Mathematical Theory of Communication. Urbana-Champagne: University of Illinois Press, 1963. Originally published 1949; reprinted 1998.
- Thackara, John. In the Bubble – Designing in a Complex World, Cambridge, Mass. The MIT Press, 2006
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- Mori, Toshiko, Immaterial/Ultramaterial: Architecture, Design and Materials, Harvard Design School, George Braziller, Cambridge, MA 2002

Links to Articles and Papers:

http://www.interactivearchitecture.org/adaptive-architecture-spatial-management.html

http://www.dubberly.com/articles/cybernetics-and-counterculture.html

https://cumincad.architexturez.net/documents/series/CAADRIA%20%2708

http://www.interactivearchitecture.org/strategic-boredom-molly-wright-steenson.html

http://www.girlwonder.com/speaks

Links to Project References:

http://icd.uni-stuttgart.de/?page_id=17788

https://issuu.com/gsdharvard/docs/materialperformance

https://issuu.com/yuliya_baranovskaya/docs/knitflatables_ybaranovskaya_2310201

https://www.instagram.com/p/BcE5NCeF8sl/

http://shape.gatech.edu/

http://paskpresent.com/exhibition/

Precedents / Works by:

Christopher Alexander
Horst Rittel
Fun Palace, Cedric Price
Space-light Modulator, Moholy Nagy
Cybernetic Serendipity' exhibition at the Institute of Contemporary Arts in London
Musicolour, Gordon Pask
Colloquy of Mobiles, Gordon Pask
Tortoise, Gray Walter
Eames Office
Nicholas Negroponte, Arch Machine Group
Total Design , 1963
Unimark, 1965
Pentagram, 1972
Buckminster Fuller's "comprehensive designer"
Horst Rittel's "wicked problem"
Macy's Conference on cybernetics
Hochschule für Gestaltung Ulm, Germany
Andriano Olivetti & Marcello Nizzoli at Olivetti
Tom Watson & Eliot Noyes at IBM
Max Dupree & George Nelson at Herman-Miller
Hiroshi Yamauchi & Shigeru Miyamoto at Nintendo
Steve Jobs & Jonathan Ive at Apple

// Grading & Attendance Policies and Studio Culture

Course Expectations:

• That students will develop a high level of independent thought and rigor and a willingness to go beyond both basic project requirements and their own perceived limits and abilities.

• That students will successfully complete all project requirements. No make-up or postponed project submissions will be accepted except in the case of medical emergencies or other extraordinary circumstances. Excused absences and project delays must be officially cleared by professor in advance in order to be considered valid.

All M Arch I second and third year students and all M Arch II students are required to submit a portfolio on February 1st, 2018. Second year students must submit a hard copy portfolio to Hannah Borgeson's office by 5pm on the 1st. Third year students and M Arch II students may submit either a hard copy portfolio or email a link to a digital portfolio to hborgeson@ccny.cuny.edu. Digital submissions must be a link, not a file attachment.

Methods of Assessment:
• Attendance and participation in class discussions: 20%
• Project development in response to the studio's structure (6 parts as described above): 50%
• Project presentation, completion and resolution: 30%

Evaluation Criteria:
Effort - motivation, and a willingness to work at an intense level of involvement.
Quality - a comparative judgment of the quality of an individual's work with respect to the highest quality of work produced in class.
Ability - a subjective evaluation of the student's analysis, creativity, and level of investigation as exhibited by their work.
Participation - an evaluation of the student's contributions to the social and intellectual life of the studio, participation in class discussions, mutual criticism, paying attention, pitching in, etc.
Presentations - the highest quality and complete presentations that can communicate clearly and accurately your intentions to an outsider.
Completion - of all assigned work in a timely manner. Simply 'doing the work' does not mean that the work will receive a passing grade. Work is to be completed before studio and discussed during class.

Key Areas of Grading Assessment:

- Studio Performance & Work Habits: Ability to respond to studio criticism & discourse in a consistent & clear manner throughout the course of the semester as demonstrated in the evolution and development of design work.

- Clarity of Representation & Mastery of Media: Ability to utilize both digital and manual drawing and model-making techniques to precisely and creatively represent ideas.

- Research: Understanding of the theoretical and applied research methodologies and practices used during the design process.

- Integrated Evaluations and Decision-Making Design Process: Ability to demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.

- Studio & Lecture Series Attendance

- Completion of Portfolio and Attendance at all scheduled portfolio related events

Grading Criteria:
Note: C is the lowest passing grade for M Arch I and M Arch II students.

A (+/-) work meets all requirements and exceeds them. Presentations are virtually flawless, complete,

and finely detailed. Work exhibits professional, "museum quality" level of craft. Student has developed an individual design process that shows a high level of independent thought and rigor. Work shows evidence of intense struggle to go beyond expectations, and beyond the student's own perceived limits of their abilities.

B (+/-) work meets all requirements. Presentations are complete and finely detailed. Work exhibits professional level of craft. Student has developed an individual design process that shows a high level of independent thought and rigor.

C (+/-) work meets minimum requirements. While presentations may be complete, student has struggled to develop an individual design process and/or is lacking in craft or design resolution

D (+/-) work is below minimum requirements. Presentations are incomplete, student has struggled to develop an individual design process and/or is lacking in craft or design resolution.

F work is well below minimum requirements. Student does not develop adequate design process, and / or does not finish work on time.

INC grades of "incomplete" are not given under any circumstances unless there is evidence of a medical or personal emergency. In such cases, instructor and student develop a contract to complete work by a specified date, as per CCNY policy. Classes / work missed due to illness must be explained with a physician's note.

NOTE: *Working in teams does not guarantee the same grade for each team member; grades are based on a range of criteria for each student.*

For more information on grading guidelines and other CCNY policies and procedures, consult the current CCNY Academic Bulletins: http://www.ccny.cuny.edu/registrar/bulletins.cfm

Office Hours:
Office hours are set by appointment. If a student needs to speak in private with a studio critic they must email in advance to request a meeting time. Students may seek office hour appointments to discuss any matters of concern including personal, private matters and general inquiries about course related work, grading, assessment and content.

Probation & Dismissal: For program specific information related to grades, academic standing, probation and dismissal, please see your program academic advisors:
B. Arch.: Arnaldo Melendez & Sara Morales
M. Arch.: Hannah Borgeson

Studio Culture:
Working in the studio is mandatory. Studio culture is an important part of an architectural education. Please see the Spitzer School of Architecture Studio Culture Policy, which can be accessed on the SSA website here https://ssa.ccny.cuny.edu/about/policies/ for more information.

Absence & Lateness:
Arriving more than ten minutes late to class will constitute an absence. Two unexcused absences will result in a whole letter grade deduction from a final grade; three will result in a failing grade. It is expected that all students will participate in all scheduled working, midterm and final reviews and contribute constructively to the discussion.

Absences due to Religious Observances:
Students who will miss any class sessions, exams, presentations, trips, or the like due to a religious

observance should notify the instructor at the beginning of the semester so that appropriate adjustments for observance needs can be implemented. This could include an opportunity to make up any examination, study, or work requirement that is missed because of an absence due to a religious observance on any particular day or days.

Noise Policy:
The studio environment should be a quiet and respectful place where all students can work and think in peace. At no time may students play music out loud in studio, even at a low volume. If you desire to listen to music, either during class hours or after hours, headphones are a requirement. Conversations must also be kept to a reasonable volume to respect classmates and those students in adjacent studios.

Readings & Journals:
Students are expected to keep a journal or sketchbook throughout the duration of studio to document their thought process & take notes of any texts, books, terms or references that are mentioned by either the studio critic or fellow classmates and to selectively follow up on these and any other assigned readings before the next class.

Academic Dishonesty:
As a student you are expected to conduct yourself in a manner that reflects the ethical ideas of the profession of architecture. Any act of academic dishonesty not only raises questions about an individual's fitness to practice architecture, but also demeans the academic environment in which it occurred. Giving or receiving aid in examinations, and plagiarism are a violation of an assumed trust between the school and the student.

Plagiarism, i.e. the presentation as one's own work of words, drawings, ideas and opinions of someone else, is a serious instance of academic dishonesty in the context as cheating on examinations. The submission of any piece of work (written, drawn, built, or photocopied) is assumed by the school to guarantee that the thoughts and expressions in it are literally the student's own, executed by the student. All assignments must be the student's original work. Any copying, even short excerpts, from another book, article, or Internet source, published or unpublished, without proper attribution will result in automatic failure of the entire course.

CCNY Academic Integrity Policies: http://www.ccny.cuny.edu/academicaffairs/integritypolicies.Cfm
In particular, consult the Academic Integrity Brochure for students:
http://www.ccny.cuny.edu/academicaffairs/upload/BrochurePDFVersion.pdf
For more guidance about understanding standards for plagiarism in the digital age, see:
http://www.nytimes.com/2010/08/02/education/02cheat.html?_r=1&emc=eta1&pagewanted=print
For citations, use the Chicago Manual of Style "Notes and Bibliography" method:
http://www.chicagomanualofstyle.org/tools_citationguide.html

AccessAbility Center (Student Disability Services):
The AccessAbility Center (AAC) facilitates equal access and coordinates reasonable accommodations, academic adjustments, and support services for City College Students with disabilities while preserving the integrity of academic standards. Students who have self-identified with AAC to receive accommodations should inform the instructor at the beginning of the semester. (North Academic Center 1/218; 212-650-5913 or 212-650-6910 for TTY/TTD).

Library:
The school's library is a shared resource that is necessary supplement to all research and design work. Please direct questions to the library staff or the architecture librarian Nilda Sanchez.

NAAB (National Architectural Accrediting Board)
The National Architectural Accrediting Board (NAAB) is the sole agency authorized to accredit US

professional degree programs in architecture. Since most state registration boards in the United States require any applicant for licensure to have graduated from a NAAB-accredited program, obtaining such a degree is an essential aspect of preparing for the professional practice of architecture. While graduation from a NAAB-accredited program does not assure registration, the accreditation process is intended to verify that each accredited program substantially meets those standards that, as a whole, comprise an appropriate education for an architect.

More specifically, the NAAB requires an accredited program to produce graduates who: are competent in a range of intellectual, spatial, technical, and interpersonal skills; understand the historical, socio-cultural, and environmental context of architecture; are able to solve architectural design problems, including the integration of technical systems and health and safety requirements; and comprehend architects' roles and responsibilities in society.

The following Student Performance Criteria are addressed in this course:

Realm B: Building Practices, Technical Skills, and Knowledge. Graduates from NAAB-accredited programs must be able to comprehend the technical aspects of design, systems, and materials and be able to apply that comprehension to architectural solutions. In addition, the impact of such decisions on the environment must be well considered.
B.1 Pre-Design: Ability to conceptualize, prototype and test a comprehensive system that includes an assessment of user needs; an inventory of spaces and their requirements; an analysis of site conditions and an assessment of their implications for the project; and a definition of site selection and design assessment criteria.

Realm C: Integrated Architectural Solutions. Graduates from NAAB-accredited programs must be able to demonstrate that they have the ability to synthesize a wide range of variables into an integrated design solution.
C.1 Research: Understanding of the theoretical and applied research methodologies and practices used during the design process.
C.2 Integrated Evaluations and Decision-Making Design Process: Ability to demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.

Students should consult the NAAB website www.naab.org for additional information regarding student performance criteria and all other conditions for accreditation.