Spitzer The Bernard & Anne Spitzer School of Architecture

Type of Course:	**Graduate Studio + Research Workshop/Design Seminar**
M.Arch 2nd yr:	ARCH 74100 Architecture Studio IV (6 cr) + ARCH 73501 Research Workshop (3 cr)
M.Arch 3rd yr:	ARCH 85200 Advanced Studio (6 cr) + ARCH 85200 Research Workshop (3 cr)
M.S. Arch:	ARCH 92102Advanced Studio (6 cr) + ARCH 92202 Design Seminar (3 cr)
Class Meetings:	**Workshop M 9:30-12:20; Studio M/TH 2:00-5:20pm**
Office Hours:	**M/TH 1:00-1:50pm, by appointment (Melendez)**
	M 5:30-6:20pm, by appointment (Maghlakelidze)
Instructors:	**Frank Melendez, Associate Professor**
	Mariami Maghlakelidze, Adjunct Lecturer
Location:	**SSA 207**
Semester/Year	**Spring 2025**

GENERAL DESCRIPTION

STUDIO: This advanced studio explores an architectural project through extended design research and in-depth building design propositions. Engaging with a variety of contemporary architectural design topics, students analyze and synthesize human, socio-cultural, contextual, technical, and regulatory forces. Project work includes quantitative investigation of environmental impacts and articulation of mitigation strategies. Independent research methodologies are supported, and student work is expected to achieve the quality of a well-developed architectural design thesis and design proposition.

RESEARCH WORKSHOP: This required seminar course focuses on special topics of study that support and broaden the design studio curriculum. Students co-enroll in this course with their architectural design studio.

ROBOTIC ECOLOGIES

3D Printed Ceramic Architectural Systems and Bioreceptivity

OVERVIEW

This studio and research workshop will explore novel methods for the design and fabrication of architectures in hot dry climates, by merging natural materials and digital technologies. We will examine new possibilities for architecture, by merging traditional and contemporary methods of making, and focusing on additive manufacturing processes that conflate clay, ceramics, computation, digital tooling, 3D printing, and robotics. The studio will explore new approaches to sustainable and ecological design in architecture through the use of natural materials (clay) and synthetic systems (robots), to design a campus of structures located at the base of the McDowell Mountains in Scottsdale, Arizona. The project will consist of a series of live/work and communal spaces located adjacent to Frank Lloyd Wright's Taliesin West.

In the research workshop, students will conduct in depth research and critical analysis of vernacular case studies in hot, dry climates, focusing on the relationship between site, geology, soil, locally available materials, materiality, modularity, symbiosis, and the inherent properties of construction materials. This analysis will also address the environmental impact of these architectural systems and natural materials, particularly regarding their carbon footprint and adaptability to climatic conditions. Utilizing advanced computational simulations and performance-based assessments, students will investigate how vernacular design strategies can contribute to sustainable, contextually responsive architectural solutions.

SPECIFIC DESCRIPTION

Throughout civilization, fired clay has taken on various roles, ranging from utilitarian objects to decorative art. Clay is a pliable, malleable material that can undergo plastic deformations, which, when fired, undergoes a transformation and hardens, resulting in ceramics. In architecture, ceramics have a long-standing role as a ubiquitous building material, and its production has evolved throughout the history of architecture, from manual, to industrial, and more recently, digital processes. As a natural material, clay offers a more sustainable approach to design, as opposed to synthetic and environmentally detrimental materials that are often used in buildings and

products. As a bio-receptive material, ceramics can serve as a substrate for the growth of lichens, mosses, and other vegetation, as a means of promoting sustainable design and enhancing biodiversity.

It is evident, in the era of the Anthropocene, that the earth's ecosystems have been drastically impacted and affected by humankind. The results of climate change include global warming, extreme weather conditions, rising sea levels, and other effects threaten our (human) survival as well as other species on the planet. What is our responsibility as architects and designers in addressing our built environment in the age of a climate crisis? This studio will engage in a current movement in architecture and design that seeks alternative methods for manufacturing materials and fabricating architectural systems that promote principles of ecology, sustainability, upcycling, and circularity. This movement is based on a transdisciplinary framework that merges design, science, and technology, to develop nascent architectures that reflect post-human, ecological, and environmentally sensitive qualities. The research and work produced in this studio is intended to prompt new methods for advancing sustainable practices, raising ecological awareness, and promoting an 'ecological tuning' [Morton, 2019].

3D printed vessels, Melendez/Diniz, 2021

SPECIFIC LEARNING GOALS/OUTLINE OF ASSIGNMENTS

Studio:

Critical Analysis:

- Design response to site, context, program, landscape, and ecological systems through drawings, models, data visualizations, and presentations.

Material and Environmental Impact Assessment:

- Integration of clay materials to explore and tes design ideas through 3D printing and robotic fabrication processes, to produce multiple design iterations and versions through physical models, and prototypes.

Research and representation skills:

- Application of drawings, 3D models, and architectural visualizations from conceptual design through all phases of the design process. This includes an understanding of conventional architectural representation methods.

Design Application and Innovation:

- Integration of materials, systems, and fabrication methods to arrive at novel design solutions that contribute to, and expand upon, current architectural research methods.

Design Integration

- The integration of different architectural systems, passive/active environmental systems, structural systems, accessibility requirements, and life cycle assessment.

Computational tools and Data-driven methods:

- Integration of computational design methods, 3D printing and robotic fabrication protocols.

Research Workshop:

Critical Analysis:

- Analyze vernacular architectural strategies in hot, dry climates, using Clay and rammed earth in a relationship to the site, soil classifications, geology, local materials, and construction methods.

- Evaluate the symbiotic relationships between natural systems and built environments.

Material and Environmental Impact Assessment:

- Assess the environmental impact of natural materials and construction systems, emphasizing carbon footprint and adaptability to climate.

Research and representation skills:

- Conduct in-depth research and effectively communicate findings through graphical presentations.
- Develop critical thinking through comparative analysis of case studies.

Design Application and Innovation:

- Translating vernacular design principles into innovative, contextually responsive architectural solutions.
- Advancing Adaptive Systems through Modularity and Material Symbiosis

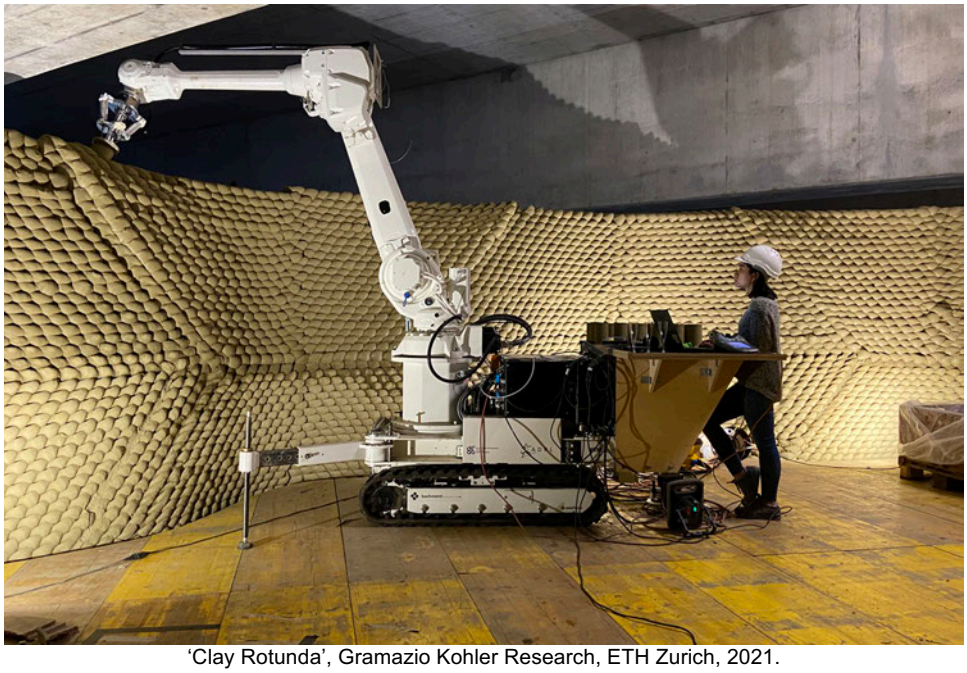
Computational tools and Data-driven methods:

- Advanced computational simulations and performance-based assessments

RESEARCH

Robotics

The studio and research workshop will explore specific techniques of clay 3D printing and robotic fabrication. Some individuals may not see or engage with robots everyday (or ever), but whether we realize it or not, for most of us, robots are part of, and affect, our daily lives. Over the past two decades, Industrial Robots (IRs), originally developed for car manufacturing beginning in the 1960's, have been explored in architecture, primarily for fabrication and assembly. In more recent years, IRs and 3D printing technologies have been used to explore possibilities for additive manufacturing with earth, clay, and cement materials. The research in this advanced studio and research workshop is intended to build upon and advance this discourse while gaining an understanding of various other forms of robotic systems while focusing on the potentials for 3D printing and robotic fabrication to shape materials.



'Clay Rotunda', Gramazio Kohler Research, ETH Zurich, 2021.

Ecology

This studio and research workshop will address the relationship between *environment* and *technology*, by reading and discussing a series of critical texts and case studies from the mid-20th century through today, that have shaped the contemporary architectural discourse exploring the relationship between *ecology* and *computation*. We will seek opportunities to design architectural systems in relation to environmental phenomena; air, water, wind, solar radiation, energy, light, etc. The studio will research, analyze, and implement passive design strategies as a means of promoting sustainable architectures within an age of climate crises. These topics will be explored by focusing on ecological design opportunities using 3D printing and robotic fabrication with clay, a natural soil material that can be shaped and formed in many ways. When fired at high temperatures, the material loses plasticity, becoming a hard, brittle, ceramic. This allows for structural rigidity, porosity, and water retention, providing ceramics with the potential

to be used as bio-receptive materials that can support the growth of some forms of vegetation. In architecture, fired clay, as a building material, has a wide range of uses, from waterproofing buildings to decorating surfaces, in historical and contemporary buildings, and within various cultures throughout the world.

Clay and Ceramic-Based Photosynthetic Biocomposites', HBBE, Assia Stefanova, Ben Bridgens & Rachel Armstrong, **2020.**

PROGRAM

The architectural program consists of developing a small campus of structures within a desert landscape. This includes a series of dwellings and communal spaces for artists, architects, and designers to have temporary live/work and studio spaces, a kitchen/dining hall and communal space, a workshop/fabrication space, a residential hall with multiple rooms, and administration offices. The designs of these structures and strategies for arranging the program will address specific aspects of the desert landscape and climate, through the use of materials, structural systems, and environmental control systems. The projects will focus on the integration of 3D printed and robotically fabricated ceramic architectural assemblies, such as ceramic architectural envelopes that are environmentally and ecologically performative. The ceramic envelopes will be programmed to enhance post-anthropocentric approaches to design that promote living systems and non-human species to thrive, and evolve our understanding of the relationship between nature and cities.

SITE

The studio project will be located in the hot-dry climate and desert landscape of Arizona. The site will be located at the base of the McDowell Mountains in Scottsdale, Arizona, adjacent to Frank Lloyd Wright's Taliesin West. We will analyze site conditions, environmental factors, biotic/abiotic systems, and ecologies to design architectural projects that are site specific to the site, while considering larger environmental impacts and building strategies that could be implemented within other regions of the world with similar landscape and climatic conditions. Site analysis will also require an understanding of the history of the site, as Native American land occupied by Indigenous peoples dating back thousands of years.

Modules

The semester will be broken into four contiguous and interrelated modules that each focus on the Studio topics in relation to architectural design: Research and Analysis, Site and Systems, Schematic Design, and Synthesis. The semester is subdivided in this way to establish a conceptual and theoretical framework for architectural research, experimentation, and build our foundational understanding of each topic, and will then be synthesized into a coherent set of ceramics architectural systems at the end of the semester.

Module 1 (2 weeks) – Research and Analysis

In this module, we will focus on preliminary research, analysis, documentation, and presentations that unpack the topics of clay, ceramics, ecology, computation, robotics. This module will also focus on skill-building assignments that are focused on computational design, 3D printing, and workflows for clay 3D printing and robotic deposition.

Module 2 (2 weeks) – Site and Systems
This phase focuses on site analysis and systems thinking. This includes a focus on the specific site conditions, views, landscape, biotic/abiotic systems, and climate. This also includes understanding and developing systems through geometry, form, morphology, topology, and performance. An emphasis will be placed on the design of components/modules/assemblies and an understanding of part-to-whole relationships.

Module 3 (3 weeks) – Schematic Design
This module will focus on the schematic design phase of the project. This includes conceptual and schematic designs from the overall planning and organization of the campus, schematic design of individual structures, and schematic design of assemblies. This requires exploring conceptual design possibilities through multiple iterations and developing a schematic design through site analysis, environmental analysis, material studies, architectural drawings, massing models, and prototypes. The schematic designs should address topics of circularity, feedback, and closed-loop systems emphasizing ecological design solutions and technological innovation.

Module 4 (6 weeks) – Synthesis and Production
This module will be allocated to synthesizing the research and design through the architectural design proposals and prototyping ceramic architectural assemblies. The intent is to organize and convey the research and findings from the previous modules in a cohesive manner and develop architectural designs through various forms of architectural representations, including drawings, 3D models, photographs, renderings, computational simulations, animations, and videos. This also includes the development of ceramic architectural assemblies and systems through full scale or half scale prototypes.

NOTE: Additional information regarding assignments and deliverables will be provided during each Module.

ROBOT LAB
This studio will require use of the Spitzer Robot Lab. The 'hands-on' nature of this studio requires extensive physical making and prototyping within the studio and lab. Students will be expected to spend time working with the machines in the robot lab. As the Robot Lab is a shared space with faculty and students, each individual is responsible for cleaning-up after themselves and resetting workspaces. The Robot Lab will be open during specific hours throughout the week. An initial overview of safety procedures and rules for use of the Robot Lab will be covered on the first day of classes.

RESEARCH WORKSHOP
A1_Research of the Case Study
Students will research vernacular case studies in hot, dry climates, using natural materials such as clay, rammed earth, in the global south. Students will analyze the Case studies based on the understanding of the regional geology, soil, temperature, humidity, in relationship to the construction materiality, durability, modularity and its social and ecological stewardship.

A2_LCA and Visual Representation of the Research
Students will conduct an in-depth life cycle assessment (LCA) including embodied energy, carbon footprint, and end of life impact of the case study. In this phase, students will be required to visually materialize all their research through comprehensive drawings and additional visualizations.

A3_Climatic Aspects and Simulations
In this phase students will conduct the environmental and climatic analysis through cutting edge Computational simulations, using grasshopper, Autodesk Forma, or CFD simulations.

STUDIO FIELD TRIP
The studio and research workshop is planning to travel to Arizona during week 8 of the semester schedule, from Monday, March 17 to Thursday, March 20. The field trip is intended to provide students with a better understanding of the site, environment, history, architecture, materials, construction methods, ecologies, and landscape in the American Southwest. The schedule (subject to change) includes visiting two historical sites and structures by Native Americans, Casa Grande by the Hohokam, and Montezuma's Castle by the Sinagua, both of which are National Monuments. We will also visit modern architectural sites, Taliesin West by Frank Lloyd Wright, Arcosanti by Paolo Soleri, and the research facility Biosphere 2.

REFERENCES

Throughout the semester in both the studio and research workshop, students will be assigned various texts to read, primarily from the reading list below. Students are expected to read assigned texts, take notes on key points, and be prepared to discuss the readings and contribute to in class discussions.

- Aranda, Benjamin, and Chris Lasch. *Pamphlet Architecture 27: Tooling*. New York, NY: Princeton Architectural Press, 2006.
- Banham, Reyner. *The Architecture of the Well-Tempered Environment*. London: The Architectural Press, 1964, 1984.
- Bennett, Jane. *Vibrant Matter: A Political Ecology of Things*. Durham and London: Duke University Press, 2010.
- Brooks, Rodney A. *Flesh and Machines: How Robots Will Change Us*. New York: Vintage Books, 2002.
- Burry, Mark. *Scripting Cultures: Architectural Design and Programming*. West Sussex, UK: John Wiley & Sons Ltd., 2011.
- Carpo, Mario. *The Second Digital Turn: Design Beyond Intelligence*. MIT Press: Cambridge, MA, 2017.
- Daas, Mahesh, and Andrew John Wit. *Towards a Robotic Architecture*. Novato, California: Applied Research and Design Publishing, 2018.
- Del Signore, Marcella, Nancy Diniz, Frank Melendez (Ed.) *Data, Matter, Design: Strategies in Computational Design*. Routledge: New York, NY, 2021.
- Ficca, Jeremy. “Material Resistance”, in MATTER, (Ed.) Gail Peter Borden and Michael Meredith, Routledge: New York and London, 2012.
- Fure, Adam. “Digital Materiallurgy: On the Productive Force of Deep Codes and Vital Matter”, Association of Computer-Aided Design in Architecture (ACADIA), conference proceedings, 2011.
- Haraway, Donna. “A Cyborg Manifesto”, in the Socialist Review, 1985.
- Heschong, Lisa. *Thermal Delight in Architecture.* Boston, Massachusetts: MIT Press, 1979.
- Jackson, Davina. *Data Cities: How satellites are transforming architecture and design*. London, UK: Lund Humphries, 2018.
- Johnson, Steven. *Emergence: The connected lives of ants, brains, cities, and software*. New York, NY: Scribner, 2001.
- Kurzweil, Ray. *The Age of Spiritual Machines: When Computers Exceed Human Intelligence*. New York, NY: The Penguin Group, 1999.
- Lewis, P., Tsurumaki, M., and Lewis, D. J. *Manual of Biogenic House Sections*. 2022.
- Lewis, P., Tsurumaki, M., and Lewis, D. J. *Manual of Sections*. Book, 2016.
- Lally, Sean and Jessica Young. *Softspace: From a Representation of Form to a Simulation of Space*. Abingdon, Oxon: Routledge, 2007.
- Latour, Bruno. “Love Your Monsters: Why We Must Care for Our Technologies as We Do Our Children.” *The Breakthrough Institute*. February 14, 2012.
- Lechner, N. *Heating, Cooling, and Lighting: Sustainable Design Methods for Architects*. 4th ed. Wiley, 2020.
- Lynn, Greg. “Multiplicitous and Inorganic Bodies,” in *Assemblage* 19 (1992): 32-49.
- Menges, Achim and Sean Alquist, ed. *AD Reader: Computational Design Thinking*. “The Architectural Relevance of Cybernetics” by Gordon Pask. United Kingdom: John Wiley & Sons, Ltd., 2011.
- Morton, Timothy. *Being Ecological*. London, UK: MIT Press, 2019.
- Pask, Gordon, “The Architectural Relevance of Cybernetics”, *AD Reader: Computational Design Thinking*. Editors: Menges, Achim and Sean Alquist, United Kingdom: John Wiley & Sons, Ltd. 2011.
- Pickering, Andrew. *The Cybernetic Brain: Sketches of Another Future*. Chicago: University of Chicago Press, 2010.
- Picone, Antoine. *The Materiality of Architecture*, Minneapolis, MN: The University of Minnesota Press, 2020.
- Pye, David. *The Nature and Art of Workmanship*. London, A & C Black, 1999.
- Rapoport, A. *Architecture Without Architects: A Short Introduction to Non-Pedigreed Architecture*. New York: Museum of Modern Art, 1964.
- Sheil, Bob.(Ed.) *AD Reader: Manufacturing the Bespoke* West Sussex, United Kingdom: John Wiley & Sons Ltd., 2012

- Watson, J. *Lo-TEK: Design by Radical Indigenism*. Taschen, 2020.
- Weinstock, Michael. *The Architecture of Emergence: The Evolution of Form in Nature and Civilization*. West Sussex, UK: John Wiley & Sons, Ltd., 2010.
- Witt, Andrew. "A Machine Epistemology in Architecture: Encapsulated Knowledge and the Instrumentation of Design." *Candide Journal for Architectural Knowledge*, no. 3, 2010, 37-88.

WEEKLY SCHEDULE, M 9:30am-12:20pm, M/TH 2:00-5:20pm
Note: schedule below is subject to revision through the duration of the semester.

		Research Workshop (morning)	Studio (afternoons)
W1			
Mon	01.27	**Grad Studio Lottery @ 2:00pm, Aaron Davis Hall** Followed by first workshop meeting. Intro *Readings assigned*	First Studio Meeting, Module 1 Intro
Th	01.30		**Spitzer Convocation @ 2:00pm, Aaron Davis Hall** **Hour SSA – Draft Community Agreement (in studio) 3-4pm** Studio
W2			
Mon	02.03	Workshop Vernacular Architecture in Hot, Dry Climates A1 Assigned	Studio
Th	02.06		Studio *Sciame Lecture: Sara Zewde "The Aesthetics of Being"*
W3			
Mon	02.10	Workshop Vernacular Architecture and Environmental Aspects	Studio, Module 2 Intro *Sciame Lecture: Joel Sanders "Building Belonging: Equity, Health and Wellbeing in Public Space"*
Th	02.13		Studio
W4			
Mon	02.17	No Classes (College Closed)	
Tu	02.18	Workshop A1 Presentations A2 Assigned	Studio
Th	02.20		Studio *Sciame Lecture: Jack Jen Gieseking "Lesbian Bars/Queer Parties: On How We Can Never Afford Them and Why We Need Them Anyway"*
W5			
Mon	02.24	Workshop Soil Texture Classification Guest Lecture:	Studio, Module 3 Intro
Th	02.27		Studio *Sciame Lecture: Dolores Hayden "Domestic Revolutions, Then and Now"*
W6			
Mon	03.03	Workshop From Harvesting to Construction Representation	Studio

Th	03.06		No Classes (Classes follow a Wednesday Schedule)
W7			
Mon	03.10	Workshop Earth Fibers and Ecology Guest Lecture:	Studio
Th	03.13		**Studio, Mid Review** *Mumford Lecture: Aimi Hamraie "Rethinking Livability"*
W8			
Mon	03.17	Workshop Studio Field Trip	Studio Field Trip
Th	03.20		Studio Field Trip *Sciame Lecture: Chelina Odbert "Situating Justice: The Role of Planning and Design in Shaping a More Equitable Public Realm"*
W9			
Mon	03.24	Workshop Constructed Microclimates, Climatic Aspects and Thermal Envelopes *Reading: Heating, Cooling, Lighting. Lechner. N & Andrasik. P*	Studio, Module 4 Intro **Mid-semester assessments**
Th	03.27		Studio
W10			
Mon	03.31	No Classes	
Th	04.03		Studio *Sciame Lecture: Despina Stratigakos "A Collaborative (Re)turn: Feminist Architectural Historians Join Forces and Get Things Done…Again"*
W11			
Mon	04.07	Workshop Environmental Simulations Sharel Liu	**Grad Sharing Session** Studio
Th	04.10		Studio *Sciame Lecture: Screening of the film "Ada: My Mother the Architect" (2024)*
	04.12 - 04.24	Spring Recess, no classes	
W12			
Mon	04.21	Workshop Presentations (*Online*)	Studio
Th	04.24		Studio
W13			
Mon	04.28	Workshop A3 Crits, synthesize the research	Studio
Th	05.01		Studio
W14			
Mon	05.05	Workshop A3 Crits, synthesize the research	Studio
Th	05.08		Studio

FINAL STUDIO REVIEWS, May 9-15

FINAL EXAMS, May 16-22 – No studio work shall be required during final exams week.

Fri 9 May	Mon 12 May	Tue 13 May	Wed 14 May	Thu 15 May
Foundation	**Foundation**	**Grad Studios**	**Grad Studios**	**Grad Studios**
Williamson (Arch) Kuehl (Arch)	Rivera/Guzman Palacios (MLA)	Topolnytska (Arch) Salcedo (UD)	Melendez (Arch) King (MLA)	Ruppert (Arch)

Th	05.15	Student Portfolios due for: SSA/CCNY Archive, etc. as directed by instructor
M/Tu	05.19 & 05.20	Clean-up Day (all materials, projects, and any other items must be removed from studio—no exceptions)
M/Tu	05.19 & 05.20	End of Semester Assessments (faculty only) – Grad Assessment on 5.20 at 2pm
Tu	05.27	Final Grade Submission Deadline for faculty

TAKE NOTE: ALL personal effects in studios and student lockers to be entirely cleaned out for the summer by Thursday May 22nd.

GRADING/ATTENDANCE POLICIES AND STUDIO CULTURE

Learning Outcomes:

- Application of architecture research methods for testing and evaluating innovative approaches to design. (NAAB PC.5). *Computational and digital fabrication methods will be used as an integral part of the design process to generate, test and evaluate architectural designs and their performance.*
- Development and application of a process for shaping the built environment through design. (NAAB PC.2). *The projects will use computational design and 3D printing techniques, while considering topics of ecological performance that focus on bio-receptivity as a means of promoting biodiversity.*
- Application of methods for integrating multiple factors into a design process, working in at least two scales. (NAAB PC.2). *Design factors will be integrated using drawings and simulations at the building scale, and physical prototypes with details at a 1:1 scale.*
- Development of the ability to make design decisions in the design of a building while integrating the following. (NAAB SC.6)
    - A building envelope system and assembly. *Projects will focus on architectural ceramic components and assemblies.*
    - A primary structural system. *Projects will explore possibilities for 3D printed earthen structures combined with rammed earth, and systems made with local materials.*
    - An environmental control system (passive or active, depending on project context). *Projects will focus on both passive and active systems used in hot/dry climates. These systems will be developed and analyzed using environmental simulation techniques.*
    - Life safely systems*. Projects will focus on egress and ADA accessibility.*
- Development of the ability to consider the outcome of building performance by at least one quantitative measure. (NAAB SC.6). *Environmental performance of the building will be tested and analyzed through daylighting and energy simulations*.

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 to be considered valid.

Community Agreement:

- As noted on the schedule, the professor will make time for an *Hour SSA* session for a supportive open discussion among students.

- Studio members will work *together* to create a community agreement for interacting together over the semester. Definition: "A consensus on what every person in our group needs from each other and commits to each other in order to feel safe, supported, open, productive and trusting… so that we can do our best work." https://www.nationalequityproject.org/tools/developing-community-agreements
- *Hour SSA* will be repeated at the middle of the semester.

Grading Assessment:

- **Deliverables**: Completion of deliverables for each assignment, pin-ups, and presentations and ability to demonstrate a response to feedback from desk-crits.
- **Design Exploration**: Ability to explore and develop designs by working iteratively.
- **Presentations**: Completeness, relevant, verbal, and visual presentation of information provided.
- **Representation**: Ability to produce high quality sketches, drawings, models, 3D models, prototypes, data visualizations, and simulations.
- **Craft**: Level of care, consideration, and quality that demonstrate a high level of craft in physical models, 3D prints, robotic fabrications, and prototypes.
- **Technological Innovation**: Ability to create novel design solutions through technological innovations that advance current research within the field of architecture.
- **Attendance**: Consistent level of preparation and on-time presence for each studio class and scheduled evening lectures.
- **Portfolio**: Completion of final portfolio or collection of studio work as directed by instructor and attendance at all scheduled portfolio related events.

Research Workshop (3 cr)

A1	25%
A2	35%
A3	30%
Participation & Attendance	10%

Studio (6 cr)

Module 1	12.5%
Module 2	12.5%
Module 3	20%
Module 4	40%
Participation & Attendance	10%
Final Portfolio - completion & submission	5%

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 ambition and effort 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. Deadlines are missed. While presentations may be somewhat complete, student has struggled to develop an individual design process and/or is lacking in craft or design resolution.

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

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 and/or work missed due to illness must be explained with a

physician's note.

Grading Scale

LETTER	RANGE
A+	EXCEPTIONAL
A	93-97
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	70-77
F	69 OR BELOW

Notes:
C is the lowest passing grade for M. Arch I and M.S. Arch students. No C- or D grades may be given to graduate students.
Working in teams does not guarantee the same grade for each team member; grades are based on a range of criteria for each individual student.

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

Office Hours:
Each studio/unit faculty member schedules regular office hours over the semester, as posted at the top of the syllabus. If a student needs to speak in private with a studio/unit critic, they should ask or email in advance to request a specific 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 advisor:
Graduate: Hannah Borgeson hborgeson@ccny.cuny.edu

Learning, Teaching, and School Culture Guidelines:
Working collaboratively and respectfully on studio assignments, with and alongside others, is an expectation in studio. Studio culture is an important part of an architectural education, and it extends to expectations for Faculty and the School's Administration as well. Please see the Spitzer School of Architecture Learning, Teaching, and School Culture Guidelines, which can be accessed on the SSA website here: https://ssa.ccny.cuny.edu/about/policies/.

Absence & Lateness:
Arriving more than ten minutes late to class will constitute an absence. Two unexcused absences from Studio (or one from Research Workshop) will result in a whole letter grade deduction from a final grade; more than four from Studio (or two from Research Workshop) 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 discussions.

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.

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 Integrity:
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 as serious an instance of academic dishonesty in this 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, or generated by AI tools *without proper attribution* will result in automatic failure of the entire course.

Wherever possible, AI-produced works are not to be presented as raw, unedited outputs; some layer of critical revision, editing, or iteration is expected. If such tools are used, standard requirements of citation must be met, including: which AI tool was used; what prompt was used to generate the results; and date of access/creation. Since AI tools cannot take responsibility for submitted work or assert conflicts of interest, they cannot meet the requirements for authorship. Even when transparent in disclosing the use of AI tools, authors who use these tools remain responsible for the content of the work produced and are liable for any breach of ethics.

The CCNY Academic Integrity Policy: https://www.ccny.cuny.edu/about/integrity

For citations, the Chicago Manual of Style is recommended:
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). For further information, go to http://www.ccny.cuny.edu/accessability/ or email disabilityservices@ccny.cuny.edu

Health And Wellness Support:
City College's Office of Health and Wellness Services offers free and confidential counseling. Contact: Health and Wellness Services, Marshak Science Building, room J-15: counseling@ccny.cuny.edu.

Gender Based Violence Resources
City College has resources to support you if you have experienced sexual violence, intimate partner/domestic violence, gender-based discrimination, harassment or stalking. For confidential support, you can contact the Student Psychological Counselor: Confidential Advocate at (212) 650-8905 or the Gender Resources Program at (212) 650-8222. If you would like to report sexual misconduct, you can contact the Chief Diversity Officer and Title IX Coordinator, Sheryl Konigsberg, at 212-650-6310 or skonigsberg@ccny.cuny.edu. If there is an emergency on campus, you can call Public Safety at 212-650-777 and off campus call 911.
https://www.ccny.cuny.edu/affirmativeaction

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-Rodriguez:
nsanchez@ccny.cuny.edu

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 accrediting 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.

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

NAAB CRITERIA ADDRESSED (2020 Conditions for Accreditation)

PC.2 Design—how the program instills in students the role of the design process in shaping the built environment and conveys the methods by which design processes integrate multiple factors, in different settings and scales of development, from buildings to cities.

PC.5 Research & Innovation—How the program prepares students to engage and participate in architectural research to test and evaluate innovations in the field.

SC.6 Building Integration— How the program ensures that students develop the ability to make design decisions within architectural projects while demonstrating synthesis of user requirements, regulatory requirements, site conditions, and accessible design, and consideration of the measurable environmental impacts of their design decisions.

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