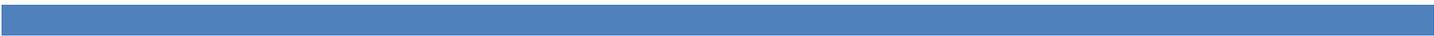


HCAD Electives

Spring 2025

Technology, History/Theory, Graduate, A+D General

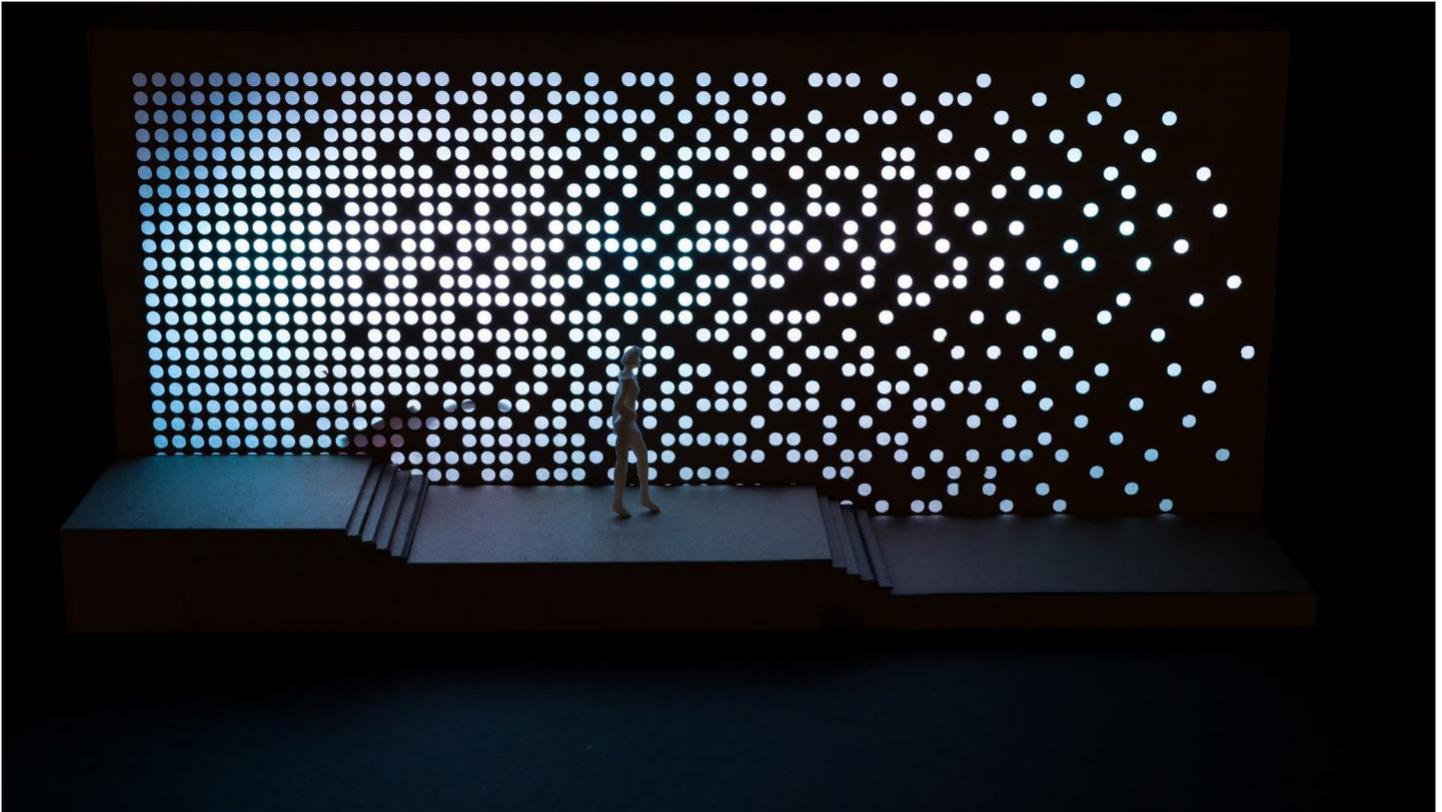


Arch 301 Technology – Digital Modeling and Fabrication

CLASS TIME: Thursdays, 6:00PM , to 9:00PM

INSTRUCTOR: [Vincent Marchetto](#)

TYPE OF COURSE: Technology Elective



Like architecture, digital fabrication sits at the intersection of art and science. It requires creative thinking to imagine complex geometry and an engineer's mind to bring the idea into reality. When creativity and engineering join forces, nothing is impossible.

This course will give students practical skills that will allow them to create digital CAD (computer-aided design) data in Rhino that can be fed directly to CAM (computer-aided manufacturing) equipment. The assignments will give students experience with 3D printers, CNC mills, and laser cutters at NJIT's Makerspace.

The first half of the course will consist of short assignments meant to introduce students to different digital fabrication techniques. The second half of the course will be a final assignment allowing students more time to develop a design before going forward with production. Students will make a mixed-medium model incorporating LED lighting. This introduces students to the complications of producing parts that connect and house electrical components.

Arch 317 Technology – Advanced Architectural Graphics

CLASS TIME: TF 1-2:20pm

INSTRUCTOR: Cleve Harp

TYPE OF COURSE: Technology Elective

Prerequisites: ARCH 296 or ARCH 264. Gives students advanced techniques for architectural expression in traditional media. A basic knowledge of drawing methods, media, materials and projection techniques is assumed.

<https://architizer.com/projects/skyloft/>

Arch 337 Technology - BUILDING INFORMATION MODELING

CLASS TIME: Mondays, 6:00PM to 8:50PM

INSTRUCTOR: [Cameron Clark](#)

TYPE OF COURSE: TECHNOLOGY ELECTIVE

ARCH 337. Building Information Modeling. 3 credits, 3 contact hours (3;0;0).

Prerequisites: [ARCH 156](#) or [AD 112](#).

This course explores both technical and philosophical approaches to the use of the computer in architectural analysis, design development, information management, and document delivery. Autodesk Building Systems and Autodesk Revit Building will be used for 3D modeling and 2D documentation employing a systems-approach framework for spatial allocation, energy analysis, and structural considerations. The workings of the foundational information databases of the respective software will be thoroughly explored. Projects requirements will include building program resolution, solar analysis, asset scheduling, document layout, and design visualization. Proficiency with Autodesk Autocad (2D) and understanding of general CAD principles are required prerequisites.

Arch 337 Technology – BUILDING INFORMATION MODELING

CLASS TIME: Wednesday 6-8:50pm

INSTRUCTOR: Brandon Warshofsky

TYPE OF COURSE: Technology Elective

Prerequisites: ARCH 156 or AD 112. This course explores both technical and philosophical approaches to the use of the computer in architectural analysis, design development, information management, and document delivery. Autodesk Building Systems and Autodesk Revit Building will be used for 3D modeling and 2D documentation employing a systems-approach framework for spatial allocation, energy analysis, and structural considerations. The workings of the foundational information databases of the respective software will be thoroughly explored. Projects requirements will include building program resolution, solar analysis, asset scheduling, document layout, and design visualization. Proficiency with Autodesk Autocad (2D) and understanding of general CAD principles are required prerequisites.

Arch 337 Technology – BUILDING INFORMATION MODELING

CLASS TIME: Tuesdays, 6:00PM to 8:50PM

INSTRUCTOR: [Hayyatu-deen Ikharo](#)

TYPE OF COURSE: Technology Elective

This course introduces students to building information modeling (BIM) using Autodesk Revit within the context of the architecture industry. Students will learn how to design, create, and manage digital representations of both the physical and functional characteristics of spaces. The course covers fundamental Revit tools and techniques, including modeling, documentation, and collaboration.

Upon completing the course, students will be proficient in creating 3D computer models according to established industry standards. They will understand the transition from 2D to 3D representations and gain the skills to analyze and extract building information data from a Revit model. At the end of the course, students will be able to:

- Create building models employing structural grids and support systems.
- Design and integrate essential building components, including levels, floors, and roofs.
- Utilize parametric modeling techniques to enhance 3D design capabilities.
- Incorporate mechanical, electrical, and plumbing (MEP) systems into building models.
- Extract and interpret data from site topography to inform design decisions.
- Produce quality building documentation and specifications.
- Generate high-quality, annotated building section drawings and renderings.

ARCH 361 Technology - Adaptive Paradigms in Architecture

Instructor: [Vera Parlac](mailto:parlac@njit.edu), Associate Professor, parlac@njit.edu

Type of Course: Technology Elective



Lewis Tsurumaki Lewis, Water Proving Ground



Enric Ruiz Geli, Media TIC building, Barcelona

Description

This course focuses on the paradigms of adaptation in architecture and urbanism. It will introduce students to various scales of adaptation and provide an overview of visionary proposals as well as built projects. Through a series of lectures, discussions, self-directed research, and a class project the course will equip students with a critical overview of the challenges and opportunities of adaptation within the built environment.

Students will be encouraged to formulate their own position towards adaptation that will be expressed in the class project (groups of two or three).

Course Learning Outcomes

This course will lead students to achieve the following competencies:

1. Learn about the scale and range of adaptive projects
2. Understand key adaptation concepts
3. Understand the approaches to adaptive projects and their social, economic, and political context.
4. Engage issues of resilient design, planetary ecology, and climate change.

Arch 432 Technology – P3 POST PROCESSING PRESENTATION

CLASS TIME: Mondays, 6:00PM to 9:00PM

INSTRUCTOR: [Dincer Savaskan](#)

TYPE OF COURSE: Technology Elective

Throughout history, art has encompassed much more than a literal or photorealistic interpretation of reality. Art has captured narratives, depicted importance, skewed perspectives (or eschewed completely), subverted reality and transcended mediums. Representation of Architecture shares the similar aspirations. In this course, we will study methods of representation which purposefully avoid the literal, to create room for exploration of the subjective. We will consider how to represent Architecture (with a capital A) as Art. We will engage with both traditional and contemporary methods of form-making and image-finding, explore the work and processes of Artists and reflect on Architecture and Art in theory.

Course focuses on instructing series of art tools and design principles such as hand drawing techniques, perspective studies, color theory, tonal value studies, scenography/ composition as well as contemporary Architectural/Art theories such as phenomenology, organic/inorganic forms, topological architecture, new materialism, Object Oriented Ontology and so on. These studies will be explored through various mediums such as sketching, painting (with acrylics), collage making, diagramming, film making and model making.

Students are challenged with in class hands-on experimentations, weekly assignments and final projects. If you are willing to explore your creativity, improve your “eye”, have a glimpse of other creative disciplines and would like to commit to it weekly this class is for you.



Dynamic mark making study. Group class assignment. Acrylic paint.

Arch 461 Technology– RESILIENT STRUCTURAL DESIGN

CLASS TIME: Tuesdays, Fridays, 1:00 pm to 2:20 pm

INSTRUCTOR: [Rima Taher](#), PhD, PE, Senior University Lecturer

TYPE OF COURSE: Technology Elective

Damages from hurricanes, earthquakes and floods amount to many billions of dollars in the US and around the world every year. These hazards also claim the lives of many people in the affected areas. The quality of building design and construction for these hazards can be improved, and building professionals have an important role to play by improving their knowledge in the field, and by designing better and safer buildings and structures.

This course discusses the topic of structural building design and construction for various hazards such as earthquakes, high winds/hurricanes, and floods. Each type of hazard is discussed separately. The structural design process is outlined based on the requirements of the latest codes and standards. The design and construction issues are addressed and some recommendations for better design and construction in hazard areas are given. Design examples are used to illustrate the various design methods, and students apply the knowledge acquired in this course to a practical building design project. Students are also introduced to some of the standard procedures used in the safety assessment and evaluation of damaged buildings in the aftermath of hurricanes and earthquakes.

Arch 483-004 Technology - Community Revitalization through Land Remediation

CLASS TIME: Wed 6-9PM In person

INSTRUCTOR: Robert Hutchinson rsh2@NJIT.edu

TYPE OF COURSE: Technology Elective

This course introduces students to the process of transforming legacy industrial and vacant commercial properties into community assets. Viewing land remediation and redevelopment through the lens of the triple bottom line, the students will explore ways in which transformation of these properties can improve environmental conditions, catalyze economic development, and create more socially equitable and resilient communities. Students will interact with local government officials, real estate developers, environmental consultants, attorneys, and community planners. Course topics will include environmental laws and regulations, real estate development, cleaning up contaminated properties, community engagement, environmental justice, gentrification, and transformative land uses.

Arch 483/662 Technology– Special Topics: Architecture and Artificial Intelligence

CLASS TIME: Tuesdays, Fridays, 1:00PM to 2:20PM

INSTRUCTOR: [Branko Kolarevic](#)

TYPE OF COURSE: Technical/Graduate Elective

Description

Recent advances in artificial intelligence (AI) offer new ways for architects to approach design projects by enabling them to generate new ideas, optimize design solutions, and enhance the overall quality of their work. This course will explore how various AI tools can augment the design processes, from conceptual design and ambient simulation to performance prediction, by integrating cutting-edge technology such as text-to-image (T2I) generators, machine learning (ML), and natural language processing (NLP).

Learning Outcomes

This elective course is designed to give students an exposure to and an understanding of the potential use of emerging artificial intelligence (AI) techniques in architectural design for the generation, analysis and representation of design content. The primary objective is to sharpen critical awareness about the emerging generative AI technologies and the reasons for careful and deliberate methods of design generation and representation of ideas using available AI tools. Students who complete this elective course will have a basic knowledge of various currently available AI tools and techniques and their use in architectural design.

Instructional Methodology

The first half of the course has a seminar format, whereby each topic is introduced in a lecture followed by a discussion of selected readings. There will be also AI software demonstrations. The second half will have a workshop format in which an AI-related proposal (approved by the instructor) will be researched through a 4,000-word paper or an exploratory term project that could result in a process, technique and/or product that will be presented at the end. In the second half, there will be regular weekly critiques of the work-in-progress and periodical group reviews.

Though software demonstrations will be given, this elective is not intended as a "how to" course, but rather as an exploration of the conceptual, analytical, representational, and/or practical implications of the use of AI tools in design. It is expected that students will complete the software tutorials on their own, in order to learn the intricacies of various programs that will be introduced.

Term Project and Assignments

There will be regular weekly reading assignments and discussions in the first half of the term. In addition, several assignments will be focused on the use of specific AI tools and their use in the development, analysis and/or representation of design ideas. The results of each assignment will be reviewed and discussed in group sessions.

As a term project, each student will pursue some of the emerging trajectories that were broadly outlined in the first half of the course, and either (a) write a research paper or (b) conduct an exploratory, speculative project that would engage a particular technique or technology and would result in a process and/or product that would be analyzed and summarized retrospectively.

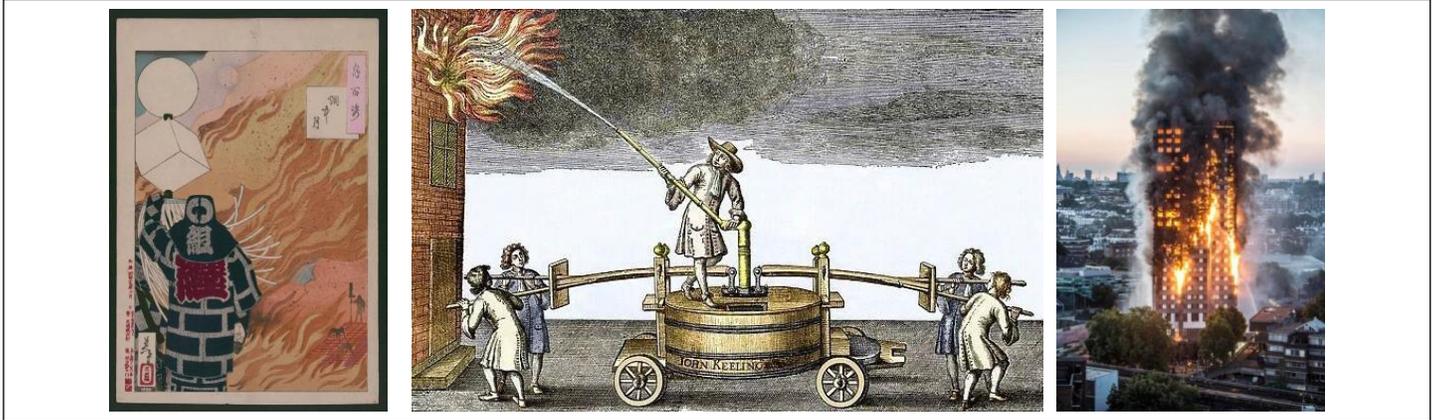
Arch 483 Technology – LIFE SAFETY ISSUES IN CONTEMPORARY BUILDINGS

CLASS TIME: Tuesdays, Fridays, 2:30PM to 3:50PM

INSTRUCTOR: [Judy K Choi RA, AIA, LEED AP](#)

TYPE OF COURSE: Technology Elective

ARCH 483 Life Safety Issues in Contemporary Buildings



Course Description: A variety of life safety and comfort situations are studied in different building types. Topics include building evacuation, compartmentalizing, fire fighting and suppression, evaluation and testing of new building materials and systems, systems control and management. Special attention is placed on multi-use, high-density buildings.

The class will be a comprehensive exploration of life safety issues, combining theoretical knowledge of codes with practical applications through historic and current case studies. Lessons will be structured around lectures, films, group discussion sessions, quizzes, and a final project, for a well-rounded learning experience.

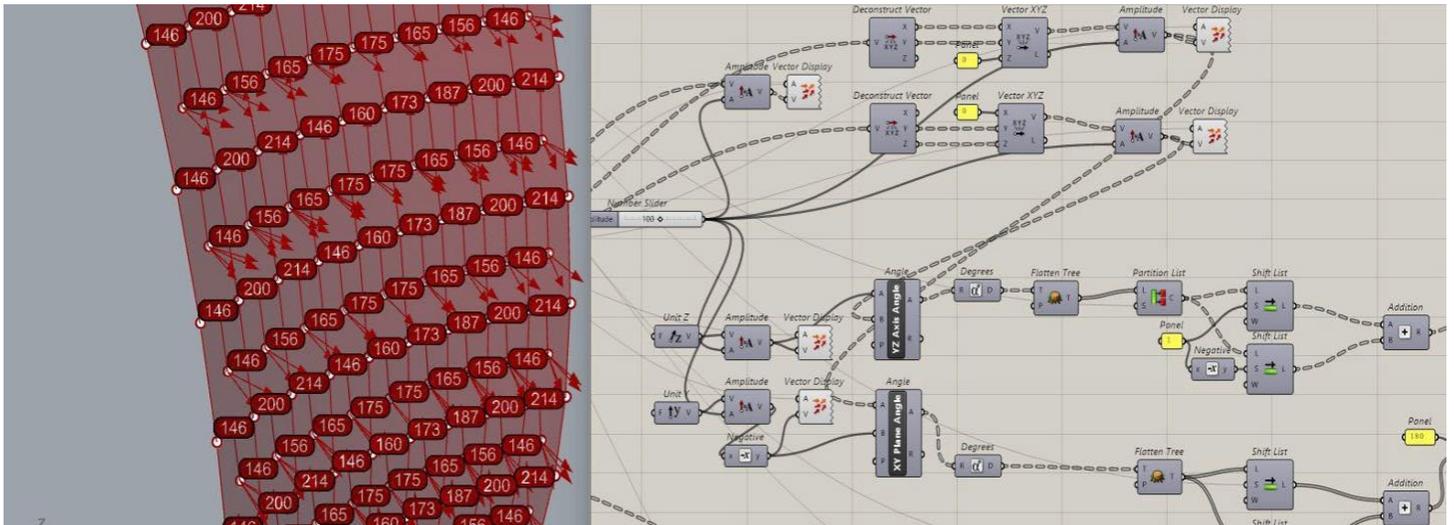
Arch 483 Technology– BUILDING ENCLOSURE DESIGN DIGITAL WORKFLOWS

CLASS TIME: Thursdays, 6:00PM to 8:50PM

INSTRUCTOR: [Jun Schick Lee](#)

TYPE OF COURSE: Technology Elective, 3 credits, 3 contact hours (3;0;0)

Prerequisites: ARCH 224, ARCH 304, ARCH 314 or (ARCH 323, ARCH 304, ARCH 327).



Today's façade design has complex geometry. AEC Industries (Architectural, Engineering, and Construction) have developed computational technology in design but also engineering and fabrication fields. BIM and parametric design platforms have developed a complex façade design to buildable drawing format and digital file for fabricating the building materials. New technology allows various unique façade modularization strategies of complex building envelopes. Rather than one typical repetitive façade module, we produce each unique different façade module of thousands of various types in today's glazing façade industry. Each parametric information can create a large system platform which can interact among others to generate the sophisticated shape of building enclosure in an efficient manner.

This course would utilize Rhino and Grasshopper software. The basic understanding and skillset of Rhino software is recommended. During the course, we would focus on Grasshopper's analytical features and produce parametric 2D- and 3D-modelings to add more technical details. During the class, we would try to research potential parametric features and create an interactive relationship to establish a system which can produce technical models to develop the original design to be engineered and buildable.

The first half of each course would be allocated for the façade basic concept theory which would be the technical knowledge basis of parametric modeling. This first part of building enclosure theory course would consist of in-depth introduction of façade principle, engineering basis, fabrication process, and installation/ field logistic procedure. Each student can have an overall basic understanding of the building enclosure system, especially for curtain walls, window walls and fenestration. The other remaining half of each class would be hands-on 2D- and 3D-modeling class by exploring Rhino and Grasshopper software. Each student can participate in the class by using Rhino and Grasshopper software during the class and follow each step of parametric modeling. The overall goal of this class is to understand the façade basic principles and establish basis of parametric modeling concepts.

ARCH 483 Technology– ST: Entrepreneurial Leadership in Architecture Practice

CLASS TIME: Wednesdays, 6:00 PM to 8:50 PM

INSTRUCTOR: [Nidhip Mehta](#)

TYPE OF COURSE: Technology Elective



Times have changed. (Photo credit: "19 vintage pictures showing how people worked when there was no Autocad" from deMilked.com)

This course will help students to develop an awareness of the particular values of entrepreneurship and leadership in the architectural profession. It is meant to supplement the learning from core Professional Practice courses as well as the course in Business of Architecture. The course aims to engender the idea of an "entrepreneurial mindset" that exists even when a professional works as an employee for another architect. It is not limited to leadership in one's own practice, but helps students understand how they can achieve positions of leadership and responsibility in any organization where they may be employed. Skills that will be developed include: learning to pitch ideas, navigating uncertainty, managing teams and personalities, and developing a practice defined by personal design identity.

The structure of the course will NOT be lecture-based. Rather, the class sessions will revolve around storytelling, sharing of experiences, discussion, debate, role-playing, and live scenario case studies. Assignments will reflect real-world tasks and scenarios that architects routinely encounter in practice, including office/studio planning, team building, recruiting, branding, time management, personnel management, crisis management, and written and verbal communication.

Arch 483 Technology – ST: From Waste to Building Material

CLASS TIME: Monday, Thursday, 8:30AM to 9:50AM

INSTRUCTOR: Moises B. Quintero Morales

TYPE OF COURSE: 400: Technology Elective

Introduction:

The study, design, and construction of the built environment inevitably leads to significant repercussions, often manifesting as waste, overconsumption, and environmental contamination. As designers, future architects, and stewards of these spaces, we share the responsibility for these impacts. It is critical that we carefully consider the entire lifecycle of materials, understanding their potential effects on both the environment and the communities we build for.

This course investigates common waste materials and explores how design can offer novel uses for them. By rethinking waste, we not only reduce the amount that enters our landfills and ecosystems but also create opportunities for cost reduction and entrepreneurial ventures.

Wherever possible, we will focus on local materials and relevant data to make informed decisions. The goal of this studio is to challenge the definition of waste, examining what it can become once it outlives its primary use.

Students will begin by identifying the sources of waste in their everyday lives, selecting one to explore deeply. From there, they will identify potential users and leverage their skills—whether in computation, fabrication, or design—to propose an alternative future for that waste. The course will emphasize developing simple post-processing systems that give materials a second life, contributing to a more sustainable built environment.

Fabrication:

Students are expected to utilize the fabrication facilities available at NJIT to produce prototypes, mockups, and other materials that will inform their design outcomes. Emphasis will be placed on creating a simple, replicable process that considers accessibility. The use of non-toxic, sustainable materials is highly encouraged to align with the course's environmental focus.

Students should also consider additional factors throughout the design process, such as: Who is building it? Where is it being built? And how long do they have to build it? These sub-contexts are crucial for shaping solutions that are not only sustainable but also practical and adaptable in real-world scenarios.

Learning Outcomes:

Students will actively engage with their communities to identify local needs and potential users for their projects. Through this process, they will develop skills such as research, interviewing, decision-making, and UI/UX design, alongside community involvement and fabrication techniques.

The most valuable takeaway from this course is the understanding that the world is full of opportunities for innovative solutions—if you keep your eyes open. By fostering a mindset of critical observation and creativity, students will leave with the tools and perspective necessary to address real-world challenges through design.

ARCH 483 – Public Interest Design/Build: METHODS FOR BUILDING COMMUNITY

CLASS TIME: Mon/Thurs - 10:00- 11:20

INSTRUCTOR:

[Erin Pellegrino](mailto:pellegrini@njit.edu) pellegrini@njit.edu [Charlie Firestone](mailto:cmf38@njit.edu) cmf38@njit.edu

TYPE OF COURSE: **Honors and Dean's Scholar Elective**



The “Public Interest Design/Build” course is predicated on the belief that designing, making, and thinking are intrinsically interrelated. It offers students a tangible experience to translate their designs into physical structures. The course not only enriches the students’ understanding of construction processes, but it also establishes a deep-rooted connection to the Newark community. Students will be tasked with identifying areas within the city where design can contribute meaningfully to inhabitation of the public realm. Students will design interventions for these areas, prototype physical investigations and fabricate select components for installation.

Service Learning and Project-Based Learning: This course is a service-learning based curriculum, with students directly engaging with the Newark community. Through hands-on experiences, students will forge connections between their architectural service, academic curriculum, and their role in community engagement. The course promotes structured reflections, encouraging students to discern the impacts of their design interventions on the community.

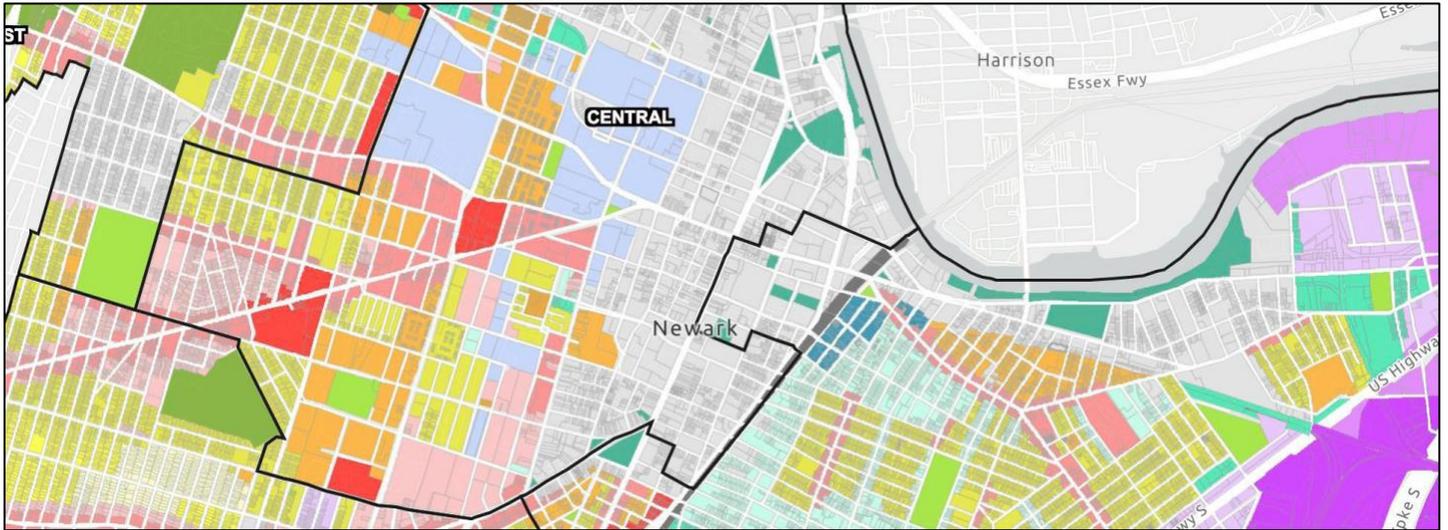
ARCH 483 ST Technology – INTEGRATION OF BUILDING AND SITE

CLASS TIME: In-Person, Tuesdays & Fridays, 10:00 AM to 11:20 AM

INSTRUCTOR: Wassim Y. Nader, PE, CFM
wyn2@njit.edu

TYPE OF COURSE: Technology

Elective



Source: Newark Zoning Map

This interactive course examines the life of a project from initial site evaluation through site development and permitting. Students learn the intricacy of site development and positioning of buildings relative to site regulations and restrictions, including environmental restrictions. With a focus on sustainability, students will design a site and experience the process of contemporary development in urban environments.

Arch 530 History/Theory – METHODS OF ARCH RESEARCH

CLASS TIME: Tuesdays 2:30PM to 5:20PM

INSTRUCTOR: [Melissa Marsh](#)

TYPE OF COURSE: HISTORY THEORY ELECTIVE



Prerequisite: [ARCH 211](#). This course examines the essential methodologies of architectural research directed towards advanced undergraduates in the professional program. Methods of research will include those related to qualitative and quantitative analysis, historical investigations, critical interpretation, archival and field work, and diverse approaches to design-as-research.

Why Research Matters: In the dynamic world of architecture and interior design, design solutions must resonate with users and address broader social, cultural, and environmental contexts. Design that responds to real-world needs and challenges is more effective, sustainable, and impactful. This course enables students to move beyond intuition and creativity alone, using rigorous research methodologies to enhance the depth and relevance of their designs. With a practical focus, the course will also help students identify where research requirements may fall outside of the field of architecture and ways of collaborating with professionals in the fields of social science, psychology, anthropology, neuroscience, etc. This course equips students to:

- **Ground** designs in evidence by understanding user needs through data.
- **Validate** creative decisions with research.
- **Design** user-centered spaces that enhance well-being and productivity.
- **Ensure** inclusivity by addressing diverse community needs.
- **Practice** ethical research and responsible data use.
- **Stand out** by integrating strong research skills into their design practice.

Arch 531 History/Theory –HISTORY OF MODERN ARCHITECTURE

CLASS TIME: Tuesdays, Fridays, 10:00AM to 11:20AM

INSTRUCTOR: [Ersin Altin](#)

TYPE OF COURSE: History Theory Elective



Prerequisites: [ARCH 211](#). This course examines the major tendencies of architectural practice and theory in the 20th century. Formal and cultural evolution of modernism is considered in relation to social, political, economic, and technological developments that informed its key buildings, projects, and texts.

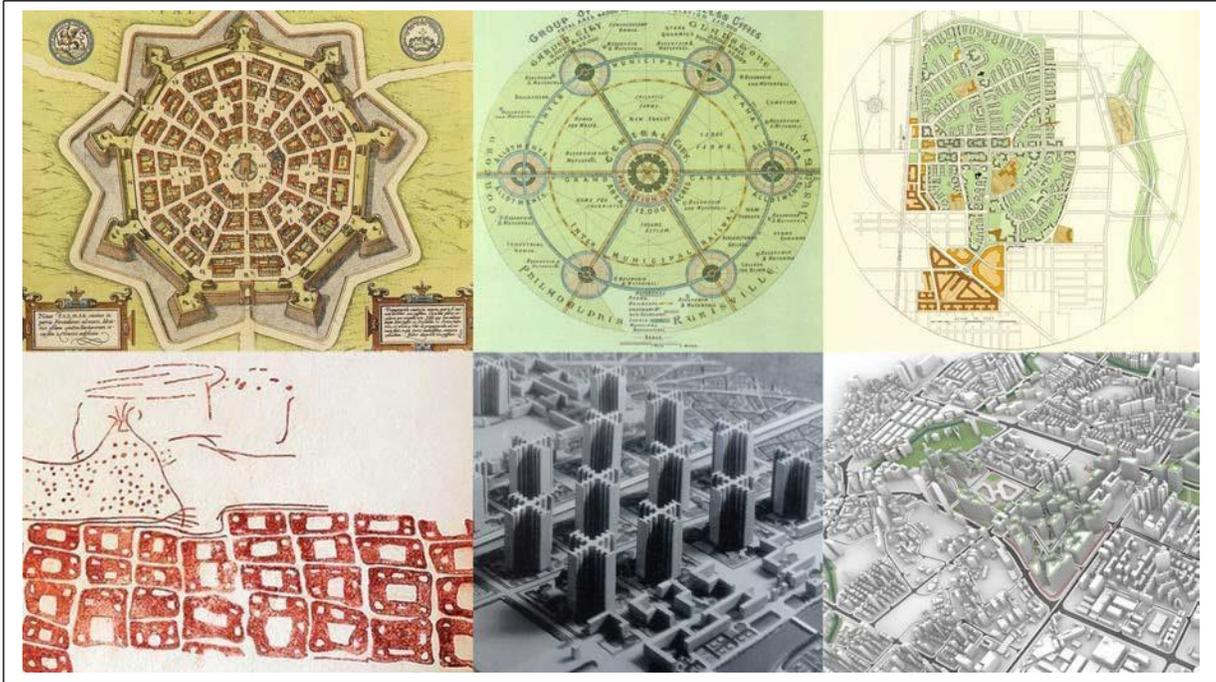
Students will learn about and think critically on the perception, utilization, and evolutionary process of modern architecture over time, as well as its relationship with other fields such as art, design, and engineering. Through the analysis of landmark structures and influential architects, students will gain insight into the interplay between architectural innovation and broader cultural trends. Although the emphasis will be on modern architecture, urbanism, and the built environment—and how these varied over time and in different contexts—the course aims to develop a more holistic and global approach that ties modern practices to older and other architectural traditions. This will help (re)define modern architecture and underscore and challenge its Western-centric history (which is tied to the Industrial Revolution and its legacy) by diversifying sources and developing a global perspective.

Arch 534 History/Theory –ASPECTS OF URBAN + SUBURBAN FORM

CLASS TIME: Tuesdays, Fridays, 8:30AM to 9:50AM

INSTRUCTOR: [Ersin Altin](#)

TYPE OF COURSE: History Theory Elective



Prerequisites: [ARCH 211](#) or ([ARCH 381](#) and [ARCH 382](#)). This course examines major forms and patterns of urban and suburban development under modernity, focusing on the industrial and metropolis and its global influence. Changing concepts of the central city and the metropolitan periphery are examined in relation to cultural, socio-economic, and political developments.

Students will engage with various theories of sub/urbanization, considering how factors such as globalization, migration, and technological innovation have transformed cityscapes. *Aspects of Urban + Suburban Form* aims to examine the meanings behind specific sub/urban elements as well as their physical, operational, and functional aspects within the broader context of the city. Consequently, we will consider specific streets and squares within the overall urban and/or suburban structure.

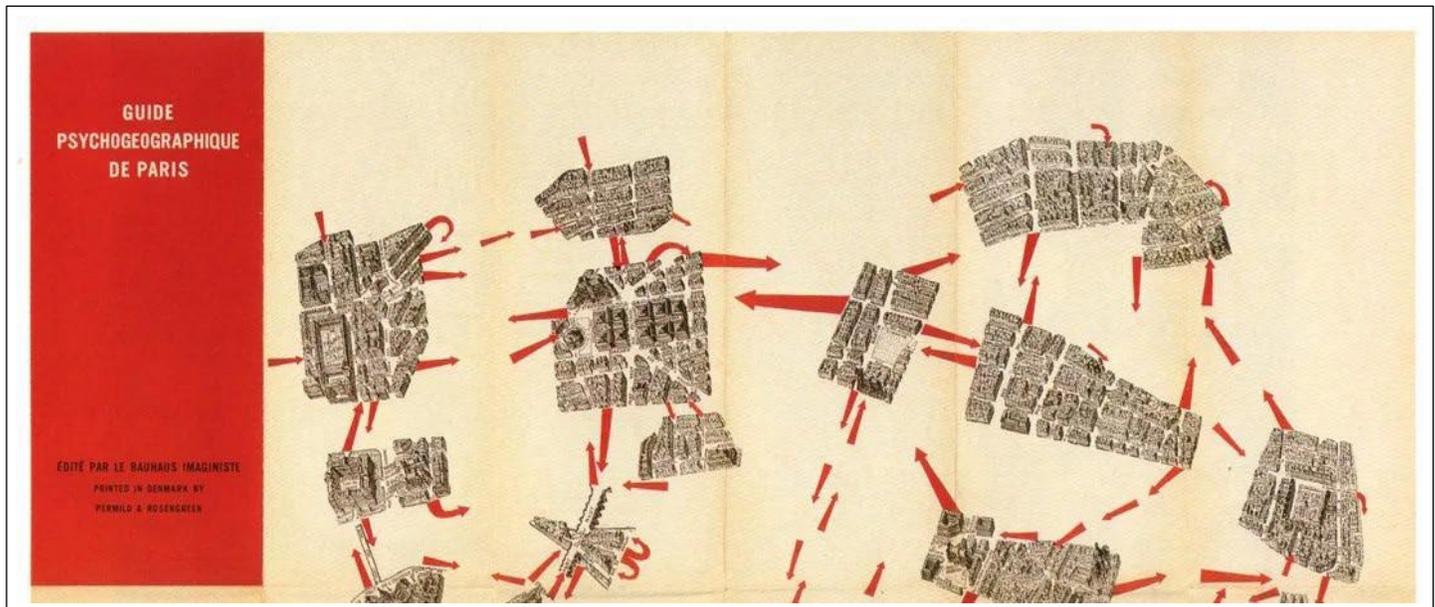
The class includes both theoretical and practical components. While lectures and in-class discussions provide a general framework for understanding the evolution of sub/urban development over time, design exercises aim to raise students' awareness of the actors within urban environments and the dynamics that shape their changing and active forms, helping students develop a critical approach.

Arch 535 History/Theory . History of Architectural Ideas

CLASS TIME: Mondays, Thursdays, 10:00AM to 11:20AM

INSTRUCTOR: [ANDREA MOLINA CUADRO](#)

TYPE OF COURSE: History/Theory Elective



This course discusses seminal architectural ideas in the Western world from Vitruvius to the present day. Organized more thematically than chronologically, the course explores key questions, problems and concerns that have historically shaped architectural discourse alongside its means of reproduction. We will focus on moments that have shifted the direction of architectural thinking, theory and criticism, analyzing the relationship between ideas and formats, understanding “medium as a message” as well. Therefore, when looking at materials produced by architectural thinkers and designers we will pay special attention to their disciplinary and historical contexts, the means of dissemination of their ideas, and their influence in shaping the present day. Throughout this detailed analysis, we will reveal the role architecture plays in the construction of social practices, human subjectivities, and technologies of power to question which premises hold relevance today and which should be challenged.

Thematically, the course will explore the following topics: 1. The Classical Treatise: Rediscovering Vitruvius; 2. The Invention of Architectural Theory (and Criticism); 3. From Treatises to Manifestos: “Towards a New Architecture”; 4. Architecture, Technology, and the Control of the Body; 5. Architecture without Architects; 6. Reinventing Architecture Again: Postmodern Historicities; 7. Urban Growth: Globalization, Land, and Territory; 8. Domesticity and Labor: “Gender and the City”; 9. Architecture (and) Media; 10. Theories of Environment: Nature, Landscape, Ecology; 11. Sacrifice Zones: Extractivism, Race, and War.

Readings will cover influential figures in architectural theory, such as Vitruvius, Leone Battista Alberti, Marc-Antoine Laugier, Joseph Rykwert, John Ruskin, Eugène-Emmanuel Viollet-le-Duc, Gottfried Semper, William Morris, Hermann Muthesius, Henry van de Velde, Le Corbusier, Sigfried Giedion, Walter Gropius, Manfredo Tafuri, Ulrich Conrads, Robert Venturi, Denise Scott Brown, Jane Jacobs, Kevin Lynch, Peter Eisenman, Bernard Tschumi, Rem Koolhaas, Superstudio, Buckminster Fuller, Kisho Kurokawa, Mark Wigley, Beatriz Colomina, Guy Debord, Jonathan Crary, Donna Haraway, Bruno Latour, Elizabeth Grosz, Henri Lefebvre, Andrés Jaque, Reinhold Martin, Timothy Morton, and Mabel O. Wilson among others.

Arch 536 History/Theory – LANDSCAPE AND AMERICAN CULTURE

CLASS TIME: Mondays, 10:00 AM - 11:20 AM

INSTRUCTOR: Marcus Wilford

TYPE OF COURSE: History/Theory Elective



(David Hockney, A Bigger Splash, 1967)

As in architecture, the parallel discipline of landscape architecture involves artistic intention set in conjunction with utilitarian concerns. As such, designs on the land include the integration of the arts and sciences of human culture with nature. Discusses landscape as a manifestation of American culture.

(Additional Texts)

Landscape and architecture are political forces spanning tangible and abstract categories, including design, aesthetics, infrastructure, and culture. The course opens with an introduction to the indigenous built environments of Pre-Colonial America and the landscape infrastructures developed during this period. This foundation sets the stage for a critical analysis of American colonialism, exploring land parceling through the historical narratives of frontierism and Manifest Destiny. We then survey the morphology of the American landscape across rural, urban, and suburban contexts, as well as transformations in industrial and post-industrial spaces.

The course also examines everyday American built environments and their role in shaping social life, culture, and subcultures over time. By studying landscape as material culture, we construct a comprehensive history and theory of both institutional and alternative approaches to analyzing the lives and spaces of ordinary Americans. Finally, we investigate the influence of pop culture on the American landscape, particularly how the commodification of land has shaped leisure, tourism, and concepts of 'free time.'

Arch 543 Technology - LIGHTING

ARCH543	LIGHTING	M	6:00 PM - 8:50 PM
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CLASS TIME: Mondays 6PM to 8:50PM

INSTRUCTOR: Manuel (Manny) Feris

TYPE OF COURSE: Technology Elective

Scope: This elective explores light (both electric lighting and daylight) as a design tool and as a medium. The goal is for each student to acquire a familiarity and working knowledge of the basic concepts and tools of lighting design, lighting/lamp/load types, lighting products/fixtures, lighting controls, the lighting industry, applicable codes and lighting sustainability.

The class will review resources used by interior designers, architects, engineers and lighting designers to actually create and specify lighting solutions that enhance and complement their designs of residential, commercial, institutional and outdoor architectural environments.

Text: Reference: Illuminating Engineering Society/North America Handbooks & Reference Library; and relevant links, PDF documents and handouts assigned by Instructor.

Arch 546 Technology – Designing and Optimizing the Building Enclosure

CLASS TIME: Tuesdays, Fridays, 1:00PM to 2:20PM

INSTRUCTOR: [Won Hee Ko](#)

TYPE OF COURSE: Technology Elective



This course explores the building envelope—the interface between a building’s interior and the external environment. Students will study and design high -performance enclosures, emphasizing energy exchange, thermal dynamics, light, and life cycle costs. The building envelope is a key architectural element that influences a building's aesthetic while critically impacting building performance and occupant experience. In this seminar, students will delve into envelope system design, which often receives limited focus in standard design studios.

The course includes weekly lectures on various aspects of the building envelope, including climate impact, thermal comfort, daylighting and views, materials and aesthetics, structural systems and fabrication. Tutorials on relevant building simulation tools, such as ClimateStudio, Grasshopper -Ladybug, WINDOW, THERM, and CONFEN, are also provided.

In the latter part of the semester, students will work on a small building envelope design project that considers environmental impact, facade geometry, and material properties, alongside occupant experience. Through project-based learning, students will gain practical skills in facade design, assembly, and material selection with an emphasis on optimizing building performance and indoor environmental quality.

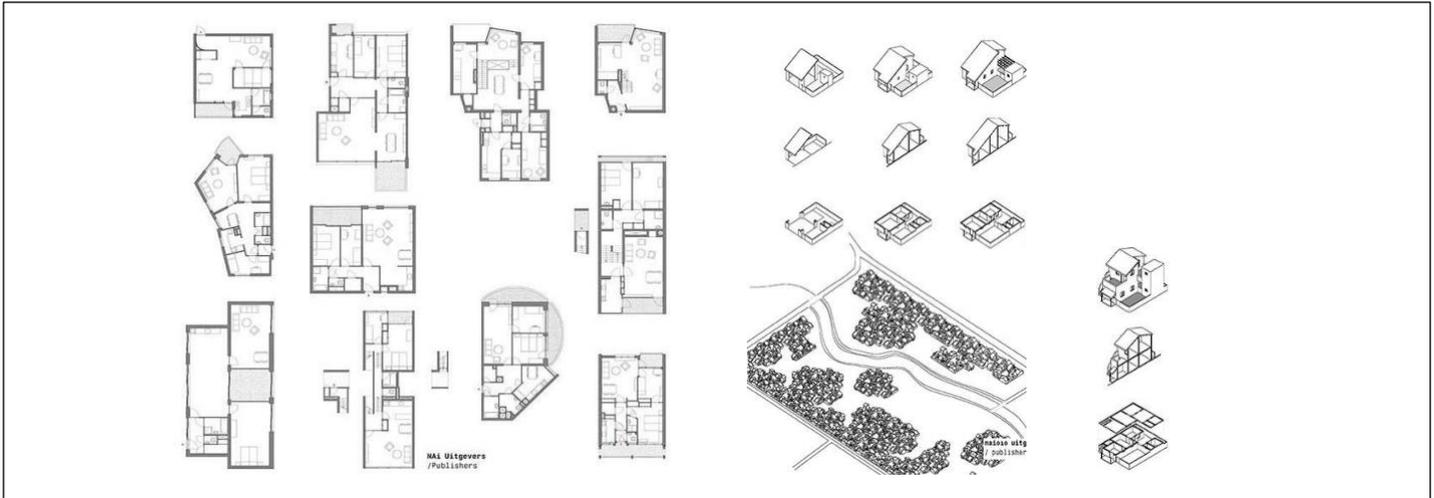
By the course’s end, students will develop a critical understanding of performance challenges in facade design, learning to integrate energy optimization strategies for occupant well -being. Proficiency with Rhinoceros 3D is required, and prior experience with Grasshopper is recommended.

Arch 557 History/Theory – PROBLEMS IN MODERN HOUSING

CLASS TIME: Mondays, 6:00PM to 8:50PM

INSTRUCTOR: [Viktoria Diskina](#)

TYPE OF COURSE: HISTORY THEORY ELECTIVE



Attempts to provide decent, affordable and well-designed housing for broad segments of society are examined. Dwelling is examined through analysis of proto-typical design solutions in urban environments. This course will explore the cause-and-effect relationship of modern housing development with those various ever-changing parameters, including cultural and socio-economic processes in the world. To do that we will, first, look at how the housing discourse evolved from its origins to present time and, then, discuss emerging societal trends together with the range of possible design, and construction technology responses.

Ever since the end of the industrial revolution, when “housing” became society’s major pain point, we find ourselves in a state of never-ending housing crisis. There seems to be a continuous struggle to provide enough homes for the working class, no matter the country, political system, or scale of proposed developments. Two world wars and several pandemics, including COVID, pushed the problem to the limit, while adding to the list of open questions.

The society is and has been searching for solutions, using every available strategy, from new forms of financing to dramatically reducing the apartment size. We do not seem to be any closer to moving the needle though. The fact that we cannot agree on underlying values also does not help. Is housing a right? Do we pay for others to have a home? Renting or owning? Wood or concrete? A townhouse or a tower? At the same time UN Habitat estimates that by 2030 “three billion people, about 40 percent of the world’s population, will need access to adequate housing. This translates into a demand for 96,000 new affordable and accessible housing units every day.

The need for fresh unconventional ideas is urgent and architects find themselves at the front lines of that challenge. We are the only discipline uniquely qualified to find an answer in the synthesis of countless constraints and considerations. We balance demands of changing lifestyles and family structures with limited budgets, energy shortages with available technologies, fire safety with comfort. And we create beautiful, stimulating spaces at the end of the process.

Arch 559 History/Theory – SOCIAL ISSUES IN HOUSING

CLASS TIME: FORMAT EXAMPLE Tuesdays, 6:00PM to 8:50PM

INSTRUCTOR: [Tyler Tourville, RA, LEED AP BD+C](#)

TYPE OF COURSE: History Theory Elective



Lecture/seminar explores the historical, economic, social, technological, and political basis for current American housing policy and practice. Examines government, community-based and private sector attempts, both successful and failed, at providing decent, affordable, and well-designed housing for broad segments of society. Student teams analyze and discuss, in a series of classroom debates, the housing and planning implications of controversial social problems from homelessness and racial segregation to caring for the elderly and people with HIV/AIDS with an emphasis on the role of the architect.

The course structure will include lectures, required source consumption (readings, podcasts, videos, etc.), project case studies, and in-class discussions. Students will analyze housing design and the development process through multiple lenses to understand the impact design and policy decisions have on the human condition. Students will ultimately identify opportunities to improve contemporary and future housing to address the ongoing crises.

ARCH 572 History/Theory – MAPPING URBANISM

CLASS TIME: In-Person, Tuesdays & Fridays, 10:00 AM to 11:20 AM

INSTRUCTOR: Karen J. Wenschhof, RA, CID, CFM
kw86@njit.edu

TYPE OF COURSE: History Theory Elective



Source:<https://urbandesignlab.in/activity-mapping-in-urban-design/>

Prerequisites: ARCH 211.

This seminar provides the critical tools necessary to examine the city as both a representation and a reality in flux. Through an interdisciplinary framework, students study urban history, theory, visual thinking and information design. Parallel to learning about global cities, their urban challenges, and transformative design strategies, students learn to employ a diverse set of representational techniques to create inventive mappings.

Arch 574 History/Theory – Case Studies in Community and Urban Design

CLASS TIME: TF 2:30pm-3:50pm

INSTRUCTOR: Cleve Harp

TYPE OF COURSE: HISTORY THEORY Elective

Prerequisites: ARCH 396 or ARCH 364. In-depth investigation of specific real-world problems of urban or community design carried out using case method approach. Current practices in the U.S. and other countries studied using interviews with designers, developers, community groups and government agencies. Site visits, reports and other documents provide important sources of information. Final report with supporting documentation required.

<https://www.linkedin.com/pulse/designing-housing-urban-community-hudson-k8yde/>

<https://spaces.hightail.com/space/mvbuEde7sD>

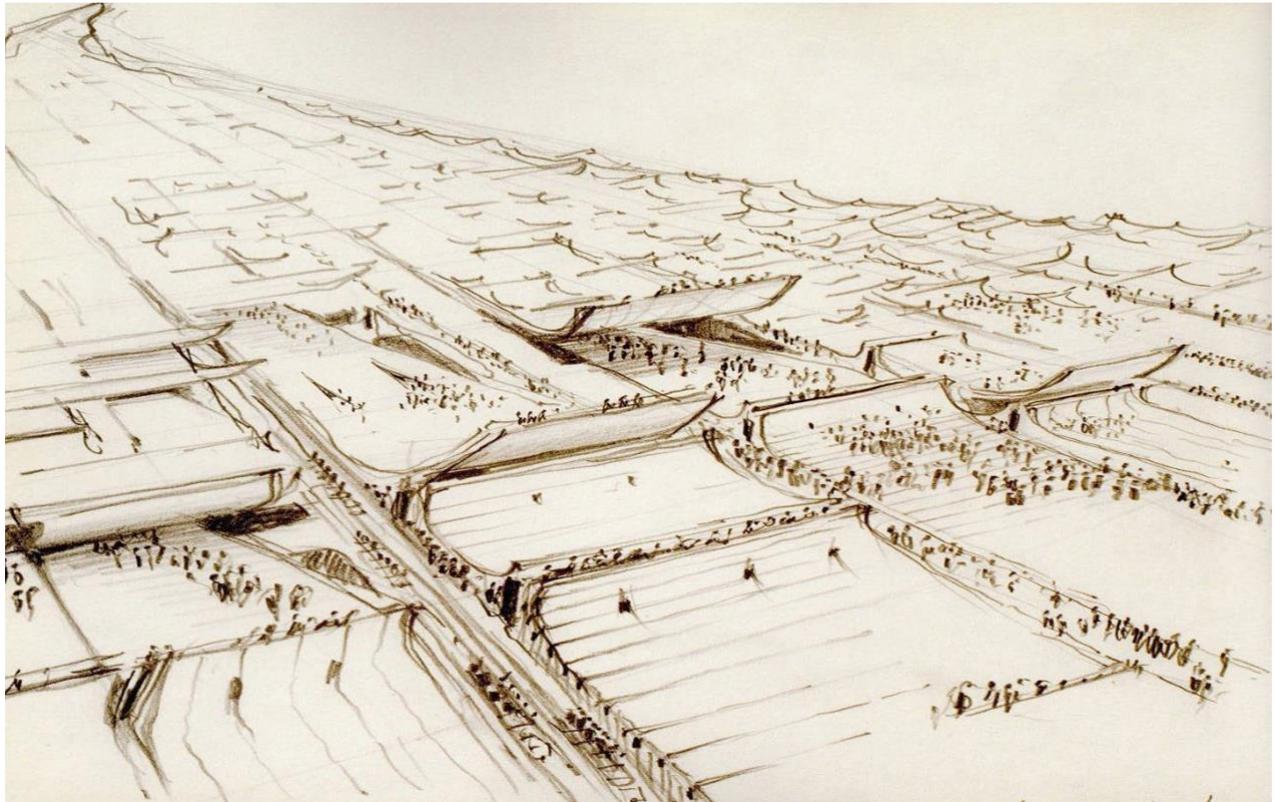
ARCH 576 History/Theory : Architecture of Utopia

history & theory seminar

Thursday 6:00 – 8:50 PM

Prof. Matei Denes

TYPE OF COURSE: History Theory Elective



Oblique City - Architecture Principe 1966

Utopias allow us to explore beyond the everyday and ask big questions about who we are and what we want. They are designed as spatial representations of society. Architecture plays a key role in both the development and understanding of utopias. In this class we will be looking at how architecture can produce cultural, political, economic, and meaning.

The class will explore how utopian projects in architecture manifest four main ideas:

1. Architecture as Problem Solving
2. Architecture as Political Machine
3. Architecture as Social Experiment
4. Architecture as Formal Metaphor

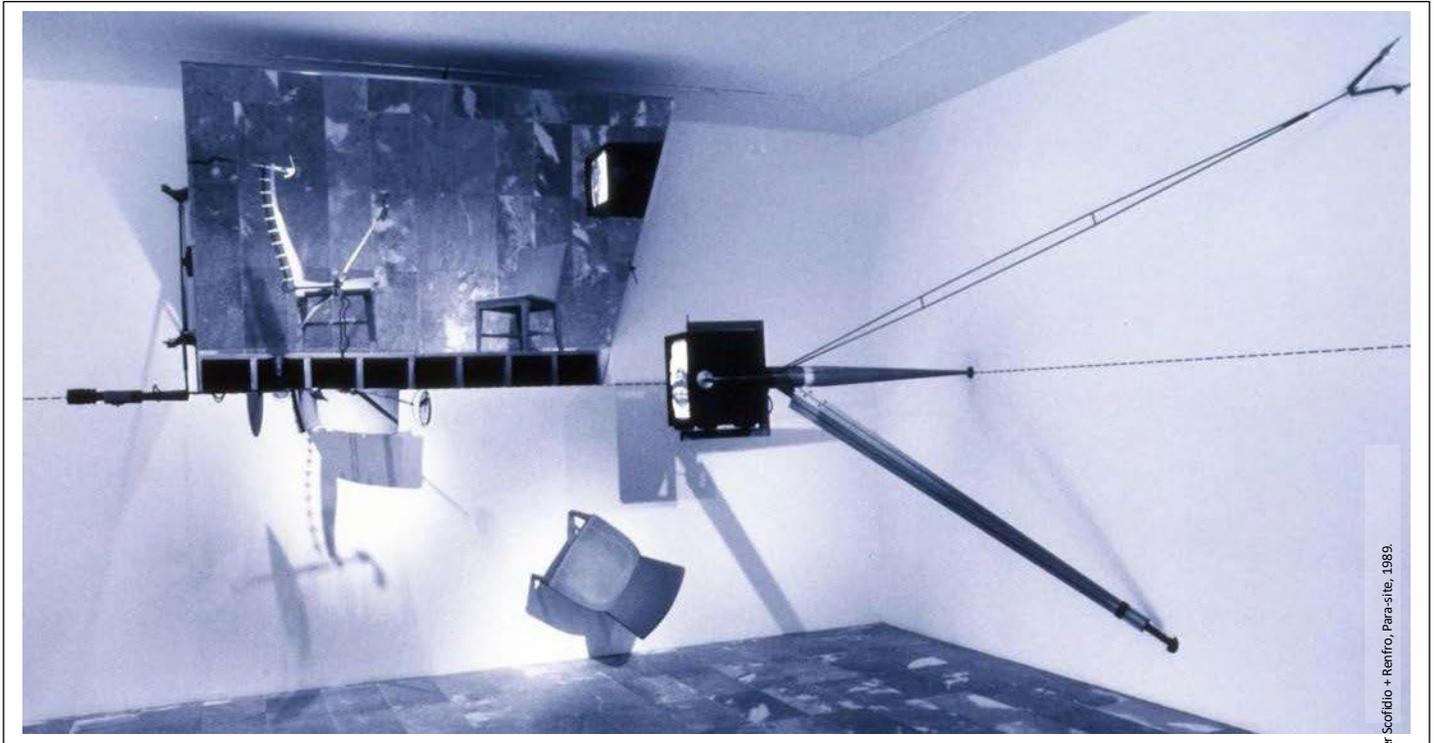
Classes will be structured as discussions with presentations by both the instructor and students. Readings and films will supplement the discussions. Students will be expected to show their understanding of the material through participation in class discussions, presentations, writing, and design.

Arch 583 History/Theory – MODERN ART AND ARCHITECTURE

CLASS TIME: Tuesdays, 6:00PM to 8:50PM

INSTRUCTOR: [Ersin Altin](#)

TYPE OF COURSE: History Theory Elective



Diller Scofidio + Renfro, Parasite, 1989.

Today's art is rarely pretty. Much of it is difficult to look at and understand; it is often confrontational. Contemporary art demands more than simple visual communication or passive consumption. Who consumes art today, where, and how? How should architects view art? How does art influence architecture? In what ways do art and architecture inform one another?

Modern Art and Architecture aims to tackle these questions by tracing the history of the relationship between modern art and architecture, highlighting key movements, influential figures, and the ways in which these fields have shaped and inspired each other over time. We will explore how political agendas, exploitative economies, displacement, deepening disparities, and increasing environmental issues have transformed the perception of art and the production of architecture. The course will introduce new ways to communicate “meaning” and will make art look prettier to you.

Arch 583 History/Theory – The Urbanism of Logistics: Planning, Design, and Policy

CLASS TIME: Tuesdays, 6:00 to 8:50 PM

INSTRUCTOR: [Mike Sacro](#)

TYPE OF COURSE: History/Theory Elective



This course examines logistics' pivotal role in architecture, especially in designing warehousing and distribution centers tailored to modern supply chain demands. Students will explore the shift from traditional manufacturing structures to multi-functional warehousing, including urban infill for last-mile delivery and the strategic importance of ports infrastructure.

Topics include warehouse types, e-commerce-driven designs, financial structures like REITs, sustainability practices such as carbon-capturing concrete and solar roofs, and EV mobility infrastructure.

By course end, students will gain a comprehensive view of logistics as an architectural driver, with insights to design adaptable, sustainable, and community-sensitive infrastructure.

Arch 583 History/Theory – RUINIFICATION: Architectural Discourse through Decay

CLASS TIME: Spring 2025, Tuesday, Friday 8:30 – 9:50 AM

INSTRUCTOR: [Carlos Blanco](#)

TYPE OF COURSE: History/Theory Elective



*A woman lives in the house; she has taken its name.
A house knows who loves it.
An empty house is one that metamorphoses into vacant space.
The breath of a house is the sound of voices within.
The house is only afraid of gods, fire, wind, and silence.*

John Hejduk

Fire at the Opera House of the Palais-Royal in 1781 - Hubert Robert

“Ruinification” presents the notion that what is built up most eventually collapses on itself- and as such temporality, human intervention, and environmental conditions begin to slowly erode and degrade our built environment, piece by piece. This course will introduce the notion of architecture discourse through theoretical and architectural investigations and an analytical understanding of ruins and the decay of architecture, looking into the cause and effects of a building’s life and fall. Students will be able to view ruins as a poetic and symbolic element of what degradation reveals. In addition, students will be critical in the reasons why ruins exist - investigating post-war effects, environmental conditions, and human/governmental violence, i.e riots. Through a series of historical anecdotes and case studies, analytical drawings, and short film screenings, students will be guided through the conceptualization of a building’s and/or spaces’ embodied energy through fragmented memories. The course will provide students with critical case studies on the theoretical underpinnings of architectural ruins as well as literature and research from notable figures such as John Hejduk, George Simmel, Anthony Vidler, and Albert Speers. The course objectives are to capture the decay of the built environment and challenge architects on the purpose of building, positioning the student to investigate the life cycle of buildings and spaces, the effects of decay, and the implications of what a ruin is. The notion of historical preservation of buildings and ruins will be introduced as part of the means and methods of studying how ruins earn preservation merit. The course is designed to introduce the topic of “Ruinification” and guide the student through the material with readings, lectures, and assignments. The course will be in a lecture format and participation is required through discussions. A final essay/presentation will be required for this course.

Arch 583 History/Theory – Earthwork: Geoaesthetics and Ecology

CLASS TIME: Mondays, 6:00 PM to 8:50 PM

INSTRUCTOR: [James Coleman](#)

TYPE OF COURSE: History Theory Elective



This course examines the phenomena of 'land art' that arose in New Jersey in the late 1960's, its disruptive tendencies within the art world, its adoption of environmentalism, and its evolution into contemporary geoaesthetics (the representation of the Earth and its systems). Through lectures and discussions students will analyze key texts by artists and theorists to contextualize specific art practices and methods of representation within the changing dimensions of today's climate crisis. Students will replicate artistic methodologies including data analysis, photography, surveying, writing, and mapping, culminating in a work of their own.

Arch 583 ST History/Theory – Architecture Without Building

CLASS TIME: Tuesdays and Fridays, 10:00 AM to 11:20 AM

INSTRUCTOR: [Etien Santiago](#)

TYPE OF COURSE: History / Theory Elective



Being an architect typically means designing edifices that get built. Today, the success of an architectural firm often hinges on how many of its projects are realized. Yet some architects have increasingly challenged this status quo. This course will probe the growing and heterogeneous trend of architectural work that does not aim to produce buildings.

While this trend is particularly obvious today, its multiple roots stretch back into the recent past. A key purpose of the course will be to trace each of these roots up to the present day. Doing so will lead us to explore—amongst other topics—World War I-era debates about how to commemorate loss, the multimedia creations of Frederick Kiesler, avant-garde architectures of the 1960s and 70s, the forensic architecture spearheaded by Eyal Weizman, architectural forms of community activism such as those of Paola Aguirre’s Borderless Studio and Elizabeth Timme’s Office Of:Office, adaptive reuse, Philippe Rahm’s design of microclimatic environments, and Charlotte Malterre-Barthes’s call for a global moratorium on new construction.

The course will be organized as a seminar. It will primarily consist of readings, short presentations, and discussions. Throughout the semester, each student will delve into a particular strand of architecture-without-building to chronicle the history of this strand, contemplate its ideas, and speculate on where it might go next.

ARCH583 History/Theory– ST: Regenerative Systems in Architecture and Urban Design

CLASS TIME: Tuesdays 6:00 PM to 8:50 PM

INSTRUCTOR: [ONDER, DENIZ](#)

TYPE OF COURSE: HISTORY THEORY ELECTIVES

Urban Farm in Paris. Image Courtesy of CieloVivo



Regenerative systems represent a shift in architecture and urbanism, moving beyond conventional practices and focuses on the restoring ecosystem and communities. In the face of ongoing climate crisis, students will engage with themes of circularity, ecological resilience, social equity, and climate adaptation to explore how built environments can support and cultivate natural systems and social infrastructure.

The semester will begin with a study of international case studies, where students individually analyze international case studies and their urban challenges through a multiscalar approach and present their reflections. Following case studies, students will work in pairs to design building-scale interventions that prioritize resilience, material feasibility, and sustainability while also exploring and visualizing their design intervention's impact at urban scale. These design interventions will be contextualized within New Jersey and New York. Throughout the semester, guest lecturers, field trips, and tutorials on multiscalar visualization workflows (community engagement and critical map-making) will feed into students' regenerative design projects.

By the end of the semester, students will have an understanding of regenerative design frameworks and their multiscalar applications, as well as building up on their design and visualization skills.

Arch 583 History/Theory – Architecture and Counterculture

CLASS TIME: Mondays, 6:00 PM to 9:00 PM

INSTRUCTOR: Maria Aurora Bonomi Durer Bacchetti

TYPE OF COURSE: History Theory Elective



A scene from *Beautiful Losers* (2008) documentary by Aaron Rose and Joshua Leonard.

This course examines the dynamic relationship between architecture and underground counterculture, focusing on how architectural spaces and forms have both influenced and been shaped by movements that challenge mainstream cultural norms, born during periods of political and social unrest. Through an interdisciplinary approach, students will explore case studies from the 20th and 21st centuries, analyzing how architects and designers have responded to issues such as social justice, environmentalism, and anti-establishment ideals. By considering examples of art, music, photography, fashion and design, the course encourages students to think critically about how art and architecture not only reflects societal values but also acts as a tool for cultural and political expression.

ARCH 583 Technology - Sustainable Architecture

Class Time: Monday & Thursday, 8:30am to 9:50am

Instructor: Ross Myren (rossmyren.com)

Technology Elective (eligible for Minor in Environmental Studies and Sustainability)



EcoCocon, compressed straw cassette assembly, 2022

Prerequisites: ARCH 314 or INT 222

Course Description:

This course follows two precepts: first, that we accept responsibility for the consequences of design decisions upon human & non-human well-being, and second, that we reconsider the long-term viability of natural systems with renewed respect for planetary limits. We will explore how the development of construction over the past ~150 years has established a material culture rooted largely in complex globally-sourced, mass-produced, high-energy, and often petrochemical-derived materials; looking to previous eras where construction materials were few and local in origin in order to radically rethink how we build today. We will utilize life-cycle assessments and cost/benefit analyses of building systems to compare the viability of low-carbon, local materials in meeting - and even exceeding - industry standards in both new-construction and adaptive re-use.

ARCH 583 History/Theory– ST: Architecture in Film, Television, and Games

CLASS TIME: Tuesdays, 6:00 PM to 8:50 PM

INSTRUCTOR: [Nidhip Mehta](#)

TYPE OF COURSE: History/Theory Elective



Still from "The Fifth Element" (1997, dir. Luc Besson)

A survey and study of the role and history of architectural form in a variety of filmed media (film, television, advertising, animation, video games, etc.).

Architecture has often been used not just as a backdrop for visual storytelling but sometimes as a character itself. The course will explore a sampling of ways in which buildings, spaces, cities, and settlements have been explored by filmmakers, animators, and game designers, in both utopian and dystopian modes.

Students will choose and conduct their own topical case-study research according to their own interests and inclinations across a variety of filmed media, in addition to being provided a selection of prompts and recommendations. Some class sessions will be spent in watching portions of films, but the majority of viewing will be done outside of class. Most of each class will be spent in discussion, debate, and student presentations. Students will be expected to be active – not passive – participants in the class. Be ready to talk and listen and to learn via two-way communication. Express your opinions while respecting the opinions of others.

Arch 583 History/Theory – ST: Building Wellness

CLASS TIME: Tuesdays 6:00PM to 8:50PM

INSTRUCTOR: [Melissa Marsh](#)

TYPE OF COURSE: HISTORY THEORY ELECTIVE



This interdisciplinary course explores how architecture shapes human experiences, with a focus on wellness, sustainability, and the interface between the built environment and our sensory systems. We will delve into the relationship between design and human performance, examining how architectural choices influence health, well-being, and our larger environmental impact. Vitruvius' timeless principle that “Well building hath three conditions: firmness, commodity, and delight” serves as the foundation for understanding how buildings can be designed not only for stability and function but also to foster joy, wellness, and community longevity.

Through lectures, case studies, workshops, and field trips, students will develop a critical understanding of the interplay between:

- **Human Wellness and Building Design:** Investigate how architectural choices influence physical, mental, and emotional well-being, focusing on light, air quality, materiality, and more.
- **Sustainable Design Practices:** Explore how sustainability and environmental stewardship are integrated into architecture, reducing the carbon footprint while enhancing human health and comfort.
- **Building Systems and Human Experience:** Examine lighting, thermal control, ventilation, and acoustics, analyzing how these systems can be optimized to improve occupant comfort and cognitive performance.

Arch 621 Graduate – Net Zero Building

CLASS TIME: Monday and Wednesdays, 8:30-9:50AM

INSTRUCTOR: John Cays

TYPE OF COURSE: Graduate Technology Elective

This course critically explores principles and technologies governing net-zero building design to achieve the outstanding performance that goes beyond minimum green requirements. Case studies of existing high-performance green buildings around the world will be analyzed in terms of their design, system integration, renewables, and environmental performance, which will be accompanied by lectures about the principles and tools applied to the projects. The use of existing and emerging net-zero energy standards will be also discussed. Using the techniques and tools learned in this class, students will practice how to critically evaluate and design/redesign a net-zero energy building, which will form the final project of the class.

Arch 625 Graduate – PASSIVE HOUSE AND BEYOND

CLASS TIME: Monday and Wednesday 8:30-9:50am

INSTRUCTOR: Hilary Padget

TYPE OF COURSE: Graduate Technology Elective

This course explores leading edge green building programs designed for highly efficient buildings and regenerative design, including Passive House, Living Building Challenge, and Enterprise Green Communities Certification Plus. Each program's requirements and application for single family, multifamily and commercial building typologies will be investigated through in-depth case studies and presentations. A cross-program comparison will analyze overlaps, gaps, strengths and weaknesses of the programs - and challenge students to discern where their own sustainability values lie.

Arch 630 Graduate – CRITICAL THEORIES IN ARCHITECTURE

CLASS TIME: Mondays, 6:00PM to 8:50PM

INSTRUCTOR: [Peter Dumbadze, AIA NCARB](#)

TYPE OF COURSE: Graduate History/Theory Elective



Ant Farm, "Media Burn", Video Still, 1975, SFMoMA

Prerequisites: [ARCH 528G](#), [ARCH 529G](#). This seminar is structured around notable readings on architectural history, theory, and criticism to provide students with a sound basis for critical analysis and assessment. It is recommend for students who select history and theory as their area of concentration.

In 1984, the architectural theorist K. Michael Hays wrote the essay, "Critical Architecture: Between Culture and Form", in which he lays the groundwork for what has become known as the Critical Project in Architecture. A synthesization of Marxist historical materialism and the formalist strategies espoused by the academy, the Critical Project sought to create a path in which Architecture could actively engage in historical dialogues while exploring how space could physically manifest. However, in only a decade, a new project spearheaded by Sarah Whiting and Robert Somol that instead of being retrospective in nature was projective followed in the first two decades of the twenty-first century, by an architectural theory that has scattered across a diversity of intellectual movements.

This seminar will look at the formation and dissolution of Hays's Critical Project and what trajectories architectural theory may take in a post-2025 world. Through critical analysis of disciplinary and adjacent texts, we will develop a narrative that explores the evolution of architectural theory and what uses it has to the architectural discipline.

Arch 636 Graduate – History and Theory of Urban Planning and Design

CLASS TIME: Wednesday 6-8:50pm

INSTRUCTOR: Chris Watson

TYPE OF COURSE: Graduate History/Theory Elective

The course examines methods for conducting historically driven, interdisciplinary research on the built environment (with a focus on cities and suburbs) through the lens of architecture, landscape, geography, and material culture. Methodology is studied to inform the production of urban history and to frame historical perspectives on contemporary urban issues. Historiography and critical theory are key aspects of the study of urban history's methodologies. In addition to traditional historical methodologies, the course examines emerging digital humanities methodologies.

In this class, we will examine the creation of the American city from the macro lens, and discuss how these big thinking leads to the micro production of the built environment and more so how architecture and architects contributed to the built environment, and how we respond to same in our consumption of space in places.

Our collective voices on this fascinating topic will allow us to end this course having a better understanding of the places we consume daily.

Arch 651 Graduate – Public and Private Development

CLASS TIME: Thursdays, 6:00PM to 8:50PM

INSTRUCTOR: Joseph Cosenza. Cosenza is a real estate professional, developer, program manager, construction manager and consultant. Cosenza is based in New Jersey, and has worked in various markets, including Metro NY/NJ, Florida, Maryland, Delaware, and Colorado. Cosenza is currently consulting on several large projects with Ivy Realty. Cosenza's role spans the entire life cycle of the projects from feasibility analysis through planning, design, approvals, and execution. Cosenza's 40-year career began in Architecture and diversified into the development business.

[Joseph Cosenza | LinkedIn](#)

TYPE OF COURSE: Graduate Elective

Many design professionals are frustrated by the seemingly haphazard nature of owner decision-making. Developers often require compromises to the optimal scheme due to budget constraints, investor demands, contractor's value engineering, community pressure, public sector requirements, tax credit, and lender bank requirements. The decision-making process is always more complex and multifaceted than meets the eye.

I will teach the course as a seminar. As such, class participation in discussions is important.

The course will begin with a boot-camp where we will learn the terminology, tools, and relationships and motivations which drive the decision-making process. Students will learn to use a financial proforma and populate it with real market data.

Once we have established a common framework of understanding, each student will research a specific activity in the development process, and make a short presentation to the class, followed by discussion. Invited guest speakers including planners, and developers will present to the class throughout the term. These may include planning, finance, tax equity, public -private partnerships as examples.

Finally, students, working in groups, will identify, plan, and conceptually design a project. Each group will select a project site, with the instructor's assistance, and produce a commercially acceptable feasibility study for its project. The study will include a conceptual design, thesis statement, market research, zoning considerations, real estate taxes, tax equity, public participation, partnership structure, and cash flow. Based on its study, each group will make a recommendation to investors whether to proceed or not. Each group will present the feasibility study to a panel of invited developers and professionals.

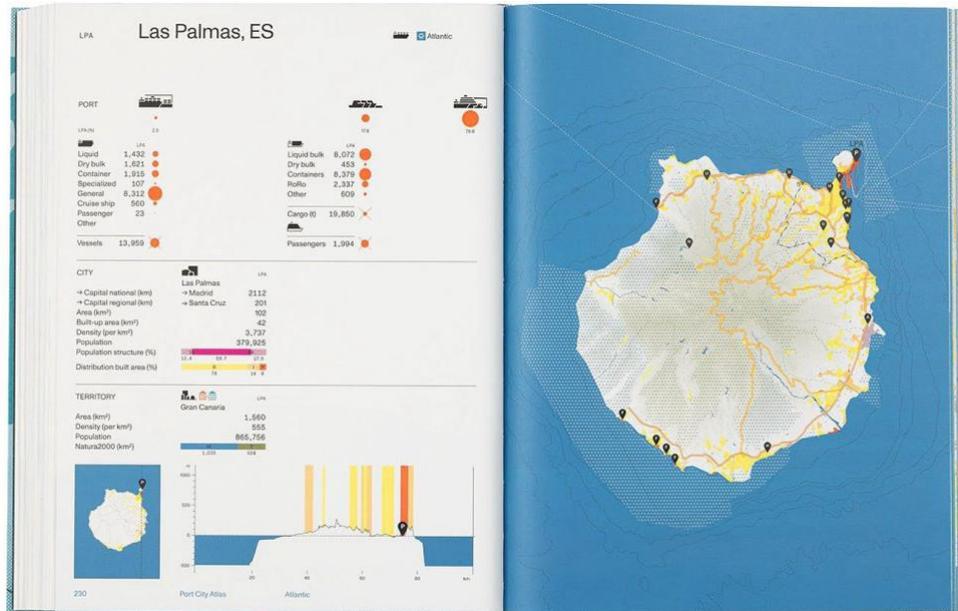
Grading will be based on a quiz following the boot-camp, class participation, and the strength of the final feasibility study.

ARCH 677 Graduate – GEOGRAPHIC INFORMATION SYSTEMS

CLASS TIME: Mondays, 6:00PM to 8:50PM

INSTRUCTOR: [Carsten Rodin](#)

TYPE OF COURSE: Graduate Technology Elective



Geographic Information Systems (GIS) are networked systems encompassing users, methods, software and data and are used to store, manipulate and retrieve spatial information about built environments and natural landscapes and present information through maps. GIS is an interdisciplinary approach used to manage land use, study natural resources, perform environmental monitoring and hazard/toxic waste control, site public buildings, organize disaster response and recovery and much more. In addition to conventional applications, the study of GIS can also provide rigorous preparation for spatial analysis and presentation challenges in architecture, web design and game development. The course introduces students to spatial data presentation and analysis fundamentals using QGIS, showcases precedent projects and suggests directions for ongoing study.

Image: [Studio Joost Grootens, Port City Atlas, 2023](#)

Arch 679 Graduate – Envisioning Newark

CLASS TIME: Tuesdays, 11:30 AM to 2:20 PM

INSTRUCTOR: [Angela Garretson](#)

TYPE OF COURSE: GRADUATE HISTORY/THEORY ELECTIVE



Newark NJ City Hall

With nearly 300,000 residents, Newark is the largest municipality in New Jersey and a vibrant, diverse regional city, rich in history. It provides essential services and public safety to an increased daily population. Therefore, we will use Newark as a living laboratory to examine urban issues and gain insights applicable to cities.

This course will provide an in-depth look at Newark's government structure, budget, policies, and programs across public safety, infrastructure, education, healthcare, housing, economic development, sustainability, and more. Students will analyze current challenges and opportunities through field visits, data analysis, interviews with officials and community leaders, and reviewing current initiatives. The goal is to develop practical policy recommendations and innovations to improve Newark residents' quality of life.

Students will build critical thinking, research, communication, and problem-solving skills while expanding their understanding of urban history and current affairs. They will gain hands-on civic engagement experience by collaborating with peers and applying lessons learned to identify thoughtful solutions tailored to Newark's unique needs and assets. This course will provide transferable skills from local to global cities for leaders across all disciplines to improve communities.

Arch 684 Graduate – TOPICS OF SUSTAINABLE URBANISM

CLASS TIME: MR 10-11:20am

INSTRUCTOR: Pallavi Shinde

TYPE OF COURSE: Graduate Technology Elective

Cities are growing at an unprecedented speed. Cities currently account for about 70 percent of global carbon emissions and over 60 percent of resource use. We have to develop a vision for more sustainable cities and new protocols and processes to implement more sustainable visions for urban areas. This course will provide an inside into the challenges we face (growing number of slum dwellers, inadequate infrastructure and services); it will provide an overview of goals and existing frameworks and speculate on solutions to address sustainability urban issues.

Arch 689 Graduate – AI / VR IN ARCHITECTURE

CLASS TIME: Wednesday, 11:30 AM - 2:50 PM

INSTRUCTOR: [Dr. Taro Narahara](#), Associate Professor [[CV](#), [Work](#)] Email: narahara@njit.edu

TYPE OF COURSE: Graduate Technology Elective



This course focuses on Artificial Intelligence (AI) and Virtual Reality (VR) in Architecture and Urban Design. Recent advancements in data science allow for a deeper understanding of artistic expressions and their inherent qualities in quantifiable formats, paving the way to explore creativity through a symbiotic relationship between human and machine intelligence. In this course, you will learn to generate architectural forms logically, evaluate them analytically, and creatively represent them using industry-standard, state-of-the-art AI-enhanced tools.

The first half of the semester introduces various analytical tools to assess spatial design performance and quality. Using computational design software, including Grasshopper in Rhinoceros with plugins such as ClimateStudio and Ladybug, we will analyze spatial quality across environmental metrics (e.g., solar radiation, energy use, CO2 emissions) and subjective criteria, such as living comfort, views, aesthetics, and spatial appeal. Students will also learn parametric geometry generation in Grasshopper for multi-objective design.

The course will cover generative AI tools, including Stable Diffusion, image-to-image and image-to-video techniques, and 3D reconstruction from 2D images. Additionally, students will gain hands-on experience in immersive VR technologies through head-mounted displays (MetaQuest3) and real-time rendering software, including Twinmotion and Unreal Engine. In the latter half, students will apply course concepts to their individual interests, developing a creative project in architectural design or research. Optional advanced topics in machine learning for architecture are available for interested students.

The course is open to graduate students from all disciplines and advanced undergraduate architecture students (4th or 5th year).

HCAD Spring 2025 Electives

Content:

AD 490	Intro to Cinematography.
AD 490	Monster FX.
AD 490	The Newark Dept of Care and Belonging.
AD 490	The Design of Branding: Introduction to Branding and Motion Design.
AD 490	The Intersection of Style and Culture: Products, Environments and Fashion.
AD 150	Color and Composition.
AD 340	Photography and Imaging
DD 320	Robotics for Architects and Designers.
DD 449	Imaginary Worlds: Architecture in Motion Pictures.
ID 217	Modeling and Manufacturing.
ID 341	Sustainable Materials and Processes.
INT 351	Furniture Design.

See detailed descriptions below.

AD 490 General – INTRO TO CINEMATOGRAPHY

CLASS TIME: Mondays, Wednesdays, 10:00AM to 11:20AM

INSTRUCTOR: [Raafi Rivero](#)

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE



Prerequisites: DD 264 or ID 264 or INT 264 or ARCH 363. Restrictions: For Digital Design, Industrial Design, and Interior Design majors only; other majors require department approval to register. As determined by individual section and topic. Group investigation of problems or topics of special interest in art and design including, but not limited to, fine arts, industrial design, interior design, and digital design.

By now nearly everyone has some facility with making, shooting, and editing videos, but what makes a video look good? What's the difference between something that feels "cinematic" and something that looks flat? Intro to Cinematography will cover all the basics of the image-making chain including framing, exposure, lighting, and camera work. Over the course of the semester, we'll experiment with various styles of cinematography: whether shooting hand-held, on tripods, or on more sophisticated setups. Students will learn the basics of cameras – techniques that apply whether shooting on a phone or a full cinema rig – and how to manipulate them to deliver images that stand out.



AD 490 General – MONSTER FX

CLASS TIME: Thursdays, 6:00PM to 8:50PM

INSTRUCTOR: [Miguel Rodrigues](#)

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE



Prerequisites: DD 264 or ID 264 or INT 264 or ARCH 363. Restrictions: For Digital Design, Industrial Design, and Interior Design majors only; other majors require department approval to register. As determined by individual section and topic. Group investigation of problems or topics of special interest in art and design including, but not limited to, fine arts, industrial design, interior design, and digital design.

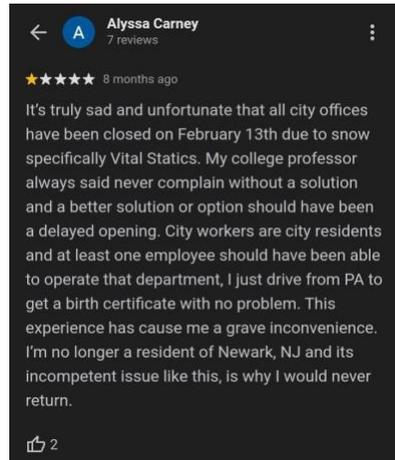
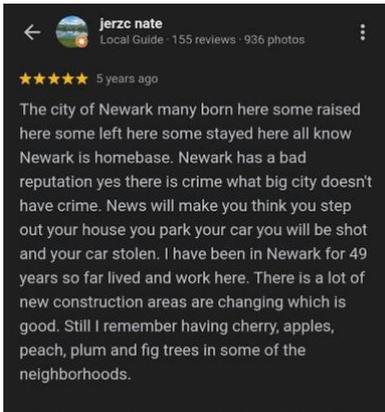
Monster FX teaches students how to create creature effects with film industry techniques such as prosthetics, makeup, 3d, video, and digital compositing tricks. Students learn skills ranging from sculpting and animation in Autodesk Maya to motion tracking on live-action characters with digital elements with Adobe After Effects. Students also learn about the History of Monster FX and studios like WETA, ILM, and Scanline VFX, as well as prominent Monster FX artist legends like Rick Baker, Ray Harryhausen, and many others.

AD 490 General – NEWARK DEPT OF CARE AND BELONGING

CLASS TIME: Mondays, 6:00PM to 8:50PM

INSTRUCTOR: Petia Morozov

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE



Prerequisites: DD 264 or ID 264 or INT 264 or ARCH 363. Restrictions: For Digital Design, Industrial Design, and Interior Design majors only; other majors require department approval to register. As determined by individual

section and topic. Group investigation of problems or topics of special interest in art and design including, but not limited to, fine arts, industrial design, interior design, and digital design.

People and place are the dynamics that shape a city, but it's power - and who has it - that shifts the direction of a city's future. In this course, we will learn how people, place and power can be re-organized to create more

equitable and resilient outcomes for cities, and in particular, for Newark, our home city. We will prototype the foundations of a new quasi-governmental body called the "Newark Department of Care and Belonging," as a new arm of place-based decision-making that prioritizes coalition building between communities, community organizations and government agencies.

First, we'll tackle terms and practices that carry legacies of harm, inequity and/or virtue signaling, like master plan, placemaking, blight, eminent domain, preservation, urban design, stakeholder, civic engagement, placement and public space. Then we'll get to know our city better, using participatory practices that pull us out of the classroom and into formal and informal environments of decision-making. Lastly, we will develop a

AD 490 General – NEWARK DEPT OF CARE AND BELONGING

new framework with terms

and practices that center care and belonging at various scales - from the home to the Newark region. This work will evolve into a document that aims to catalyze coalition building among various community organizations across the city. Contemporaries across the fields of art, design, planning, activism and policy will be our guests throughout the semester, advising us through their work on how to re-orient our roles as designers in the larger urban project of future Newark.

AD 490 General – THE DESIGN OF BRANDING: INTRODUCTION TO BRANDING AND MOTION DESIGN

CLASS TIME: Tuesdays, 6:00PM to 8:50PM

INSTRUCTOR: [Justin Countee](#)

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE



Prerequisites: DD 264 or ID 264 or INT 264 or ARCH 363. Restrictions: For Digital Design, Industrial Design, and Interior Design majors only; other majors require department approval to register. As determined by individual section and topic. Group investigation of problems or topics of special interest in art and design including, but not limited to, fine arts, industrial design, interior design, and digital design.

This elective provides students with a foundational understanding of branding principles and motion design techniques. The course explores how to create cohesive visual identities and bring them to life through dynamic animations. Students will learn the basics of brand development while also gaining hands-on experience in motion design software. By the end of the course, students will be able to develop and animate brand assets, effectively communicating a brand's message through motion.

Justin Countee is a seasoned designer with over 20 years of experience in the industry. As a business owner and founder of his own brands, he brings real-world expertise to the classroom. Justin holds a BFA in Visual Communications, Master of Science in Graphic Communications Technology Management and an MBA, combining his creative skills with a deep understanding of business strategy. His diverse background allows him to teach students not only the technical aspects of design but also how to apply those skills in branding and business contexts.



AD 490 General – INTERSECTIONS OF STYLE AND CULTURE: PRODUCTS, ENVIRONMENTS, AND FASHION

CLASS TIME: Tuesdays, Thursdays, 8:30AM to 9:50AM

INSTRUCTOR: [Gretchen Von Koenig](#)

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE



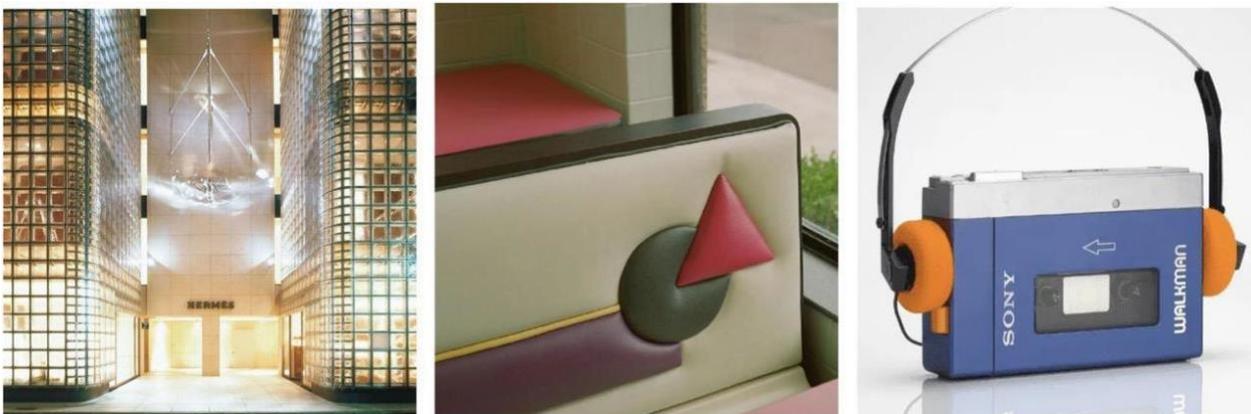
Prerequisites: DD 264 or ID 264 or INT 264 or ARCH 363. Restrictions: For Digital Design, Industrial Design, and Interior Design majors only; other majors require department approval to register. As determined by individual

section and topic. Group investigation of problems or topics of special interest in art and design including, but not limited to, fine arts, industrial design, interior design, and digital design.

By now nearly everyone has some facility with making, shooting, and editing videos, but what makes a video look good? What's the difference between something that feels "cinematic" and something that looks flat?

Intro to

Cinematography will cover all the basics of the image-making chain including framing, exposure, lighting, and camera work. Over the course of the semester, we'll experiment with various styles of cinematography: whether shooting hand-held, on tripods, or on more sophisticated setups. Students will learn the basics of cameras – techniques that apply whether shooting on a phone or a full cinema rig – and how to manipulate them to deliver images that stand out.



AD 150 General – COLOR AND COMPOSITION

CLASS TIME: Wednesdays, 8:30AM to 12:40AM

INSTRUCTOR: [Justin Countee](#)

TYPE OF COURSE: ARCH ELECTIVE



Restrictions: For Digital Design, Industrial Design, and Interior Design majors only; other majors require department approval to register. Introduction to principles of 2D composition with emphasis on color use and color theory. Students are introduced to traditional media (watercolor and collage) and digital raster graphics (painting, image processing, and composition). Applications that include interior design, product/industrial design, advertising, web design, and fine arts are discussed. Concepts include grids and hierarchy, color models and mixing, color interaction, human response to color, printing, etc. Creative projects.

AD 340 General – PHOTOGRAPHY AND IMAGING

CLASS TIME: Thursdays, 8:30AM to 12:40AM

INSTRUCTOR: [Glenn Goldman](#)

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE



Prerequisites: AD 150 or ARCH 396 or permission of instructor. Restrictions: For Digital Design, Industrial Design, and Interior Design majors only; other majors require department approval to register. Photography is introduced as an artistic medium in a digital context. General photographic principles and techniques will be discussed including digital flash photography, image processing, in/on-camera filters and post-processing filters, camera controls, and compositional elements. Photographic student projects will be required. Students must provide their own DSLR camera for use throughout the semester.

Photography is introduced as an artistic medium in a digital milieu as a convergence of art and technology, looking at the discipline both synthetically and analytically. Student projects will be required that deal with a variety of subjects (people and animals, architecture, landscape and flowers, food, street life, product shots/portfolio, storytelling, etc.). Students will be taking and processing photographs (in both black and white and color), and analyzing and providing critiques to/for photographs publicly available as well as those produced by their colleagues in the class in both written and oral form. Assignments will incorporate technical, creative, aesthetic, and expressive criteria. General photographic principles and techniques will be discussed including digital flash photography, image processing, in/on-camera filters and post-processing filters, camera controls, and compositional elements. The three components that go into the photo-creation process (camera, shot selection, post-processing software) will all be considered, discussed, and applied to various situations. A limited survey of the history of photography based on genre that includes the work of significant photographer artists (e.g., Julius Sulman, Ansel Adams, Bill Cunningham, Dorothea Lange) will be included in the course and students will analyze the work of other photographers. Field trips are required, and students must provide their own digital interchangeable lens camera (DSLR or mirrorless, full frame or crop sensor) with some manual controls to use throughout the semester and shoot photos in "RAW" format. While the course can be completed with a single mid-sized lens (35mm to 50mm), multiple primes or a zoom lens will provide more opportunities for student photographers to explore a range of genres more effectively.



DD 320 General – ROBOTICS FOR ARCHITECTS AND DESIGNERS

CLASS TIME: Mondays, Thursdays 8:30AM to 9:50AM

INSTRUCTOR: [Hye Yeon Nam](#)

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE



Prerequisites: AD 112, AD 150; or ARCH 295; or instructor approved equivalents. This course is for students who would like to explore and produce interactive and kinetic products or building prototypes using microcontrollers (Arduino), sensors, and actuators. The course will focus on producing creative and aesthetically articulated applications of robotic technologies. Topics include applications of adaptable, responsive, and distributed systems to various fields of design. The course will take a hands-on approach to learn about sensors (such as light, sound, motion, and gesture-tracking sensors, for example, Microsoft Kinect sensor), actuators (such as servo motors), graphic/game design/simulation software (Processing, Unreal Engine, and Unity3D), and prototyping using available digital fabrication tools such as laser cutters, 3-D printers, and CNC machines at the HCAD and others. Topics from IoT (Internet of Things) will be also explored for those who are interested in creating smart products. Recommended for 5th-, 4th-, and 3rd-year students with basic knowledge on programming, 3-D modeling, and digital fabrication skills. Open to students from any college. Non-HCAD students with appropriate backgrounds are welcome to join the course.

This year the Robotics for Architects and Designers will introduce students to environmental applications for robots. They will learn how to build DIY robots, program industrial robots, and design custom end-effectors. Through a series of projects, students will design, prototype, and program a robotic process for co-habitation with nature.

DD 449 General – IMAGINARY WORLDS

CLASS TIME: Mondays, Thursdays 8:30AM to 9:50AM

INSTRUCTOR: Ron Kopp

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE

Prerequisites: AD 112, AD 161, AD 162 or ARCH 211, ARCH 395. Restrictions: DD cohort designation for DD majors only. Like childhood photographs in family albums, movies are part of our collective memories and become a unique way of "remembering" an era or place, even one that has never existed or could exist. The study of imaginary worlds in motion pictures provides students with opportunities to gain an awareness of architecture and study it from different perspectives. Movies studied will be limited to those that postulate new, or unique, environments rather than those films that faithfully document reality. Discussions will focus on architectural issues raised by the movies studied as well as those found in critical essays.

ID 217 General – MODELING AND MANUFACTURING

CLASS TIME: **Tuesdays 6:00PM to 8:50PM**

INSTRUCTOR: **Mathew Schwartz**

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE

Prerequisite: ID 216. Corequisite: ID 264. Restriction: For Industrial Design majors only, or with department approval. This course will build on the computer modeling techniques of the ID 216 course and combine it with the programs, tools and facilities used in Computer-Aided Manufacturing (CAM). The student will take computer-generated designs and feed them directly into the manufacturing system. The course will also explore Computer Aided Manufacturing as a means of facilitating mass customization: the process of creating small batches of products that are custom designed to suit each particular user.

ID 341 General – SUSTAINABLE MATERIAL & PROCESS

CLASS TIME: Mondays, Wednesdays 10:00AM to 11:20PM

INSTRUCTOR: Mathew Schwartz

TYPE OF COURSE: ARCH ELECTIVE / DESIGN ELECTIVE

Prerequisites: ID 340 or ARCH 295. Restrictions: Junior level or higher; For Industrial Design majors only, or with department approval. The course will comprise of lectures and field trips that take a critical look at the traditional materials and processes used in manufacturing and evaluate alternatives based on research and experimentation. Each student will perform a Life Cycle Analysis (LCA) on an existing product by following the products life from the mining of raw materials to disposal taking particular attention to energy usage, use of natural resources, toxicity and decomposition.

INT 341 General – FURNITURE DESIGN

CLASS TIME: **Wednesdays 11:30AM to 2:20PM**

INSTRUCTOR: **David Brothers**

TYPE OF COURSE: **ARCH ELECTIVE / DESIGN ELECTIVE**

Prerequisites: INT 264 or ID 264 or DD 364 or FA 264 or ARCH 211. Corequisite: Studio enrollment. This course is an introduction to the concepts, materials and construction technologies involved in the design and fabrication of furniture. It explores the relationship between ergonomics, comfort and function in the design of furniture for both site-specific environments and mass -produced applications. Course includes lectures, field trips and a variety of drawn, modeled, and built design projects.