

Spring 2024 Graduate Electives List

Course descriptions are included as they are made available. Questions about specific courses should be directed to the faculty who teach the courses. Questions about how courses apply to a specific degree plan should be directed to Associate Dean Trang Phan.

This list specifies which concentrations these courses will count toward: Urban Systems (US), Sustainable Design (SD), Digital Media and Fabrication (DF), History, Theory, & Criticism (HT)*

*HT is only applicable to the MAAS degree.

History, Theory, and Criticism (HTC) Electives

ARCH 6342 The Shape of the City

Instructor: Drexel Turner

Schedule: MW 10– 11.30am

Concentration Types: US, HT

This course will provide detailed information about how American cities and towns look and work. In most cases, the articles, and books we will read are written by non-native observers who have lived in the places they describe for extended periods. Often, they are “inexpert” witnesses with an uncanny ability to see things as they really are simply by bringing a fresh pair of eyes and an acute critical sensibility to bear on places whose virtues and vicissitudes are often hidden in plain sight. Readings and in-class discussion will typically include the equivalent of two long-form articles or several chapters from a book for each class.

ARCH 6347 Evolution of Architectural Interiors

Instructor: James B. Thomas

Schedule: M 6.00 – 9.00 pm

Concentration Types: HT

This course follows the development of interior architecture throughout history and how this history is applied to current practice. Students study the broad history of Western interior architecture, emphasizing 18th through 20th-century interiors and their influences on current practice. This involves lectures by Houston interior architects; visits to both residential and institutional projects, with their designers; selected films; projects challenging the students’ ability to relate to history; investigating the role of nature or biophilia in design; the study of color and pattern usage; and lectures and visits to the Bayou Bend Collection of Decorative Arts, Museum of Fine Arts, Houston.

ARCH 6311 Topics in Design History: Three Urbanisms: New York, Houston, Detroit

Instructor: Deepa Ramaswamy

Schedule: Th 10.00 am– 1.00 pm

Concentration Types: HT

The course will look at New York, Houston, and Detroit as three specific urbanisms with properties that allow us to draw intersections and translations between their spatial and scalar systems. Each week is organized around an idea,

determinant, or narrative that introduces key political and historical frameworks, figures, networks, and contexts that shaped these cities. New York, Houston, and Detroit will offer us a set of questions that will unpack architecture's relationship with the city and its many sites of conflicting cultural, social, economic, political, aesthetic ideologies and discourses.

ARCH 6311 Topics in Design History: Emerging Scholar Fellow Seminar | Extractive Architecture and Urbanisms in Latin America

Instructor: Giovanna Bassi Cendra

Schedule: Th 3.00pm- 6.00pm

Concentration Types: HT

Considering extractivism—from highly toxic practices such as mining to less maligned enterprises such as monoculture agriculture—this seminar explores the multiple ways in which architecture and urbanism have performed as instruments of extractive capitalism in Latin America, from the colonial search for El Dorado, to the neocolonial infrastructures of modern developmentalism, to the commodity boom and planetary urbanization of today. Engaging with critical theory and groundbreaking architectural history, students will interrogate the environmental and racialized social injustices supported by extractive architectures, as well as alternate forms of inhabiting the planet that have been left out of historical accounts.

ARCH 6311 Topics in Design History: Publishing Practices

Instructor: Enrique Ramirez

Schedule: MW 11.30am– 1.00pm

Concentration Types: HT

A historical overview of publishing practices in architecture and design, understood as the process of making things public through communicative media—from books to magazines, pamphlets, broadsheets, zines, blogs, Instagram feeds, and other publication formats both analog and digital.

ARCH 6397 Imperialism, Uneven Geography, Appropriation + Inequality

Instructor: Bill Truitt

Schedule: MoWe 11.00 am- 12.30pm

Concentration Types: US

Inequality in cities is not only an American problem. This elective proposes innovations in infrastructure create conditions of early globalization while literature and science are leveraged to legitimize imperialism stemming from the early innovations. British, Spanish, and French attitudes toward colonization vary but all contribute to an uneven urban geography visible today in Asia, Africa, and the Americas. Drawing relationships between the European colonization of Shanghai, Hong Kong, and Rangoon (British) with Saigon, Hanoi, Phnom Penh, and Luang Prabang (French), small stories illustrate varying European attitudes toward far off places despite colonial efforts to create sameness. These early incursions are background for the more complete French modernization and imagination of culture in Morocco. Colonial adventures of the US are politically intertwined with early European examples, appearing much later as cover for “spheres of influence” in Puerto Rico and Colombia. Each presentation links early events to contemporary conditions of conflict, local resistance, and complexity of local culture. Critical texts from Edward Said, David Harvey, Richard Sennett, Naomi Klein and others uncover links between colonial and global space as well as dissimilar imperial pasts.

ARCH 6351 Criticism in Architecture

Instructor: Drexel Turner

Schedule: TuTh 10.00– 11:30am

Concentration Types: US, HT

This course provides in-depth information on a select group of buildings as well as an exposure to different approaches to thinking and writing about particular buildings or classes of buildings, whether considered “high”

design or vernacular. Some of the writers you will encounter operate at the level of literature – John Ruskin, Henry James, and J. B. Jackson – while others furnish lucid, insightful, and intermittently provocative commentary, as in the cases of Reyner Banham, Mark Girouard, Mariana Griswold Van Rensselaer, Henry-Russell Hitchcock, Ada Louise Huxtable, James Ackerman, William Jordy, Lewis Mumford, Colin Rowe, Vincent Scully, Joseph Rykwert, and John Summerson among others. Through readings and class discussions we will develop acute and sophisticated observation of (and writing about) interesting buildings, whatever their architectural pretensions and however subtle their claims to our attention may be.

ARCH 6355 Houston Architecture

Instructor: Stephen Fox

Schedule: TuTh 8.30– 10.00 am

Concentration Types: US, HT

The course consists of a series of illustrated lectures and walking tours that describe and analyze the architectural history of Houston. The basis of the lectures is a chronological account of the development of the city from its founding in 1836 to the present. Characteristic building types and exceptional works of architecture are identified for each period within the city's development. Notable architects who worked in Houston are also identified and the evolution of the practice of architecture is profiled. Walking tours acquaint class members with outstanding buildings and educate them in developing an awareness of the historical dimension of urban sites.

Design Media (DM) Electives

These courses will fulfill the Design Media concentration requirement

ARCH 6112-03/05 Topics in Design Media: Building Information Modeling with Revit

Instructor: Peter Noldt

Schedules:

- ARCH 6112-04: Session 2 (5-weeks: January 16 – February 16, 2024): Fr 9am-12pm
- ARCH 6112-05: Session 4 (5-weeks: February 19 – March 29, 2023): Fr 9am-12pm
- ARCH 6112-09: Session 4 (5-weeks: February 19 – March 29, 2023): TuTh 1- 2.30pm

Concentration Types: DF

Unlike traditional CAD software, where designers produce two-dimensional drawings, Building Information Modeling or BIM, involves the creation of full three-dimensional models. Plans and sections then become views of the model and are updated instantly whenever changes are made to the design. Objects in the model, such as walls and doors, also include imbedded information like materials and dimensional data. While outside the scope of an architectural education, this data can then be automatically parsed into various schedules. This five-week, one credit hour class, will utilize Autodesk Revit to survey all the major “Systems” and “Components” required for an architectural project. Once the basics have been covered, we will then learn how to create renderings and setup sheets for a schematic design presentation. Additional topics will include creating “families” or symbols and mass modeling. Autodesk Revit is available in the computer lab and an academic version can be freely downloaded for the Windows platform only.

ARCH 6112-06/07/08 Topics in Design Media: 3D Modeling in Rhino

Instructor: Peter Noldt

Schedules:

- ARCH 6112-06: Session 2 (5-weeks: January 16 - February 16, 2024): TuTh 11.30am- 1pm
- ARCH 6112-07: Session 2 (5-weeks: January 16 - February 16, 2024): TuTh 1- 2.30pm
- ARCH 6112-08: Session 4 (5-weeks: February 19 - March 29, 2024): TuTh 11.30am- 1pm

One of the most popular tools for architectural and industrial design is Rhinoceros or “Rhino” for short. Unlike more traditional CAD software, Rhino uses NURBS modeling, which allows for quite complex and often organic shapes. In this five-week, one credit hour class, we will explore the major tools for creating curves, surfaces, solids and SubD objects. We will also introduce visual script writing using the parametric/generative companion “Grasshopper”.

Finally, we will conclude with the various forms of output, like traditional plans and sections, 3D printing as well as imagery utilizing both Rhino's native "Rhino Render" and the "V-Ray" plug-in. Rhino software is available in the computer lab and can be downloaded for both the Windows and Mac platforms with licenses available for checkout, free of charge, from the college's license server.

ARCH 6112-14 Topics in Design Media: Intro to Realtime Rendering

Instructor: Josh Smith

Schedule: Session 4 (5-weeks: February 19 – March 29, 2024) W 6.30- 9.30pm

Concentration Types: DF

Intro to Realtime 3d and Video game engines - This course aims to discover new ways to interpret, conceive and describe reality. Traditional methods of representation create an "emitter" and a "listener" relationship. Game technologies allow us to step beyond this and pave the way for a truly immersive/interactive experience. This semester we will look at different techniques of representation using twin motion and unreal engine.

ARCH 6112-11/12 Topics in Design Media: Portfolio Design

Instructor: Meg Jackson

Schedule:

- ARCH 6112-11: Session 2 (5-weeks: January 16 - February 16, 2024) Th 2.30- 4pm
- ARCH 6112-12: Session 4 (5-weeks: February 19 – March 29, 2024) Th 2.30- 4pm

This elective course will focus on how designers communicate a body of work through digital and print portfolios using Adobe InDesign.

Concentration Types: DF

ARCH 6112-15 Topics in Design Media: Artificial Intelligence in Design

Instructor: Andrew Kudless

Schedules: Session 2 (5-weeks: January 16 - February 16, 2024) Tu 1- 4pm

Recent advances in artificial intelligence have enabled new methods for designers to explore and expand their imagination. This course will introduce the primary theories and practices of AI in design and discuss the challenges, biases, and opportunities of using AI tools to co-author design sketches. Students will become familiar with several AI platforms using text-to-image algorithms and will collectively work on weekly design themes.

Concentration Types: DF

ARCH 6112-18 Topics in Design Media: Wood Fabrication

Instructor: Cara Murray

Schedules: Session 2 (5-weeks: January 16 – February 16, 2024) MW 6- 7.30pm

This course focuses on the basics of working with wood as a material in industrial design, interior architecture, and architecture. The course will cover both traditional woodworking as well as digital fabrication techniques with wood.

Concentration Types: DF

ARCH 6112-04 Topics in Design Media: Digital Installation

Instructor: Cara Murray

Schedules: Session 4 (5-weeks: February 19 – March 29, 2024) MW 6- 7.30pm

This workshop investigates analog film processes, digital projections, and temporary installation through critical research and hands-on experimentation. Students will explore the art of storytelling through abstract visuals that culminates in a public installation of final project.

Concentration Types: DF

ARCH 6112-02 Topics in Design Media: Digital Mapping

Instructor: Celeste Ponce

Schedules: Session 2 (5-weeks: January 16 - February 16, 2024) MW 6- 7.30pm

Concentration Types: Design Media Elective, Architecture Research Elective, Interdisciplinary Elective, or Architecture Elective

The seminar will explore data collecting through a map visualization process. The seminar will also include an introduction to ArcGIS and CAD mapper as a tool to help generate spatial patterns and relationships collected from the students' raw data.

Concentration Types: DF

ARCH 6312-02 Topics in Design Media: Architectural Visualization

Instructor: Peter Noldt

Schedules: Session 1 (15-weeks) TuTh 10- 11.30am

Concentration Types: Design Media Elective, Interdisciplinary Elective, or Architecture Elective

Today's designers are presented with a wide variety of digital tools for modeling and visualizing their designs. Some software programs are general in nature while others are discipline specific.

The purpose of this course is to introduce several modeling tools so that the designer can choose the program that best fits the presented design problem. Types of modeling mechanisms include parametric, mesh, NURBS and Building Information Modeling. Basic rendering techniques will also be discussed.

ARCH 6312-05 Topics in Design Media: Hybrid Visualization with AR-Augmented Futures

Instructor: Josh Smith

Schedule: Session 1 (15-weeks) Mo 6.30- 9.30pm

Concentration Types: DF

Hybrid Visualization with AR - Augmented Futures - This Course aims to explore augmented futures and their underlying technologies position in pop culture, entertainment, and architecture. We will use contemporary culture as a laboratory of the immediate present, an experimental breeding ground for a multitude of possible realities. We will watch films, read texts, and develop a rich discourse around AR/VR spaces and their layered states of existence in our collective reality.

ARCH 6312-06 Topics in Design Media: Biomaterials

Instructor: Meg Jackson & Michael Gonzales

Schedule: ARCH 6312-06: Session 1 (15-weeks) Mo 6- 9pm

Concentration Types: DF

With current global attention to climate change and an estimated 66 per cent of the world's population projected to be living in urban areas by 2051, investigations into alternatives to traditional construction practices and materials

are urgently needed. Current research in bio-digital hybrids and bio-receptive materials is promising because of the potential to develop resilient, performative design solutions that not only improve environmental quality but also reduce manufacturing and life-cycle costs. Such efforts can be seen in research into bioremediation and self-repairing organisms such as microalgae and mycelium. Composites using these material strategies can absorb CO₂, oxygenate air, and are fully biodegradable. Current development of bio-sensing materials and systems also has the potential to integrate embedded sensing, actuation, and control mechanisms directly into material strategies producing materials and systems with the ability to monitor their environment and trigger dynamic responses based on changing environmental conditions.

Looking towards more sustainable, healthier, and cyclical practices, this course will focus on 1) developing bio-architectural composites that are adaptive, self-sufficient, and reduce the impact on the environment; 2) developing bio-computational strategies that can be applied to performative skins, materials, and structures; 3) developing scalable bio-fabrication techniques that can be utilized in the manufacturing of high-performance multi-material systems. Students will create an index of contemporary case studies as well as do hands-on growth, material, and fabrication experiments to investigate the potentials of biomaterials in the design disciplines. The course will be a workshop/lab format.

ARCH 6312-o8 Topics in Design Media: Climate Media - Drawing Atmosphere

Instructor: Sam Clovis

Schedule: Session 1 (15-weeks) We 6- 9pm

Concentration Types: DF

This course will explore the transient reality of climate and its representation, incorporating qualities of ambiguity and instability into architectural design and representation.

Oftentimes in architecture, to design is to demarcate defining desired outcomes through an emphasis on specificity, determination, and certitude. Through the act of drawing and modeling, issues of uncertainty are intentionally neglected or otherwise fixed. In contrast to the perceived static nature of building, climate resists measurement, its ephemeral character better expressed through shade and tone rather than line.

In this course students will engage with various physical and digital media (drawing, animation, modeling, simulation) to explore methods of representing temporary, ambiguous, and unstable conditions. These studies will include the design and modeling of volumetric datasets, photogrammetry, and environmental simulation. Readings and collective discussion will take place alongside this technical experimentation. Through these studies, students will develop a library of techniques that will be used in a culminating group exercise in which they will be asked to apply new methods of representation and analysis to canonical works of architecture as a means of conveying their variable material and environmental conditions.

Goals

1. Students will gain an understanding of the history of climate's representation in architecture, and how these methods of representation have directly influenced cultural awareness and constructs of environment.
2. Students will develop new technical skills in environmental modeling and simulation through iterative design exercises.
3. Student will use this knowledge to engage in the rigorous analysis of existing buildings, developing new representations of these works that illustrate their environmental mediation.

ARCH 6312-o7 Topics in Design Media: [Hola, Robot]

Instructor: Joaquin Tobar-Martinez

Schedules: Session 1 (15-weeks) TuTh 6- 7.30pm

Concentration Types: DF

Digital tools are instigating alternative methods in the AEC industry to build more efficiently. For this reason, a closer collaboration is needed between designers, engineers, and builders, to develop solutions that produce less waste and less harm to the environment. In this elective course, we explore the possibilities of earth-based materials, such as clay, enhanced by digital fabrication methods.

Objectives:

We will focus on a series of prototypes using clay and cement-based mixes for 3D Printing from small-scale prototypes. Students will speculate on the potential for large-scale assemblies by emphasizing digital workflows toward material expression. In addition, students will be encouraged to experiment with the changes that clay and cement-based mixes undergo during and after each fabrication process. Towards the end of the semester, we will focus on designing and fabricating components with large-scale printers.

Learning Outcomes:

Digital fabrication skills using ABB Robot, basics of visual programming using Rhino and Grasshopper, clay printing for ceramic assemblies, familiarity with large-scale printers such as COBOD 2.5 used by Industry Partners in the context of Houston, TX, and beyond.

Method:

Guest lecturers, introduction to parametric design workflows for 3D printing clay, robotic fabrication setup, physical experimentation, site visits to industry partner facilities, construction of 1:1 demonstrator. Final presentation location TBD.

Technology | Research | General Electives

ARCH 6314 High-Rise Structures

Instructor: Joseph Colaco

Schedule: Fr 8.30- 11:30am

Concentration Types: SD

A study of Structural Design of Superstructure and Foundations of Tall Buildings.

Examples of the Full Arch. and Eng. Design and Construction of tall steel, concrete, and composite buildings.

ARCH 6314 Case Studies in Sustainable Design

Instructor: Rives Taylor

Schedule: Tu 6.30- 9.30pm

Concentration Types: DF

The class participant will engage in a “design thinking” process to gain practical insight in the delivery of sustainable outcomes for real world challenges. This 21st century design process entails both a client / community educational avenue as well as an action/realization method; this design approach is needed to respond to real world problems at a variety of scales, in the context of the evolving, larger natural environment.

The course method of discovery for this sustainability in the built environment is predicated on both the ability explore how our built environment performs and understanding the implications of our human environment design and construction through the operational (full life) cycle. The class will also seek to elevate and enhance the knowledge base from the collaborators’ previous courses, including foci on technology, cultural histories, economics, and studio design.

ARCH 6397 Environmental Analysis II

Instructor: Bruce Race, PhD, FAIA, FAICP

Schedule: MoWe 11:30- 1.00pm

Concentration Types: DF

Environmental Analysis II is the second of a two-part series of environmental analysis courses. The course is an introduction to economic assessment methods for sustainable urban systems, technical and legal constraints for air quality, brownfield, and greyfield projects. Students will review issues relating to performing formal environmental assessments, such as an Environmental Impact Statement (EIS) required by the National Environmental Protection Act (NEPA). Students will prepare case studies of air quality impact projects. The semester project will include analysis and proposal for industrial legacy sites in the Greater East End.

ARCH 6397 Design of Construction Details

Instructor: Jon Kevin Story

Schedule: Mo 6:00- 9.00pm

Concentration Types: DF

This course provides a comprehensive study of the basics of architectural construction detailing. The learning outcome of this course will be to provide the student with a working knowledge of how to think through a variety of construction detailing issues. To facilitate this outcome the course will introduce the students to basic exterior and interior construction detailing including the following material and systems assemblies:

- _Wood frame wall/floor/roof assembly
- _Heavy Timber including Cross Laminated Timber
- _Steel frame wall/floor/roof assembly (this course will concentrate on Steel Frame assemblies).
- _Concrete frame wall/floor/roof assembly
- _Glazing systems storefront systems, curtainwall systems, structural glass systems
- _Various skin assembly details for a variety of exterior and interior materials, including, wood, stucco, brick/masonry, stone, glass, and metal panel systems.
- _Students will be required to develop typical details for various exterior opening conditions. There will be an emphasis on exterior wall and roof edge assembly detailing.
- _Students will be required to develop a set of details for selected interior material assembly constructions, including, millwork, interior glazing, balcony railings and/or stair details.
- _Students will develop an exterior assembly section and detail using one of the students' design projects as a basis to select the documented assembly.